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IMPACTS OF THE 4TH EAST ASIAN GAMES ON RESIDENTS' PARTICIPATION IN LEISURE SPORTS AND PHYSICAL ACTIVITIES – THE CASE OF MACAU, CHINA

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Macau hosted the 4th East Asian games in 2005

Impacts of the 4th East Asian games on residents' participation in leisure sports and physical activities – the case of Macau, China

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ABSTRACT: Sport events and the associated impacts are not new subjects for academic research, and the past enquiries have given substantial attentions to the economic impacts, especially those of tourism. Some important social issues have not been sufficiently investigated, including the extent to which sport events stimulate resident interest in leisure sports and the enhancement effects on public health. This study aims to address the past omissions through an examination of the 4th East Asian Games. It especially focuses on the extent to which the event stimulated resident participation in leisure sports and physical activities, so as to draw implications for public health enhancement and the ripple benefits for tourism. Combined methods were used for the investigation, which included questionnaire survey, in-depth interviews, documentary research and on-site observations. The results indicate that respondents who were highly attached to the sport promotion schemes of the event perceived most positive impacts and were more likely to support the city to host similar events in the future. While the results show to a certain extent that the 4th East Asian Games stimulated resident interest in leisure sports, forming and adopting relevant policies are considered necessary for nurturing a community culture of sports that may help construct a public health image of the host city and, this will eventually benefit local tourism.

KEY WORS: East Asian Games; enhancement effect; leisure constraint; Macau; physical activity; public health image; sport event; tourism

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1 Introduction

Past studies of sport events have given substantial attentions to the economic impacts, especially those of tourism (Weed and Bull 1997; World Tourism Organization 1999; Roche 2000;Kim and Morrison 2005; Lee and Taylor 2005; Owen 2005; Weed 2005). Notwithstanding the merit of this line of investigation, it has been argued that there are other dimensions of sport events that merit increased attention (Hinch and Higham 2001; Ritchie and Adair 2004). One such omission has been the investigation of the stimulating effects of major sport events on resident interest in leisure sports and the extent to which such effects may contribute to community public health. This paper is to address this omission by presenting the case study of the 4th East Asian Games held in Macau, China, in 2005.

The origin of East Asian Games can be traced back to a regional sport event: the Far Eastern Games or Far Eastern Championships which were launched in Philippines in 1913. The Second World War put this sport event on hold until 1992 when East Asian countries decided to revive the Far Eastern Games with a new name 'East Asian Games'. This sport event has since been held in Shanghai(China) in 1993, in Pusan (South Korea) in 1997, in Osaka (Japan) in 2001, in Macau in 2005, and the 5th in Hong Kong in 2009. This case study attempted to investigate the extent to which the 4th East Asian Games (Macau, 2005) had stimulated Macau residents' interest in leisure sports and regular physical activities; as well as the enhancement effects on local tourism.

Located in the Pearl River Delta Region of China, Macau is expected to have a promising prospect for tourism development thanks to these recently held or soon to be held regional and international sport events: Hong Kong Equestrian Competition of Olympics 2008, Hong Kong 5th East Asian Games 2009; Guangzhou Asian Games 2010, and Shenzhen World University Games 2011. Despite the physical activity focus of those events, the local public participation rate in leisure sports and physical activities is rather low (Hong Kong Department of Health, 2006). This lack of interest in leisure sports and regular physical activities not only undermines community public health but also contributes to an unattractive tourism destination image of a sedentary population prone to health issues like Severe Acute Respiratory Syndrome epidemic and avian flu (Chien and Law 2003; Lo et al. 2006; McKercher and Chon 2004). A critical issue observed by Dickson and Schofield (2005) is that high expectations of the economic effects associated with major sport events held in this region encourage sponsors such as Coca-Cola, Volkswagen, Panasonic, Samsung, Legend Group and General Electric, to be involved with these events. This is directly responsible for additional increases in caloric intake and declines in physical activities among the local Chinese population, and has become an important challenge for the community public health. Accordingly, this case study has three objectives to achieve. Specifically they are, 1) to explore the stimulating effects (if any) the 4th East Asian Games on the residents' interest in leisure sports and the associated contribution to public health image and tourism; 2) to generate useful insights so that Macau and other cities of the region will be in a position to maximize the catalytic effects of similar events in the future and; 3) to explore the relevant theoretical and practical questions in the context of a major Asian city.

2 Theoretical Framework

A theoretical framework was developed to facilitate the case study, on the basis of a conceptualized relationship regarding public health, leisure sports participation and leisure constraints. According to World Health Organization (hereafter WHO, 2003), public health refers to all organized measures, public or private, that help prevent disease, promote health, and prolong life among the population as a whole. It is thus concerned with the total system and not only the eradication of a particular disease. While public funds are major resources for public health maintenance, alternative approaches, such as promoting leisure sports related physical activities, can also help improving residents' health (Brown et al. 2001). Leisure sport is conceptualized as an intersection between leisure and sport (Hinch et al. 2005); and a sub-field of leisure activities (Haywood et al. 1995; Lynch and Veal 1996). First, leisure is part of our daily life – »portion of an individual's time that is not directly devoted to work or work connected responsibilities or to other obligated forms of maintenance or self-care« (Kraus 2001, 38). Second, sport refers to »all forms of physical activity, which through casual or organized participation, aims at improving physical fitness and mental well being, forming social relationships, or obtaining results in competition at all levels« (Standeven and

Knop 1999, 1). Study by the U.S. Department of Health and Human Services (1996) suggests leisure sports can help maintain residents' health in terms of physical soundness; and the related physical activity is one of the best treatments for minimizing the risk of disease.

Despite the potential of leisure sports for maintaining and enhancing residents' health, such potential may be challenged by various constraints for people to participate in them. Insights from this line of study suggest such constraints exist in terms of participation level and/or variety of activities, thereby creating difficulties for transferring the benefits (Crawford and Godbey 1987; Crawford et al. 1991; Hinch et al. 2005; Jackson 1988, 2005; Jackson et al. 1993; Jackson and Scott 1999). A brief review of this line of research indicates constraint modeling has been the focus of some recent enquiries about leisure constraints (e.g. Crawford and Godbey 1987; Godbey 1985; Jackson and Searle 1985). A good example should be the 'Hierarchical Model' (Crawford and Godbey 1987) which hypothesizes there could be three types of leisure constraints: structural, interpersonal, and intrapersonal. 'Structural constraints' refer to external environmental factors (such as time, geographic location, financial resources, provision of facilities and transportation) external to leisure preferences and participation; 'intrapersonal constraints' refer to individual psychological states and attributes (such as personality, interests and attitude towards leisure) which interact with leisure preferences rather than intervening between preferences and participation; and 'interpersonal constraints' refer to those that arise out of social interaction with friends, family and others. Those constraints function in a sequential order: interpersonal constraint → intrapersonal constraint → structural constraint (Crawford and Godbey 1987; Crawford et al. 1991). An important modification of the hierarchical model is the adding of a 'representation thesis': leisure participation is not determined by the absence of constraints but by negotiation through them and negotiation of such constraints may not prevent but modify participation (Jackson et al. 1993). In addition, a couple of other works also serve to expand the scope of study on constraints and seek more reflective and dialectic understanding of constraints' role in leisure participation (e.g., Frederick and Shaw 1995; Jackson 2000; Kay and Jackson 1991; Liechty et al. 2006; Shaw et al. 1991). In effect, those efforts have provided theoretical critiques, explored alternative analyses, and introduced new concepts related to leisure constraints. Those studies reveal an important assumption that leisure constraints limit one's capability »to participate in leisure activities, to spend more time doing so, to take advantage of leisure services, or to achieve a desired level of satisfaction« (Jackson 1988, 203). Interested

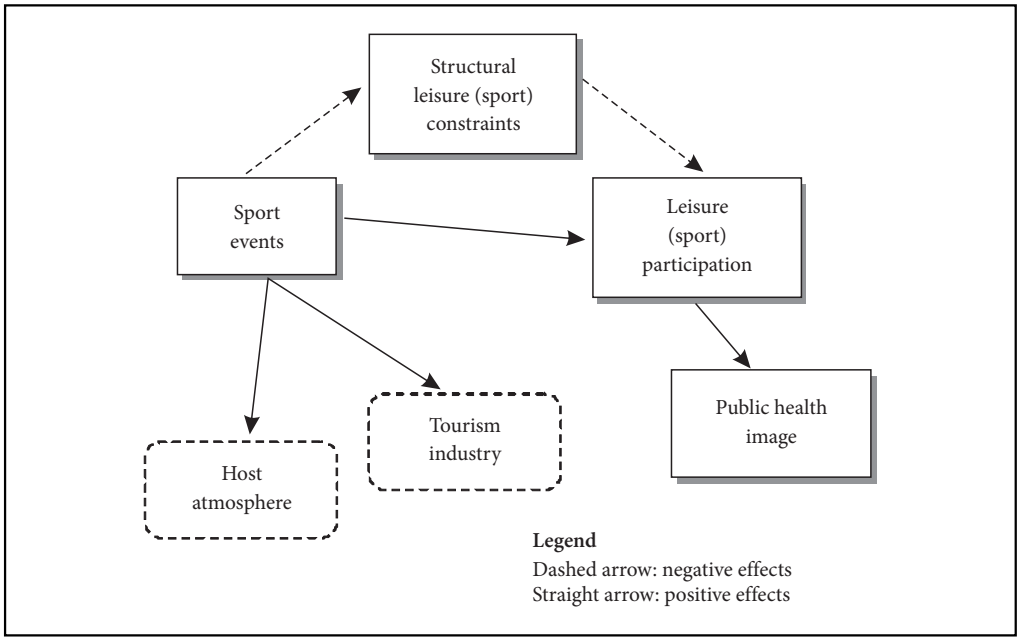

Figure 1: A theoretical framework.

scholars should seek to understand "why do some people not participate in leisure activities or not participate to the extent that they may desire (Hinch et al. 2005, 144), so that countermeasures or 'constraint reduction strategy' (Mowen et al. 2005) can be found to facilitate leisure participation.

Sport events may be considered an option for helping people reduce constraints of leisure sports participation. Studies show the rate of resident participation in leisure sports is directly proportional to the spectator experience of sport events (Melnick and Wann 2004; Wann and Grieve 2005). A sport event provides a platform for the residents to support their favorite teams, build up social identity, develop community sports culture and participate more in the related physical activities (Getz 1997; Hall 1992; Ritchie 1984). It is thus suggested that a sport event should be launched to stimulate public interest in leisure sports so as to increase the rate of resident participation in physical activities (Wong, 2006). Madrigal (2006) asserts spectator sports not only provide the participants with leisure experiences but also inspire them to recognize the health benefits of physical activities. Such recognition will enhance the awareness of the general public about the enhancement effect of leisure sports on individual health. Moreover, it is found that motivations to participate in physical activities or watch sport events as spectators are similar (Wann et al. 2001). The climate of sports remains high after a major sport event is held, because the intensive media coverage of the event helps create an exciting sporting milieu which can be of a great potential encouragement on the residents' participation in leisure sports. Notwithstanding a few advocacy of tapping into this potential of sport events, a more systematic study within the framework of 'leisure constraints – leisure sports participation – community residents' health' (see Figure 1) is lacking. As a preliminarily attempt to fill this knowledge gap, presented case study examined the impacts of one recent sport event – the 4th East Asian Games held in Macau in 2005 – on the host community, regarding residents' participation in leisure sports and the enhancement effects on the city's public health development, as well as the ripple benefits for local tourism.

3 Research Methodology

This case study was initiated in mid-2006. The first step of study was to set three specific hypotheses which integrate the relationships of significant components presented in Figure 1. A: Development of new sport facilities and city infrastructures for the sport event helps reduce structural constraints for residents to participate in leisure sports. B: Various sports promotion initiatives help stimulate resident interest in participating in sports related physical activities. C: Physical activities improve community public health image thus enhancing the attractiveness of the host city to tourists

A total of 458 questionnaires were distributed, and 286 useful ones were eventually collected. The survey was conducted randomly at Macau Peninsula, Taipa Island, and Cololane Island – nine spots in total over two consecutive weekends in July 2006. The locations were the tourism attractions with high pedestrian flow. This was to achieve sufficient sample of tourists, and local residents who have lived in Macau for more than three years – a sufficient period that covers planning, organizing and hosting the 4th East Asian Games. The questionnaire consisted of both closed-ended and open-ended questions. They were attempted to investigate the efficacy of the promotional sports activities and facilities and infrastructures built for the event in terms of stimulating resident interest in leisure sports and promoting local tourism.

Five-point Likert scale was used to measure the level of preference or opinion (from »5 = strongly agree« to »1 = strongly disagree«). The first section included: 1) questions related to respondents' previous physical activity participation pattern and any constraints for participation and; 2) screening questions related to their identifications of: residents or tourists. The second section consisted of questions related to the awareness and participation of respondents in the promotional initiatives implemented through the event, such as leisure sport programs, venues and facilities; as well as city infrastructures. The third section focused on the variables of the event impacts in terms of tourism, community health, and the city image; and measured the respondents' opinions on those variables. The final section consisted of questions designed to gather the demographic information of the respondents. Fifteen in-depth interviews were conducted with respondents representing the relevant organizations involved in the Games, including East Asian National Olympic Committee, Sports Federation & Olympic Committee of Macau, and the organizations' co-operate. They were attempted to gather more detailed and sensitive information by focusing on words, feelings and perceptions, in order to capture the respondents' thoughts of the event. In addition, documentary research and on-site observations were conducted to supplement the primary data collection methods.

Data analysis was conducted in four steps. The first involved a review of the demographic profile of respondents and their perceived impacts of the event. The data was inputted in digital format using the Statistical Package for Social Science (SPSS) software 14.0. Analytical methods such as t-test and one way ANOVA were also used to test the impacts of variables and hypotheses. The second part involved the data collected from the in-depth interviews. Informal content analysis technique was used in order to look for recurring themes, concepts, metaphors and other phrases. The third and forth parts included the analysis of the data collected from documentary research and on-site observations. The documentary research data were processed as a supplement to the primary data. The used documents were classified and selected by three guiding principles including authenticity, credibility, and representativeness that indicate the usefulness of documentary forms of evidence (Scott 1990). The factual situations of sport facilities and venues in Macau were recorded through on-site observations hence this helped understanding the relationships between the responses from the questionnaire survey and in-depth interviews. The entire results were eventually consolidated.

4 Research Findings

Table 1 reports a relative gender balance in the survey samples. The largest group is the cohort between 14 and 29 years old (48.6%), followed by the 30–44 year old group (25.5%). There is also a nearly even distribution of tourists (52.1 %, n = 149) and Macau residents (47.9%, n = 137). Figure 2 shows the results that 80% of tourists visited Macau for sightseeing, followed by 10% for visiting friends or relatives and 4% for business or meetings. Only 4 % were for gambling. Figure 3 suggests, in terms of sport event as tourist appeal, more than half (60%) respondents gave negative replies.

Table 1: demographic charactertistics of sample.

Variables	n	%
Gender		
Male	135	47.2
Female	151	52.8
Age range		
Below 14	25	8.7
14–29	139	48.6
30–44	73	25.5
45–59	36	12.6
60 or above	13	4.5
Occupation		
Student	116	40.6
Home-maker	19	6.6
Professional	54	18.9
Retired	14	4.9
Underemployed	8	2.8
Others	75	26.2
Salary per month (HKD1 = MOP 1)		
Below HKD 4,000	148	51.7
HKD 4,000–7,999	48	16.8
HKD 8,000–14,999	45	15.7
HKD 15,000–24,999	19	6.6
HKD 25,000–39,999	17	5.9
HKD 39,999 or above	9	3.1
Education level (Highest level attended)		
No schooling/Kindergarten	6	2.1
Primary	25	8.7
Secondary (Lower, upper secondary and matriculation)	167	58.4
Tertiary (non-degree and degree)	83	29.0
Others	5	1.7

Residence		
Macau	149	52.1
Hong Kong	93	32.5
Mainland China and Taiwan	40	14.0
Others	4	1.4
Length of Residence in Macau#		
Less than 3 years	1	0.3
3–5 years	3–5 years	1.0
6–8 years	9	3.1
9–11 years	11	3.8
More than 11 years	119	41.6

n = 286
# only for Macau residents

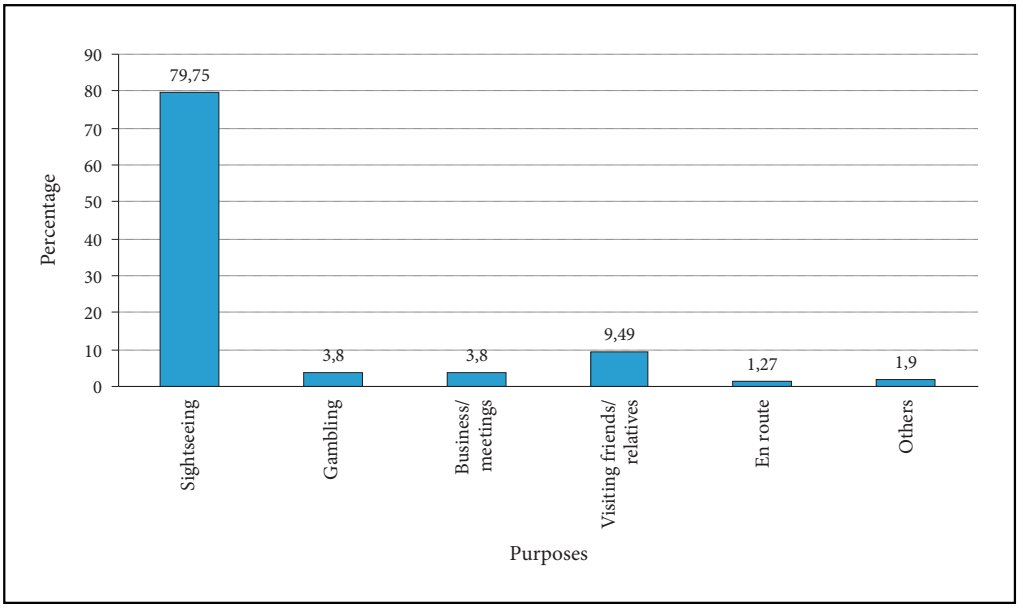

Figure 2: Purposes of visiting Macau (Percentages have been rounded off to two decimal places. Only tourists are the respondents in this question. More than 1 answer may be given by each respondent).

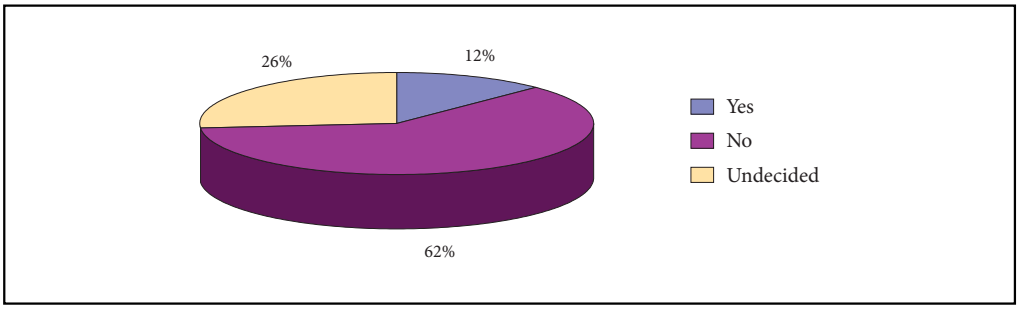

Figure 3: Percentage of respondents who had visited / would visit Macau for watching or joining sport events (Percentages have been rounded off to two decimal places. Only tourists are the respondents in this question.).

In terms of the respondents' awareness about the sport initiatives of the event, such as promotional activities and sport facilities, the results show they were informed by a variety of sources, including television and radio (43.40 %), newspapers and magazines (20%), internet (14.99%), friends and relatives (7.38%). School (9.4%) was also found to be an important source. With regards to the respondents' perceptions of, and participation in, the promotional activities, nearly 70% respondents knew about the major promotional activities of the event while »East Asian Games Opening and Closing Ceremonies« drew the greatest attention, accounting for 50.67%. However, less than a third of respondents participated in any of the activities, and only half (49.65%) of them knew about the sport facilities built and used for the event.

As shown in Table 2, the majority of responses were recorded neutral to positive means (2.64–4.16), indicating the respondents' neutral perception of the impacts associated with the event. The overall mean score across the 20 choices is 3.53, indicating a positive perception of those variables. The highest level of agreement was 4.16, with the statement »Macau was a city focusing on gaming industry before the 4th Eat Asian Games«. Five more statements received higher levels of agreement, including »The 4th East Asian Games has helped enhance the global image of Macau«, »The 4th East Asian Games has helped enhance the destination image of Macau«, »A sport event can enhance a destination image«, »New sport facilities built for the 4th East Asian Games enhance the destination image of Macau«, and »I would consider re-visiting Macau because of the improved destination image«. Regarding the impacts of the event on city infrastructure, high levels of agreement were recorded on the statements: »after the 4th East Asian Games, more sport facilities are available« and »after the 4th East Asian Games, the overall infrastructure in Macau has improved« (3.68). Regarding impacts on tourism, this statement, »the 4th East Asian Games has improved Macau tourism industry« received highest level of agreement (3.81). A notable group of respondents (80%) agreed that »sport event can serve as a catalyst for promoting health activities« (3.88). Survey participants also showed support for hosting sport events, as indicated in the two statements: »I will support Macau to host sport event in the near future« (3.88) and »I will be a volunteer/helper when Macau hosts sport event in the near future« (3.58).

Table 2: Mean score of questionnaire statements.

Statements	Mean (SD)*
Macau was a city focusing on gaming industry before the 4th East Asian Games	4.16 (.78)
The 4th East Asian Games has helped enhance the global image of Macau.	3.97 (.56)
A sport event can serve as a catalyst for promoting sports related physical activities.	3.88 (.61)
I will support Macau to host sport events in the near future.	3.88 (.72)
After the 4th East Asian Games, more sport facilities are available.	3.82 (.66)
The 4th East Asian Games have improved Macau tourism industry.	3.81 (.75)
The 4th East Asian Games have helped enhance the image of Macau.	3.78 (.69)
A sport event can enhance a host city image.	3.78 (.68)
New facilities built for the 4th East Asian Games enhance the image of Macau.	3.74 (.68)
After the 4th East Asian Games, the overall infrastructure in Macau has improved.	3.68 (.66)
I will be a volunteer/helper when Macau hosts sport events in the near future (for residents only)	3.58 (.99)
I would consider revisiting Macau because of the improved destination image (for tourists only)	3.52 (.66)
Macau becomes a city which focuses more on sport events after the 4th East Asian Games.	3.47 (.77)
After the 4th East Asian Games, community health in Macau has improved.	3.38 (.71)
The 4th East Asian Games impacts on my awareness of the health benefits of sports	3.32 (.82)
I would consider revisiting Macau because of the enhanced public health (for tourists only)	3.27 (.76)
After the 4th East Asian Games, the rate of resident participation in sports increased.	3.19 (.80)
I would consider revisiting Macau when these events are held (e.g. Asian Games and Kart Grand Prix). (for tourists only)	3.09 (.79)
The 4th East Asian Games impacts on my participation in sports and physical activities	2.72 (.85)
After the 4th East Asian Games, I participate more in sports and physical activities	2.64 (.83)
Overall Mean	3.53

The statements are arranged by the mean score in descending order.
*The mean score is corrected to two decimal places.
Level of agreement: 1 = strongly disagree, 5 = strongly agree

The t-test and one way ANOVA analyses indicated the extent to which the sports promotion programs implemented through the event would enhance the residents' participation in sports related physical activities. Both were to analyze the differences of respondents' perceptions regarding four variables: 1) those

who either knew or did not know about the promotional activities, 2) those who either participated or did not participate in the promotional activities, 3) those who were either familiar or not familiar with the sports facilities developed for the event; and, 4) those who either used or did not use the sports facilities, and those who had not decided whether to use the facilities as well.

Table 3: Perceptions of respondents who knew the sports promotion activities of the 4th East Asian games and those who did not know the activities.

	Respondents who knew the programs (n=194)		Respondents who did not know the programs (n=92)			
Statement	M	SD	M	SD	t-value*	Sig.
I will support Macau to host sport events in the near future.	3.99	.702	3.63	.691	4.123	.000
After the 4th East Asian Games, more sport facilities are available.	3.90	.644	3.65	.654	2.989	.003
Macau becomes a city which focuses more on sport events after the 4th East Asian Games.	3.54	.756	3.33	.772	2.180	.030
The 4th East Asian Games have helped enhance the image of Macau.	4.02	.559	3.87	.597	2.089	.038

* The significant level is $p < 0.05$.

Table 4: Perceptions of respondents who participated or did not participate in the sports promotional activities.

	Respondents who participated in the programs (n=59)		Respondents who did not participate in the programs (n=136)			
Statement	M	SD	M	SD	t-value*	Sig.
I will be a volunteer/helper when Macau hosts sport events in the near future	3.93	.696	3.29	1.073	3.814	.000
After the 4th East Asian Games, I participate more in sports and physical activities	2.93	.828	2.60	.880	2.443	.015
I would consider revisiting Macau when these events are held (e.g. Asian Games and Kart Grand Prix)	3.80	.447	3.03	.803	2.105	.039
I will support Macau to host sport events in the near future.	4.14	.601	3.91	.735	2.059	.041
I would consider revisiting Macau because of the enhanced public health	4.00	.000	3.24	.824	2.044	.045
A sport event can enhance a host city image.	3.93	.553	3.73	.717	1.968	.050

* The significant level is $p < 0.05$.

Table 3 reveals difference of perceptions, between those who knew the activities and those who did not, regarding the enhancement effect of the event on the residents' interest in leisure sports. For example, the agreement is significantly higher, among those who knew the activities, for the items »I will support Macau to host sport events in the near future«, »After the 4th East Asian Games, more sport facilities are available«, »Macau becomes a city which focuses more on sport events after the 4th East Asian Games«, and »The 4th East Asian Games have helped enhance the image of Macau«. The t-test results, shown in Table 4, indicate significant differences, between those who participated and those who did not participate in the activities, regarding their attitudes towards leisure sports and physical activities. As the table reveals, more respondents who participated in the activities tend to agree on statements such as: »After the 4th East Asian Games, I participate more in sports« and »I will be a volunteer/helper when Macau hosts sport events in the near future«. From Table 5, certain constructive impacts of the event on the respondents' participation in leisure sports and physical activities are demonstrated. Those who were not aware of the facilities built for the Games were less likely to agree, than those who knew, regarding »The 4th East Asian Games impact on my participation in sports«; »After the 4th East Asian Games, I participate more in sports«; »After the 4th East Asian Games, more sport facilities are available« and; »I will support Macau to host sport events in the near future«.

Table 5: Perceptions of respondents who knew the sport facilities of the 4th East Asian games and those who did not know the sport facilities.

	Respondents who know the facilities (n = 142)		Respondents who do not know the facilities (n = 136)			
Statement	M	SD	M	SD	t-value*	Sig.
The 4th East Asian Games impacts on my participation in sports and physical activities	2.91	.898	2.52	.769	3.844	.000
After the 4th East Asian Games, I participate more in sports and Physical activities	2.89	.843	2.36	.727	5.572	.000
After the 4th East Asian Games, more sport facilities are available.	4.03	.607	3.59	.649	5.839	.000
I will support Macau to host sport events in the near future	4.09	.582	3.63	.769	5.717	.000
I will be a volunteer / helper when Macau hosts sport events in the near future	3.68	.936	2.90	1.210	3.255	.001
The 4th East Asian Games impacts on my awareness of the health benefits of sports	3.45	.768	3.14	.854	3.196	.002
New sport facilities built for the 4th East Asian Games enhance the image of Macau.	3.85	.611	3.62	.751	2.776	.006
Macau becomes a city which focuses more on sport events after the 4th East Asian Games.	3.57	.728	3.34	.781	2.564	.011
The 4th East Asian Games have helped enhance the image of Macau.	3.89	.695	3.68	.687	2.542	.012
After the 4th East Asian Games, community health in Macau has improved.	3.48	.722	3.28	.674	2.379	.018
I would consider revisiting Macau because of the improved destination image	3.74	.631	3.47	.652	2.111	.036
After the 4th East Asian Games, the rate of resident participation in sports increased.	3.28	.784	3.08	.802	2.101	.037
After the 4th East Asian Games, the overall infrastructure in Macau has improved.	3.76	.654	3.60	.659	1.977	.049

The significant level is $p < 0.05$.

Table 6: Perceptions of respondents who have used the sport faclities of the 4th East Asian games, those who have not used, and those who have not decided whether to use.

	Respondents who have used the facilities (n = 58)		Respondents who have not used the facilities (n = 47)		Respondents who have not decided whether to use the facilities (n = 39)			
Statement	M	SD	M	SD	M	SD	F-value*	Sig.
After the 4th East Asian Games, the overall infrastructure in Macau has improved	3.83	.679	3.51	.655	3.95	.510	5.768	.004
I will support Macau to host sport event in the near future	4.19	.606	3.87	.536	4.20	.516	5.238	.006
After the 4th East Asian Games, more sport facilities are available	4.14	.476	3.81	.647	4.10	.672	4.514	.013
After the 4th East Asian Games, I participate more in sports	2.95	.782	2.64	.819	3.08	.888	3.338	.038
Macau becomes a city which focuses more on sport events after the 4th East Asian Games.	3.67	.758	3.36	.735	3.70	.608	3.264	.041

* The significant level is $p < 0.05$.

The ANOVA analysis results shown in Table 6 suggest respondents who had not decided whether to use the facilities (M = 3.70, SD = .608) were more likely to agree »Macau becomes a city which focuses more on sport events after the 4th East Asian Games« than those who had not used the facilities (M = 3.36, SD = 0.735)

[F (2, 144) = 3.264, p < 0.05]. For the statement of »After the 4th East Asian Games, I participate more in physical activity«, the respondents who had not decided whether to use the facilities were likely to give neutral response (M = 3.08, SD = 0.888) than those who had not used the facilities in the 4th East Asian Games (M = 2.64, SD = 0.819) [F (2, 144) = 3.338, p < 0.05]. The respondents who had used the facilities (M = 4.14, SD = 0.476) were likely to agree »after the 4th East Asian Games, more sport facilities are available« than those who had not used the facilities (M = 3.81, SD = 0.647) [F (2, 144) = 4.514, p < 0.05]. On the other hand, the respondents who had not used the facilities (M = 3.51, SD = 0.655) indicated less agreement on »after the 4th East Asian Games, the overall infrastructure in Macau has improved« than those who had not decided whether to use the facilities (M = 3.95, SD = 0.510) [F (2, 143) = 5.768, p < 0.01]. Furthermore, the respondents who had not decided whether to use the facilities (M = 4.20, SD = 0.516) were more likely to agree on the statement »I will support Macau to host sport events in the near future« than those who had not used the facilities (M = 3.87, SD = 0.536) [F (2, 144) = 5.238, p < 0.01].

5 Discussion and Conclusion

The survey results show, to a certain extent, that the 4th East Asian Games did function as catalysts to stimulate respondents' interest in leisure sports related physical activities. Hypotheses A and B are therefore partially supported. Namely, development of new sport facilities and city infrastructures for the sport event helps reduce resident structural constraints for participation in leisure sports; and various sports initiatives help stimulate resident interest in participating in sports related physical activities. The following discussions will focus on the information collected through the in-depth interviews in order to reveal insights into the social and institutional contexts that help understand these catalytic effects and, especially, the extent to which Hypothesis C – Physical activities improve community public health image thus enhancing the attractiveness of the host city to tourists – could be supported.

First and foremost is the local government's awareness about the overall impacts associated with the event, shown in the reports of the interviews with two local government officials:

- The East Asian Games certainly has positive and negative impacts on the community. The event induced urban restructuring, such as constructing new sport venues and facilities before the event, affected the daily life of the residents. [Macau is a small city] some projects were located near schools and residential areas, producing significant noise and dust pollutions. During the event large numbers of vehicles were moving around the city, creating traffic problems that made the residents' life rather inconvenient (direct interview quotation)

Hosting a major sport event [can] definitely raise public interest in leisure sports. [Our local] sport culture is relatively weaker compared to other countries. [But] you would see a sport event [help] promote sport culture. It would start with schools first, hopefully stimulating the students' interest in sports, then [the ripple effect] would spread to the general public. [So] hosting a sport event enables us to promote public participation in physical activities (direct interview quotation).

The above opinions reflect those impacts similarly articulated by previous studies of other events (Allen 2005; Getz 1997; Hall 1992; Higham 1999; Kim and Morrison 2005; Lee and Taylor 2005; Owen 2005; Ritchie 1984; Roche 2000). It is significant to note the comments regarding the 4th East Games as stimulator of public interest in leisure sports. For example, the in-depth interviews with representatives of the local government and non-government sport organizations suggest the significance of the sport promotion programs and facilities for enhancing the residents' interest in leisure sports and participating in physical activities:

- Macau government has invested more in sports and planned more sport programs in order to promote the [community] sport culture since it started to prepare for the East Asian Games. Our local sport team has got extra financial support to attend overseas training courses. Sport culture is promoted in the community through the high profiles of the 4th East Asian Games (direct interview quotation)
- Existing sport facilities were improved and new facilities were built for hosting the Games. I think the residents will be more likely to participate in leisure sports because people would like to try the newly introduced sports and use the new facilities. Now in Macau people can enjoy ice-skating and bowling because the facilities have become available after the event. In the past those sports were not popular in Macau due to lack of relevant facilities (direct interview quotation)

While those respondents suggested leisure sport culture was promoted through the event, some others pointed to the ripple effects such as a healthy community would enhance the city image and benefit local tourism:

- I think the Games helped present a healthier image of Macau. In the past people only knew Macau as a gaming capital, but the Games let them know more about Macau, such as the sport [culture] development. I feel the tourism industry should have benefited too … tourists came to watch the Games and they might go shopping afterwards … helping the local economy (direct interview quotation)

A local tourism expert had some reservation about the extent to which the Games would help Macau change her reputation of being a gaming capital of Asia, but he was not totally sceptic about the potential enhancement effects of the Games on the tourism image of Macau:

- Gaming in Macau is well known in Asia as it is the only gaming city in this part of the world. The total gross income of the gaming industry has already surpassed that of Las Vegas, and this should help you figure out how important a role the gaming industry is playing in the local economy. So it is hard to say if a single sport event can change the long-established reputation. But I think the popularity of Macau as a tourism destination has been strengthened further because of the high profiles of the Games (direct interview quotation).

A healthier image and / or strengthened popularity of Macau were thought to be positive for the local tourism development, by a volunteer of the 4th East Asian Games and a local tourism official as well:

- I feel the Games has slightly changed Macau's image of being solely a gaming city. In order to promote the 4th East Asian Games, the local government made great efforts to plan and organize more [community-based] sport programs and events such as Asian Indoor Games and the 1st Lusofonia Games. Those programs helped project a healthier image of Macau to the world … From my observation, I did not find much more tourists had come only for the Games. But I did observe day-trippers extend their stay; and watching the Games become one of their activities during the visit; and I would assume they had spent more in Macau. So I will not doubt about the direct and indirect benefits to the local tourism economy (direct interview quotation).

Our statistics show a slight increase of tourist arrivals during the 4th East Asian Games, compared with the figure of the same period in the last few years. I was responsible for accommodating the visitors who had come particularly to attend and or watch the 4th East Asian Games, and I could see they not only enjoy the different sport competitions held during the event but also sightseeing in Macau, and buy souvenirs. I think the local tourism economy has benefited from the Games because they attracted more visitors to consume in Macau (direct interview quotation).

In short, Hypothesis C can be partially supported by the results of both the questionnaire survey and the in-depth interview that physical activities contribute to community public health image thus enhancing the attractiveness of the host city to tourists. Our case study finds most respondents agreed that the 4th East Asian Games had helped enhance the destination image of Macau and catalyzed the improvement of local tourism industry. The tourists presented that they would consider a re-visit to Macau because of the enhanced destination image. Significantly, the newly built sport facilities with a genuine multipurpose capability helped create the opportunities to develop the connection between sport and tourism. Facilities can be the venue for events, the landmark of a city, and the amenity for public to enjoy sports. The favorable publicity following a sport event increases the attractiveness of a city, raises its global profile, and helps attract tourists (UK Sports 1998).

According to some (Allison 1993; Gratton and Taylor 2000; Hall 1992; Higham 1999), a sport event is a temporal and spatial system involves a sum of relationships in the host community Instead of a further illustration of such relationships and an overall examination of the associated economic, environmental, and socio-cultural impacts, our case study focused on a specific sport event to review its stimulating effects on the residents' interest in leisure sports, and the ripple enhancement on the community public health and local tourism. Our goal of bridging the knowledge gap created by the omission of previous studies on such effects is partially achieved with these implications:

- First, of the sports promotion programs implemented through the 4th East Asian Games, some stimulated, either directly or indirectly, the residents' interest in leisure sports and physical activities. Evident is the possibility for the rate of residents' participation in leisure sports and physical activities to rise under the impacts of the 4th East Asian Games, but tailor-made technical and socio-cultural supports are still needed in order to maximize the catalytic effects. Second, effective public promotion campaign is essential for nurturing a community culture of sports and healthy life, through hosting specific sport events. This

is evident in the study results that the more the residents knew about the sports promotion programs, the more likely they would support Macau to host sport events in the future. The residents' awareness of, and involvement in, the sports programs are decisive factors for them to hold positive attitudes toward engaging in leisure sports and physical activities in their daily life. Third, the high profiles of the Games bring the host city valuable opportunities, to financially invest, politically support, and socially encourage, the development of sport culture which will benefit the residents of the host community in the long term after the event. Finally, the theoretical insight about the series of beneficial effects could contribute the relationships of sport events, public health and tourism. It is found that the degree of resident participation in leisure sports are largely influenced by factors such as community sport culture, facilities, and relevant government policies. A sport event may act as a short-term catalyst to stimulate public interest in leisure sports and promote resident participation in physical activities. A holistic perspective of the relationships (see Figure 1) should be essential for a comprehensive planning of sport events. In this sense, any future enquiries about the relationships should, probably, both incorporate and contribute to knowledge elements such as event induced changes that impact on a tourist destination image, management of sport event impacts with special attention on public health image and sustainable community development, in order to seek both theoretical insights and practical measures for maximizing the overall benefits of sport events on tourism.

6 References

Allen, J. 2005: Festival and special event management, Milton, Queensland. Milton.

Allison, L. 1993: The changing context of sporting life. The Changing politics of sport. Manchester.

Brown, P. R., Brown, W. J., Miller, Y. D., and Hansen, V. 2001: Perceived constraints and social support for active leisure among mothers with young children. Leisure Sciences 23-3. London.

Chien, G. C. L., Law, R. 2003: The impact of the severe acute respiratory syndrome on hotels: A case study of Hong Kong. International journal of hospitality management 22-3. Amsterdam. DOI: http://dx.doi.org/10.1016/S0278-4319(03)00041-0

Crawford, D. W., and Godbey, G. 1987: Reconceptualizing barriers to family leisure. Leisure Sciences 9-2. London.

Crawford, D. W., Jackson, E. L., and Godbey, G. 1991: A hierarchical model of leisure constraints. Leisure Sciences 13-4. London.

Dickson, G. and Schofield, G. 2005: Globalization and globesity: The impact of the 2008 Beijing Olympics on China. Sport management and marketing 1-1. Olney.

Frederick, J., and Shaw, S. 1995: Body image as a leisure constraint: Examining the experience of aerobic exercise classes for young women. Leisure Sciences 17. London.

Getz, D. 1997: Event management and event tourism. New York.

Godbey, G. 1985: Non-participation in leisure services: A model. Journal of park and recreation administration 3-1. Urbana.

Gratton, C. and Taylor, P. 2000: Economics of sport and recreation. London.

Hall, C. M. 1992: Hallmark tourist events: Impacts, management and planning. London.

Haywood, L., Kew, F., Bramham, P., Spink, J., Capenerhurst, J., Henry, I. 1995: Understanding leisure. Cheltenham.

Higham, J. 1999: Commentary – sport as an avenue of tourism development: An analysis of positive and negative impacts of sport tourism. Current issues in tourism 2-1. London.

Hinch, T. D. and Higham, E. S. 2001: Sport tourism: A framework for research'. The International journal of tourism research 3-1. London.

Hinch, T. D., Jackson, E. L., Hudson, S., and Walker, G. 2005: Leisure constraint theory and sport tourism. Sport in society 8-2. Oxford.

Hong Kong Trader 2007: Map of Pearl river delta region. Internet: http://www.hktrader.net/200704/prd/index.htm (26. 3. 2007).

Jackson, E. L. 1988: Leisure constraints: A survey of past research. Leisure Sciences 10-3. London.

Jackson, E. L. 2000: Will research on leisure constraints still be relevant in the twenty-first century? Journal of Leisure Research 32-1. London.

Jackson, E. L. (Ed.). 2005: Constraints to leisure. State Collegae.
Jackson, E. L., Crawford, D. W., and Godbey, G. 1993: Negotiation of leisure constraints. Leisure Sciences 15-1. London.
Jackson, E. L., Scott, D. 1999: Constraints on leisure. Leisure studies: Prospects for the twenty-first century. State College.
Jackson, E. L., Searle, M. S. 1985: Recreation non-participation and barriers to participation: concepts and models. Loisir et Socie'te' 8-2. Quebec city.
Kay, T. and Jackson, G. 1991: Leisure despite constraint: The impact of leisure constraints on leisure participation. Journal of leisure research 23. London.
Kim, S. S. and Morrison, A. M. 2005: Change of image of South Korea among foreign tourists after the FIFA 2002 World Cup. Tourism Management 26-1. Amsterdam. DOI: 10.1016/j.tourman.2003.11.003
Kraus, R. 2001: Recreation and leisure in modern society. Toronto.
Lee, C. K., Taylor, T. 2005: Critical reflections on the economic impact assessment of a mega-event: The case of the FIFA 2002 World Cup. Tourism Management 26-2. Amsterdam. doi:10.1016/j.tourman.2004.03.002
Liechty, T., Freeman, P. A., Zabriskie, R. B. 2006: Body image and beliefs about appearance: Constraints on the leisure of college-age and middle-age women. Leisure Sciences 28-4. London.
Lynch, R. L., Veal, A. J. 1996: Australian Leisure. South Melbourne.
Lo, A., Cheung, C., Law, R. 2006: The survival of hotels during disaster: A case study of Hong Kong in 2003. Asia Pacific journal of tourism research 11-1. London.
Madrigal, R. 2006: Measuring the multidimensional nature of sporting event performance consumption. Journal of Leisure Research 38-3. London.
McKercher B., K. Chon 2004: The over-reaction to SARS. Annals of tourism research, 31-3. London.
Melnick, M. J., Wann, D. L. 2004: Sport fandom influences, interests, and behaviors among Norwegian university students. International sports journal 8. West Haven.
Mowen, A., Payne, L., and Scott, D. 2005: Change and stability in park visitation constraints revisited. Leisure Sciences 27-2. London.
Owen, J. G. 2005: Estimating the cost and benefit of hosting Olympic Games: What can Beijing expect from its 2008 Games?' The industrial geographer 3-1. Terre Haute.
Ritchie, B. W., Adair, D. 2004: Sport tourism: Interrelationships, impacts, and issues. Clevedon.
Ritchie, J. R. B. 1984: Assessing the impact of hallmark events: Conceptual and research issues. Journal of travel research 23-1. DOI: 10.1177/004728758402300101
Roche, M.2000: Mega-events and modernity: Olympics and expos in the growth of global culture. New York.
Scott, J. 1990: A matter of record. Cambridge.
Shaw, S. M., Bonen, A., McCabe, J. F. 1991: Do more constraints mean less leisure? Examining the relationship between constraints and participation. Journal of Leisure Research 23-4. London.
Standeven, J. and DeKnop, P. 1999: Sport tourism. New Jersey.
The University of Texas at Austin, 2006: Perry-Castaneda library map collection. Internet: http://www.lib.utexas.edu/maps/china.html (15. 5. 2011).
UK Sports 1998: Major event: A blueprint for success. London.
U.S. Department of Health and Human Services. 1996: Physical activity and health: A report of the surgeon general. Atlanta.
Wann, D. L., Melnick, M. J., Russell, G. W., Pease, D. G. 2001: Sport fans: The psychology and social impact of spectators. New York.
Wann, D. L., Grieve, F. G. 2005: Biased evaluations of in-group and out-group spectator's behavior at sporting events: The importance of team identification and treats to social identity. The journal of social psychology 145-5. Oxford.
Weed, M. F. 2005: Sport tourism theory and method: Concepts, issues and epistemologies. European sport management quarterly 5-3. Oxford.
Weed, M. E., Bull, C. J. 1997: Influences on sport-tourism relations in Britain: The effects of government policy. Tourism recreation research 22-2. Indira Nagar.
Wong, S. S. 2006: The new challenge to sports development in Macau. Internet: www.macaudata.com/macauweb/book165.html/05701.htm (11. 4. 2011).
World Health Organization. 2003: Health and development through physical activity and sport. Geneva.
World Tourism Organization (WTO) 1999: Tourism 2020 vision: Executive summary. Madrid.