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Effects of a Dance-based Program on Sense of Stability in Elderly: A Pilot Study



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Introduction

United Nations (2013) reported that aging population is unprecedented, pervasive, profound and enduring growing in all over the world. It is expected that the number of persons aged 60 or above will be more than triple by the year of 2100, increasing from 841 million in year 2013 to 2 billion in year 2050 and close to 3 billion in year 2100. Hong Kong is also experiencing similar situation with increasing aging population. It is projected that the proportion of the population aged 65 or above will rise from 13% in year 2011 to 30% in year 2041 (Census and Statistics Department, 2012).

Nowadays, exercise was not common as high scientific technology provided convenience in our living, especially in elder populations. It was notified the functional mobility and flexibilities of the older adults had been reduced. These kind of abilities reduction would result in poor body coordination and lead to poor performance in their daily life activities, such as cleaning house, shopping, and walking up and down stairs (Brandon, 1999). During the aging process, there was a considerable deterioration in balance capability, muscle straight, vision and hearing ability. In nature, loss of muscle mass and functional ability with age was observable. Lu (1999) found 21-23% of men and 43-44% of women aged 65 or above had the experience of falling down in China. Studies in the United States of the same age group also found the similar results, in which approximately 16% had fallen down experience, 31.3% of them would consult doctor, or restricted activity for at least one day (Centers for Disease Control and Prevention, 2008).

Fall could be explained as a drop from a relatively erect to a less erect position. Buchner et al. (1993) provided a definition on fall, it stated that "unintentionally coming to rest on the ground, floor, or other lower level". Falling is viewed as negative characteristics of aging and considered as a physical body weakness and a consequence of poor health, which was considered as one of the most common sources of injuries among elderly. World Health Organization (2007) estimated 30% by the age of 70 have been experienced at least one fall, and reaching 37% for those aged 70 or above. In Hong Kong, one-fifth of the elder population experienced falling down once in their lifetime, and approximately 40,000 elderly fracture caused by fall every year (Fung, 2009; Elderly Health Services, 2004).

Physical activity and exercise have been identified as major factors that reduce the risk of falls and fractures in older adults. Physical activity can range from everyday actions, including walking, heavy housework, and gardening; to leisure activities such as cycling, swimming, and dancing. Whereas exercise is the planned and structured activities such as strength training or fitness program, where repetitive body movements are applied to improve or maintain components of fitness and to improve cardiovascular risk or to prevent falls (Cress et al., 1999; Haskell et al., 2007; Nelson et al., 2007; Sherrington et al., 2008; Steadman, Donaldson, & Kalra, 2003).

One of the challenges to run a physical activity program was to retain subjects in the program. Subjects might find bored with repetitive activity for activity's sake alone after a period of time. It was important to make fun in a program to sustain the continuance of the participants in carrying out the program in the long run. Enjoyment is a crucial element in a program, which can motivate people to participate continuously even in their own time. For this particular reason, dance is believed to be an effective exercise to prevent falls. The movement and choreography were included a wide variety of exercises, which could improve the muscular strength, balance, agility and lower extremities. In dance, the movement of head and trunk and the shifting of the centre of gravity in every direction from the axis of support allow the development of all those factors which contribute to the maintenance of balance, such as coordination and joint mobility. Federici, Bellagamba and Rocchi (2005) further indicated that dance is not only retraining the individual from a neurophysiological standpoint, but also from a social-emotional one.





Movement and choreography in dance included sagittal steps and straddling steps, which required body balance and body agility. A plyometric lunge could improve the muscle strength of the lower extremities, while the movement associated with ground reaction forces and body movement could improve muscular strength and power of the lower extremities (Alpert et al., 2009; Brandon, 1999; Federici et al., 2005; Hackney et al., 2007; Keogh et al., 2012; Shigematsu et al., 2002). Through dancing, older adults learn to move with confidence and gain a positive image of self-concept (Sherrill, 1988).

The aim of this study was therefore to determine the effectiveness of a six-week dance-based program in a group of apparently healthy older adults. The pre- and post-test measurements of functional and psychological effects included balance, muscle strength, agility, hand eye-coordination, flexibility and fear of falling.

Methods

Study Design

This was a within-subject repeated measures study. Subjects were randomly arranged into two groups, one was an intervention group, and the other was a control group. Subjects in the intervention group would be arranged to follow a 6-week dance-based program, in which subjects would receive two training classes per week, each class would be last for one hour. Subjects in the control group would not be arranged to have any specific activities, but they were still encouraged to keep their normal lives as what they used to be. Throughout the program, subjects were required to complete the demographic data questionnaire, attend pre- and post-program functional fitness evaluations, and return a self-reported pre- and post-program "Activity-specific Balance Confidence Scale". Comparison of pre- and post-test data was performed to examine the training effects.

Study Population

A signed consent was obtained from all participants prior to their participation. Thirty research subjects were recruited from a convenience sample from two elderly centers under Hong Kong Society for the Aged ($n = 30$, Figure 1). They were all aged 56 or above who were living independently at home and could perform their daily lives activities unassisted in Hong Kong. Of the 15 subjects randomized to the control group, 4 had dropped out in the pre-test screening, and 3 had dropped out in the posttest screening (Figure 1). Reasons for dropout included new or worsening health problem ($n = 2$), did not show up ($n=2$), and did not inform their reasons for discontinuation ($n = 3$). Eventually there were 23 subjects used for statistical analysis.

Dance Program

Dancing steps required flexibility, balance and cognitive skill of the whole body movement. The program encouraged subjects to use their own movement range and personal style to perform dancing steps. The body would follow the music to shake and move. All possible steps and body movement could be created. The dance-based program contained warm-up dance, towel dance and tambourine dance, each dance consisted of 15 to 20 minutes rhythmic tempo of movements. Continuous movement of legs and trunk including extend, flex, abduct, adduct, sidestepping, forward stepping, leg lifts, placing foot to the front, side, and behind, knee bends and toes rises were adopted in the

program. Subjects were encouraged to take breaks as necessary and to give feedback after each class. Class attendance was recorded, written instructions of dance-based exercises were provided to facilitate subjects to practice those learned exercise movements at their own time.

Measurements

Subjects were required to complete one practice trial and one test trial in all functional fitness evaluation measures, while the subjects' balance confidences on not to fall were measured by a self-reported "Activities-specific Balance Confidence Scale" (Tinetti, Mendes de Leon, Doucette, & Baker, 1994).

Balance was measured by stand on one leg. It assessed upright balance with a reduced base of support. The score was the time (in second) while the subject lifts the foot from the floor until the leg contacts the floor again.

Muscle strength was measured by 30-second arm curl and 30-second chair stand. A 30-second chair stand test was to assess the lower body strength while 30-second arm curl was to assess the upper body strength. The score was the total number of stands/hand weight curl executed correctly within 30 seconds.

Agility was measured by 8-foot up and go and 2-minutes step walk. The score of 8-foot up and go was the time (in second) that subjects rise from a seated position, walk 8 feet, turn, and return to the seated position, while the score of 2-minutes step walk was the total number of the right knee reaching the level as appropriately taped.

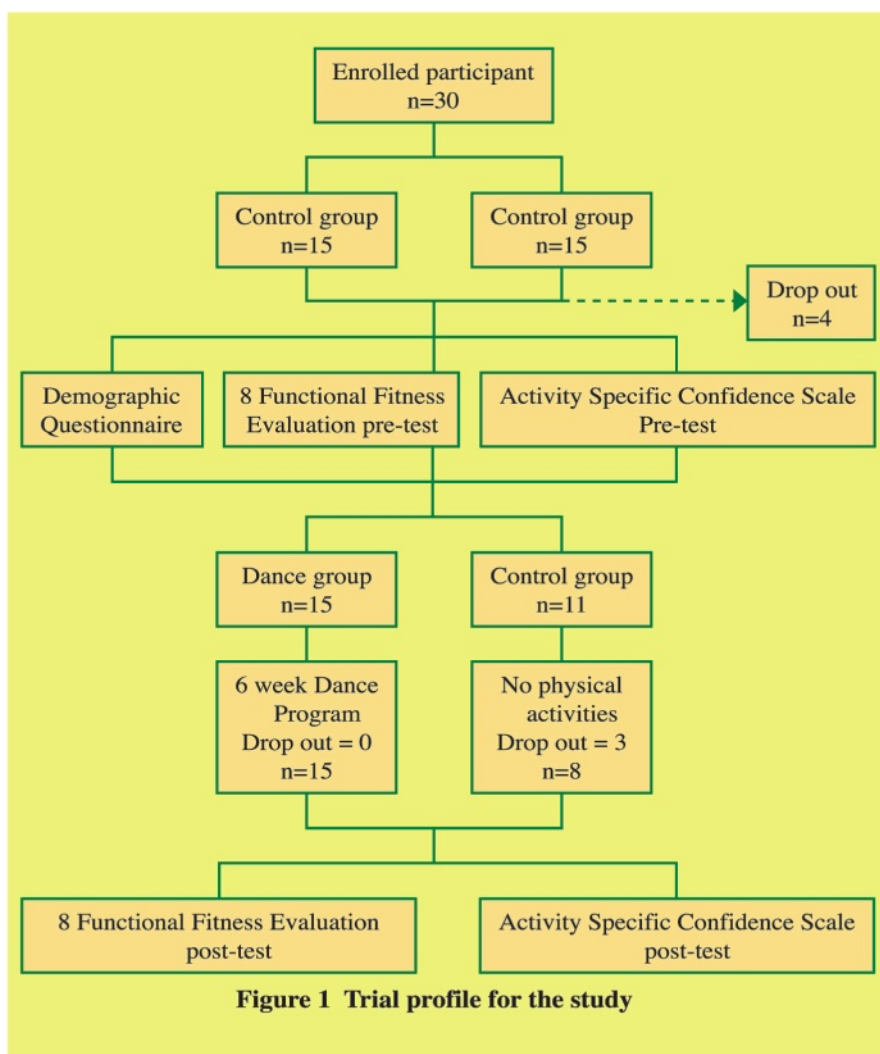
Hand-eye coordination was measured by soda pop test. The score was the time (in second) to turn upside down each of the cans into the adjacent empty marks within the drawn line, and then returns each of the cans to its original position and status in the same order of sequence.

Flexibility was measured by chair sit-and-reach and back scratch. Chair sit and reach was used to assess the lower body flexibility while back scratch was to assess the upper body flexibility. The score was the distance (in cm) between the extended fingers and the tip of the toe for the lower body flexibility; and the both extended middle fingers for the upper body flexibility.

Activities-specific Balance confidence Scale (Tinetti et al., 1994) was used to measure subjects' psychological balance confidence on 10 specific daily lives activities, including cleaning house, getting dressed and undressed, preparing simple meals, taking a bath or shower, simple shopping, getting in and out of a chair, going up and down stairs, walking around the neighborhood, reaching into cabinets or closets, and hurrying to answer the phone. The score was from 0 (no confidence) to 10 (complete confidence).

Statistical Analysis

Descriptive statistics were used to describe the participant characteristics and to show the pre- and post-test results. A paired samples t test was used to determine any differences within group at baseline and after the program. An independent sample t test was used to examine difference between groups. Statistical significance was set at $p < 0.05$ and $p < 0.01$. SPSS (version 11) was used for all analyses.



Results

Testing was completed by 23 participants with a mean age of 73.9 years (range 56 to 90 years), the total participation rate is 76.6%. 100% participation rate was recorded in intervention group while 53% participation rate in control group.

Summaries of subject characteristics were showed in Table 1. There were no differences between the two groups at baseline regarding sex, age, marriage status and education. Subjects of the intervention group on average had 80% attendance. Overall, there were no serious exacerbations of health problems associated with the exercise.

In general, subjects in control group had a better perception on themselves in term of their health condition and not to fall. The result of individual own perception on health condition in control group was slightly higher than the intervention group (3.00 ± 0.53 vs. 2.87 ± 0.74 respectively). Subjects in the control group also believed that their health condition was better than the others (3.63 ± 0.52). Subjects in the intervention group tended to view their health condition was in average or similar to the others in the same age group (2.87 ± 0.92). Result of "Not to fall confidence" in control group was slightly higher than the intervention group (6.38 ± 1.85 vs. 5.87 ± 3.14).

Table 1 Characteristics of Participants

Factor		Intervention Group (n = 15)	Control Group (n = 8)	p value
Sex	Female	13	8	
	Male	2	0	
Mean Age		73.6	74.3	
Marriage Status	Married	7 (46.7%)	4 (50%)	
	Separated	2 (13.3%)	0	
	Widow	6 (40%)	4 (50%)	
Education	Never	8 (53.3%)	4 (50%)	
	Primary	3 (20%)	2 (25%)	
	Junior High	4 (26.7%)	2 (25%)	
Not to fall confidence				
"0" no confident to "10" completely confident.		5.87 ± 3.14	6.38 ± 1.85	0.68
Individual perception on health condition				
"1" very poor to "5" excellence		2.87 ± 0.74	3.00 ± 0.53	0.66
Compare own health condition with others				
"1" far worse than to "5" far better than		2.87 ± 0.92	3.63 ± 0.52	0.04*
Practice regular physical activity				
0 = no; 1 = yes		0.53 ± 0.52	0.38 ± 0.52	0.49

* $p < .05$

** $p < .01$



Table 2 Functional fitness evaluation between pre- and post- 6-week program

Measures	Pre	Post	p value
Stand on one leg (s)			
Intervention group	11.71 ± 14.67	24.74 ± 34.18	.029*
Control group	13.76 ± 7.90	11.56 ± 6.96	.534
30-second chair stand (repetition)			
Intervention group	12.67 ± 3.35	17.40 ± 3.74	.000**
Control group	12.50 ± 1.69	15.50 ± 3.21	.056
30-second arm curl (repetition)			
Intervention group	14.67 ± 4.03	18.47 ± 3.72	.000**
Control group	15.38 ± 2.72	18.00 ± 2.07	.025*
8-foot up and go (s)			
Intervention group	9.95 ± 5.24	7.83 ± 3.17	.004**
Control group	8.52 ± 2.05	7.28 ± 1.06	.078
2-minute step walk (repetition)			
Intervention group	65.67 ± 14.48	73.87 ± 15.88	.035*
Control group	63.63 ± 22.47	69.25 ± 20.68	.501
Soda pop test (s)			
Intervention group	19.21 ± 4.34	15.54 ± 2.25	.000**
Control group	20.52 ± 8.36	15.28 ± 2.28	.159
Chair sit and reach (cm)			
Intervention group	-0.39 ± 3.05	0.96 ± 2.56	.139
Control group	2.06 ± 2.44	4.14 ± 2.19	.011*
Back scratch (cm)			
Intervention group	-0.80 ± 4.25	-0.44 ± 3.32	.572
Control group	-0.66 ± 4.02	-0.19 ± 3.24	.224

* $p < .05$
 ** $p < .01$

Table 3 Baseline Activity Specific Confidence Scale pre and post 6-week program

Measures	Intervention group	Control group	p value
Pre Test			
Cleaning house	4.80 ± 2.96	7.86 ± 2.30	.02*
Getting dressed and undressed	6.93 ± 1.75	9.00 ± 1.51	.01*
Preparing simple meals	7.13 ± 2.29	9.13 ± 0.83	.03*
Taking a bath or shower	7.00 ± 1.51	8.50 ± 1.77	.05*
Simple shopping	6.73 ± 1.44	7.75 ± 2.38	.21
Getting in and out of a chair	6.87 ± 2.42	7.63 ± 2.07	.46
Going up and down stairs	5.40 ± 3.00	6.00 ± 2.07	.62
Walking around the neighborhood	7.00 ± 2.73	8.50 ± 1.41	.09
Reaching into closets	6.40 ± 1.96	8.75 ± 1.58	.01**
Hurrying to answer the phone	6.93 ± 2.05	8.75 ± 2.12	.04*
Post Test			
Cleaning house	6.47 ± 1.92	8.13 ± 2.36	.08
Getting dressed and undressed	7.87 ± 1.51	9.25 ± 0.89	.03*
Preparing simple meals	8.00 ± 1.69	8.75 ± 1.39	.29
Taking a bath or shower	7.27 ± 1.53	8.88 ± 1.73	.03*
Simple shopping	7.53 ± 1.51	8.75 ± 1.39	.07
Getting in and out of a chair	7.60 ± 1.68	9.00 ± 1.20	.05
Going up and down stairs	6.67 ± 1.91	8.00 ± 1.93	.13
Walking around the neighborhood	8.27 ± 1.22	8.50 ± 1.41	.68
Reaching into closets	7.73 ± 1.71	8.75 ± 1.58	.18
Hurrying to answer the phone	7.40 ± 2.20	8.75 ± 2.12	.17

p value is the paired t test between group difference
 * $p < .05$
 ** $p < .01$

Statistically significant improvements were observed in the intervention group from six out of eight functional fitness evaluations in term of balance, muscle strength, agility and hand-eye coordination, they were stand with one leg ($p < .05$); 30-second chair stand ($p < .01$); 30-second arm curl ($p < .01$); 8-foot up and go ($p < .05$) and 2-minute step walk ($p < .01$). Table 2 provided a summary of the pre- and post- test results showing the mean and standard deviation of each measures. However, there was no significant between-group difference in any of the outcome measures after the completion of the 6-week program.



Table 3 showed the baseline difference between groups on specific activities balance confidence. Subjects in the control group were generally with more confidence on not to fall than subjects in the intervention group. There were 6 out of 10 daily lives activities showed statistically significant differences between groups before the program ($p < .05$). After the 6-week program, subjects in the intervention group had shown significantly improvement on not to fall confidence level. There were 2 out of 10 daily lives activities showed statistically significant difference between groups ($p < .05$) at the posttest.



Within-group difference on specific activities balance confidence was also examined before and after the program (Table 4). The results in the intervention group showed a very significant increase in getting dressed and undressed ($p < .01$). The results in the intervention group also showed significant increases in cleaning house; in simple shopping; in going up and down stairs; and in reaching into the closets ($p < .05$). However, there was no statistically significant change in the control group.



Table 4 Activity Specific Confidence Scale pre- and post- 6-week program

Specific activities	Pre	Post	p value
Cleaning house			
Intervention group	4.80 ± 2.96	6.47 ± 1.92	.03*
Control group	7.86 ± 2.30	8.13 ± 2.36	.71
Getting dressed and undressed			
Intervention group	6.93 ± 1.75	7.87 ± 1.51	.00**
Control group	9.00 ± 1.51	9.25 ± 0.89	.67
Preparing simple meals			
Intervention group	7.13 ± 2.29	8.00 ± 1.69	.10
Control group	9.13 ± 0.83	8.75 ± 1.39	.35
Taking a bath or shower			
Intervention group	7.00 ± 1.51	7.27 ± 1.53	.43
Control group	8.50 ± 1.77	8.88 ± 1.73	.50
Simple shopping			
Intervention group	6.73 ± 1.44	7.53 ± 1.51	.01*
Control group	7.75 ± 2.38	8.75 ± 1.39	.28
Getting in and out of a chair			
Intervention group	6.87 ± 2.42	7.60 ± 1.68	.23
Control group	7.63 ± 2.07	9.00 ± 1.20	.07
Going up and down stairs			
Intervention group	5.40 ± 3.00	6.67 ± 1.91	.03*
Control group	6.00 ± 2.07	8.00 ± 1.93	.05
Walking around the neighborhood			
Intervention group	7.00 ± 2.73	8.27 ± 1.22	.09
Control group	8.86 ± 1.73	8.50 ± 1.41	.29
Reaching into closets			
Intervention group	6.40 ± 1.96	7.73 ± 1.71	.02*
Control group	8.86 ± 1.81	8.75 ± 1.58	.76
Hurrying to answer the phone			
Intervention group	6.93 ± 2.05	7.40 ± 2.20	.34
Control group	8.75 ± 1.39	8.75 ± 2.12	1.00

p value is the paired t test of pre- and post test within group difference

* $p < .05$

** $p < .01$

Discussion

The six-week dance-based program pilot study was found effectively improved on the sense of stability of older adults in term of balance, muscle strength, agility, hand-eye coordination, and fear of falling, which was similar to the previous studies (Alpert et al., 2009; Brandon, 1999; Federici et al., 2005; Hackney et al., 2007; Keogh, Kilding, Pidgeon, Ashley, & Gillis, 2012; Shigematsu et al., 2002).

Increasing enjoyment could be found in the program as no one from the intervention group quit and on average 80% attendance was recorded. Enjoyment was important in running an exercise program as it served as a positive experience and a motivator to further participate (Sherrill, 1988; Resnick & Spellbring, 2000). Dancing is expected to be the key contributor in the exercise enjoyment because it is a form of body art representing a positive way of communication. Body will shake and move according to the music rhythm (Alpert et al, 2009). Meanwhile, the encouragement of using participants' own movement range and personal style in doing exercise is another contributor, everyone could follow the steps and do it.

This pilot study found that the program is good to improve elders' balance, muscle strength, agility, hand-eye coordination, and fear of falling, but not flexibility. It is believed the program

designed did not focus much on the flexibility, which should be aware of in future study as it is an important elements in improving elders' fitness (Federici et al., 2005; Nelson et al., 2007; Skelton, 2001).

Study limitations should be paid attention. Firstly, the number of participants was relatively low, larger sample size should be adopted to gain a better understanding on the effectiveness of the dance-based program. The short duration of the study was another limitation, a longer and follow up research should be conducted to check the physical changes of the elderly with continues practice on the dance-based program. Importantly, the participants in this study were asked to complete a self-reported questionnaire, which may lead bias. If resources were available in future, it is highly recommended not to use self-reported questionnaire to avoid any bias from subjects.

The results suggested funny and interesting program elements, music and body movements could encourage and motivate older adults to keep on doing exercise, which could eventually improve the elderly's stability and reduce fall risks. Therefore, dance-based program is recommended to be the future fall prevention program.

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Integrate Congruity Paradigm into Sport Consumer Inquiry: Evaluation of Mimic Brand of Sport Product



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Sport is widely adopted as a platform by firms to conduct business activities. The nature of these activities is classified as “marketing through sport” versus “marketing of sport” (Mullin, Hardy, & Sutton, 1993) from a firm-based perspective. Products or names of firms are often marketed together with the popularity of a sport or an athlete to their intended markets. Marketing through sport takes numerous forms such as sponsorship, value-in-kind, athlete endorsement, advertising, promotions, or direct sales (Gladden & Funk, 2002; Gwinner & Bennett, 2008; Kahle & Homer, 1985; Lough & Irwin, 2001; Madrigal, 2000, 2001). Pan and Baker (2005) drew the line between “sport customer” and “sport consumer” from a market-based viewpoint to mirror-image the above firm-based perspective. They reasoned that an individual as a sport consumer is also a customer of other products marketed through sport.

Firms leading ahead in marketplace often rely on a value added approach in their offerings. The marketing through sport offers an effective differentiation strategy in competition because it leverages on the popularity of sport to achieve brand uniqueness in the mind of consumers, thereby brand prominence in marketplace. Firms such as Adidas, Nike, and many others have done so by going much more beyond the product functionality itself and leveraging additional value from the popularity of sport or sport personalities for enhancing their brand equity. For example, Adidas was ranked in the 135th and Nike in the 30th place respectively among the top rated 500 valuable brands in the world (Brandirectory, 2012). Adidas was assessed with brand value of \$6,699 million in the 60th and Nike with \$15,126 million in the 26th in 2012 (Interbrand, 2012).

Firms trailing behind, on the other hand, often want to either unseat or follow the leaders as the competitive dynamics is a nature of business. Their strategies and methods are often seen to range on a spectrum from differentiation to imitation. While differentiation requires innovation and creativity at a higher cost of investment, imitation often offers a quick alternative to leverage on market leaders’ established position. Examples are

many: some attempt to offer a product in a less similar way of mimicking, while others, in a more similar way of copycatting. A few even go much further illegitimately in counterfeiting from manufacturing to retailing. Boumphrey (2007) estimated that counterfeit goods have reached US\$200 billion in 2005 alone. U.S. Custom and Border Protection (2012) reported to have seized products that infringed Intellectual Property Rights (IPR) with the manufacturer’s suggested retail value of \$1.26 billion in fiscal year 2012. Goods from China accounted for 72% of the total value, where apparel/accessories were number one on the top-10 item list.

Copycatting, a popular but loosely defined word, refers to a person or thing that copies, imitates, mimics, or follows the lead of another. It relates in essence to whether there is an overlap over one’s marketplace identity in relationship with others. It is used by an imitator to assume most part or all of the identity of an original idea and effort of others in marketplace for the imitator’s own. It is generally discouraged in the West and American cultures where individualism is dominant because an individual’s originality of an idea, process, or event is emphasized. But it is much tolerable in the cultures where collectivism is dominant because the appropriation of one’s unique identity is often blended with one another, and taken for granted in marketplace.



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Studies on copycat brand took different perspectives. Some examined a mimicking visual appearance related to the mental association with the authentic leading brand (Warlop & Alba, 2004); some distinguished copycat as perceived by either a theme or a feature based mindset (Miceli & Pieters, 2010); others investigated the relationships of imitation, preferences, and uncertainty associated with copycatting brand from a view of psychology reactance (Horen & Pieters, 2013). None is found to differentiate copycat imitation on a scalable continuum of similarity, nor in relationship with the layered function of assessors' cognitive structure with enculturation in context. We therefore examine mimics, copycats, and counterfeits in various degrees of similarity on both product and its trademark related to their congruity with the layered cognitive structure as defined by context enculturation.

At issue here in business is a challenge of how to manage a unique marketplace identity (i.e., brand) for firms of market leaders in relationship with others. This is particularly a challenge for an industry where the entry barrier is lower, and the trademark/patent is easier by others to mimic or copy. Due to the inseparability of product attributes from their use in functionality (Mills, 2009), the common law on IPR grants the apparel/fashion industry with a limited protection, mainly through trademarks (i.e., product name, logo, and alike, etc.), but not for the other components such as designs or functionalities (Lau, 2012). We want to tackle this challenge by conducting this study to gain the insight of how consumers would actually respond to a mimic brand primer versus its authentic brand in a comparative brand evaluation. The result can provide a rational guideline for firms to formulate informed strategies to manage brand in competition, and governments to design effective policies to maintain a healthy business environment for competition.

This paper is organized with a conceptual overview that addresses issues from the three aspects: (1) product development and competition, (2) brand establishment and interference, and (3) context confinement and determinacy, with the focus on congruity paradigm. The following are arranged in a nutshell of conceptual background, conceptual framework, methods, summary of result and discussion, and managerial implications with their respective rationale, justification, appropriateness, and usefulness to the real world's application.

Conceptual Background

Product development by firms and competition against their rivalries often go hand-in-hand in business. Only the first movers can initially achieve a temporary "Blue Ocean" (Kim & Mauborgne, 2005) differentiation through innovation. Others entering the competition have to build on the initial innovation. Therefore, imitation in product functionality, design, and trademark is often observed. Brand establishment is intended by firms to differentiate their own from other offerings to connect with consumers for distinguishable prominence in marketplace. However, many saturate the marketplace to be the averages or less in the mind of consumers. The difference is primarily dictated in degrees by the interference of cognitive congruity within consumers (Meryer-Levy, Louie, & Curren, 1994; Huang, Tan, Ke, & Wei, 2014), subject to a given function by product offerings and context confinement (The Authors, 2013). Firms

and their consumers in a marketplace are often cultivated and determined, jointly or individually by the factors in their business environment such as social dynamics, cultural cultivation, traditional custom, theological indoctrination, etymological influence, and legal jurisdiction. The integration of functions, processes, and relationships among the aforementioned in three dimensions is the central theme of our conceptual framework in this paper. We want to surmise with the following ten distinctive but intertwined concepts and functions: "Firms offer products, consumers conceive brands, as enculturation defines business." (The Authors, 2013).

We select the sport apparel industry in this study because it is coupled with a high visibility of both popularity for sport and competition for apparel design and trademark in marketplace. Competition in the apparel industry is often fiercely high. However, the use of an exclusive right of sponsorship or endorsement through a popular sport or a celebrity athlete can help a firm to effectively suppress heightened product competition, enlarge brand difference, and further strengthen the intended brand equity among consumers.

Studies on brand equity are many. We extend the value cocreation between firms and consumers by Vargo and Lusch (2004) for some favorable, strong, and unique brand associations in memory (Keller, 1993) with the integration of the idiosyncrasies of consumers and their culture, geography, sociopolitical decisions, and economic opportunities and constraints (Wilkie & Moore, 1999). We agree with a further call by Wilkie and Moore (2012) for a holistic approach to synthesize marketing's fragmented findings with a societal view.

We believe the socio-ethnological determinants should be treated as an integral part of independent variables in our study. Sport is a social institution in which people are enculturized into, through, and from to prepare for and make part of their life (Coakley, 2008). Sport experience is therefore vested in and reflected from our personality. Sport products are accordingly offered by firms. Proper marketing strategies are to accommodate, represent, or fit with sport experience and personality, rendering sport brands are conceived by consumers, and subsequently established and developed in marketplace. Empirical studies showed that sport has an impact on personality development (Rhea & Martin, 2010; Tiano, 2007). There is a positive and significant relationship between factors of brand loyalty, brand name, product quality, price, style, promotion, service quality, and store environment with sportswear brand loyalty (Wong & Sidek, 2008). Consumers' attitude and purchase intentions would change with celebrity-source attractiveness when a consumer product was endorsed (Kahle & Homer, 1985). A strong effect of social identity on sport brand equity existed, regardless of the type of fan (Boyle & Magnusson, 2007). A fit in a sponsorship context impacts attitude toward the sponsor which has a positive influence on consumer's purchase intentions is also confirmed (Gwinner & Bennett, 2008).

Conceptual Framework

To study consumer response vis-à-vis comparable product-by-brand assessment per context, we develop a conceptual framework that integrates socio-ethnological factors as an

independent vector in modeling. Our proposition starts from value co-creation (Vargo & Lusch, 2004), and extends with a context factor in which the enculturation of local consumers are different from that of the original international brand that has entered. We posit that resultant of brand value can be both supplied by a firm's actions for an intended purpose in branding at a guest market and demanded by a consumer's socioethnological factors in a host culture for a floating brand equity that is worthy protection. The "supply" from an international firm must meet the "demand" of local customers in order for the value in the branding process to be co-created in our conceptual framework of congruity paradigms.

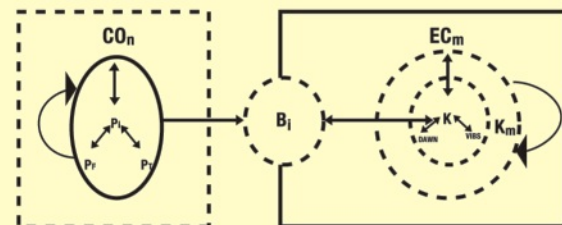
Congruity refers to the state or quality of being congruous, appropriateness, or a point of agreement. The word of congruity derives from the Old French *congruïté* for "relevance and appropriateness." We adopt congruity paradigm to refer a set of variables in which a particular element must be congruous, relevant, appropriate, or in agreement to a degree with another, primarily based on a single theme, reference, or context. Congruity effects are numerous in the use of forms or terminologies: schema congruity (Mandler, 1982), expectance consistency (Heckler & Childers, 1992), or harmonious uniformity (Solomon, 1996), or the cognitive fit theory (Chandra & Korovi, 1999). Of these, product associated with brand name of moderately incongruity are more preferred over those of being either congruent or extremely incongruent because of a need for elaboration in brand extension (Mandler, 1982; Meryer-Levy, Louie, & Curren, 1994) and cobranding (Sreejesh, 2012). However, little is found for the congruity with an ordered layer of mental representations cultivated by enculturation in context. Thus, an offering by a firm would only become brand prominent in marketplace when it occupies a unique space being congruous with a layered driver in the mind of consumers through enculturation. Conversely, a consumer's want of or search for a product or service does not become a brand until transcended with the offering that deems to be relevant, appropriate and congruent in a context of enculturation. While prominence is rooted deeply in the functionality congruity of product-brand fit per relevancy, uniqueness is achieved by the conformance of conceived brand consistency dominant in context (The Authors, 2013). Therefore, how to develop brand equity in a competitive setting such as the sport apparel industry is also an issue of how to differentiate the trademark integrity for a product in a context of enculturation.

Our framework further revises the concept of "perceived brand fit" (Park, Milberg, & Lawson, 1991) to be two-layered: specific-aimed brand (SAB) fit and general context brand (GEEB) consistency. The two-layered proposition is derived from and supported by Aerts (2009) on his proposed quantum structure that should consist of a classical logical layer and a quantum conceptual layer in cognition through his experiments. It contains the synthesis by Huang et al. (2014) of brain-stored vs. stimulus-based schemas but additionally integrates with superseding interference. We further extend the Mandler's schema learning and congruity with knowledge and experience (K) by our proposition that learning be a mirror-imaged process. We propose that schematized knowledge and experience be of various functions in their respective layer: (1) demand by afford-

ability, want, and need (DAWN) that are selective and proportionately attributable in the classical logical layer, and (2) a required degree of congruity with value, identity, belief system (VIBS) in the quantum conceptual layer that dictates and modifies the function of SAB fit. We borrow a dichotomized emic-etic (Pike, 1967) continuum to classify, scale, and test the impact of selected socio-ethnological factors on the degree of congruity between product and brand by account of conformance in the context of enculturation.

Emic account of conformance is characteristic of being that uniquely reserved to an assessor self in alignment with his or her own VIBS and DAWN that have derived from K. Etic account is being that commonly shared with others, from a third party's viewpoint (The Authors, 2013). Any absence or insufficiency of conformance, fit, or congruity, between the tangible elements of a product and the intangible elements of a brand involving the aforementioned, will suggest a negation to brand function. This could occur on product functionality, brand relevancy, or VIBS-DAWN derived from the context, and be manifested either from a firm's action or a customer's rejection. Assessment of such will therefore render a plausible basis for formulating, finetuning, and implementing an effective branding strategy for a product that is appropriate in its intended market segment.

Figure 1. Conceptual Framework for a Product to Become a Brand



Annotation: Brand function B_i , integrated under the both firm and market-based views, but different from simple aggregation, behaves independently. That is, to be receptive to a firms' strategic intent, and modifiable in stages within consumers' self-efficacy and beyond, and relevant to enculturated norms of KE in context. The effectiveness of the brand function in which how the actual offering is defined is an independent function as expressed in a mental space of consumers that is derived from probabilistic variables by relevancy in context. The relevancy refers to evaluative criteria and content required to be aligned with the endogenous DAWN and VIBS of consumers; and the context refers to the DAWN and VIBS that are nurtured and normalized through enculturation. CO_n represents a company offering a product P_i to a market that consists of enculturated consumers EC_m . The streak-lined square containing CO_n represents competition with a relatively dynamic industry boundary, while the solid-lined rectangular containing EC_m represents confinement in a relatively static socio-ethnological environment. P_i , composed of product functionality P_f and trademark P_t (where $P_f = P_{\text{substantiveness}}$, $P_t = P_{\text{trademark}}$), emits to be its representative brand B_i in a point-lined circle that is intended to share the co-domain in layers with consumer's knowledge and experience K_i in a streakpoint-lined circle in an approximated equal size.

Method

The purpose of our research were to (1) uncover factors dictating the branding process to varying degrees of similarity, fit, or consistency of congruity paradigms in a comparative mimic brand evaluation, (2) examine whether the varying degrees of congruence measurement were explainable by the



context conformance effect on brand functions through a dichotomized emic-etic classification of enculturation, and (3) determine whether the congruence variables of brand function in business and context conformance effects of enculturation were to vary by the demographic and selected behavioral orientation variables. Corresponding research questions and the instrument for data collection were thus developed. We investigated the functions, relevancies, and contextual limitations through a comparative assessment of brand function. We relied on the aforementioned conceptual framework to study mimic brand assessment relative to product functionality, co-creation of value, and effect of dichotomized enculturation and selected demographic and behavioral variable. We made three hypotheses tenable and testable, following the Stochastic process principles (Cox & Miller, 1977) regarding the random fields in space.

We selected Hong Kong as our data collection location not only for sampling support but also for sampling saliency and representativeness of the Asian culture (collectivism) vis-à-vis the West and American cultures (individualism) where mimicking or copycatting is genuinely not admired. Hong Kong follows a common law on IPR similar to that of the U.S.A. and U.K. The consumers in Hong Kong are also deemed to have a high brand consciousness for a class and style driven status through enculturation. All has made the recognition, display or exhibition of a sport brand primer even more salient and representative in signaling personality than anywhere else. Local residents and university students who were contacted under the university research endorsement to this study. Participants of both groups were screened with an informed consent procedure to proceed with their responses to an online survey instrument administered on the university website.

A series of analysis procedures were performed according to the predetermined purposes. After the use of factor analysis to reveal the underlying reasons, we reconciled two levels of comparative assessments with their respective brand function in

response to suitability or consistency in a series of multiple regression analyses. We also collected participants' behavioral orientation, knowledge of brand origin and design, and demographic variables for their effect evaluation.

Results and Discussion

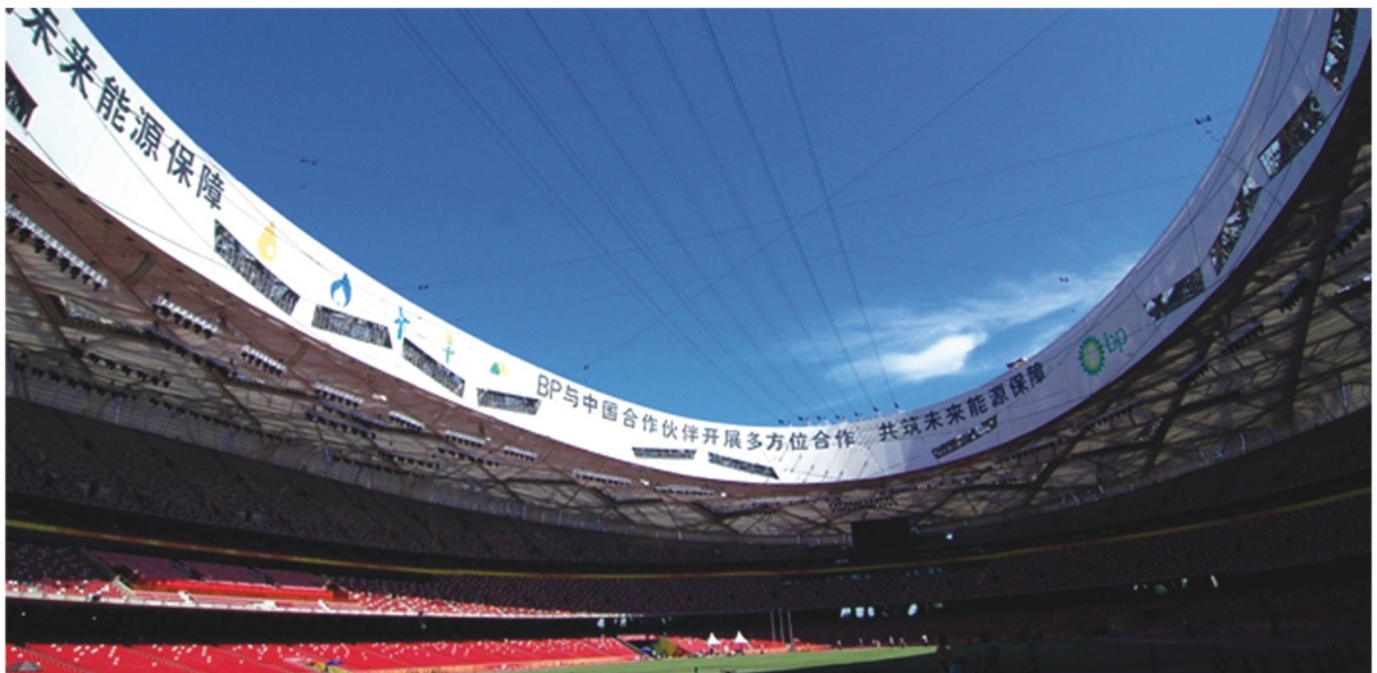
We collected data from about 900 participants. After the validity and completeness screening, we used 93% questionnaires in the further analyses. A t-test result showed two different groups of participants were indeed heterogeneous from each other, justifying the use of two separate but the same type of analyses. We summarize the results as follows:

(1) Two sets of factors were identified to dictate participants' assessment of a mimic brand primer with much explainability for variations in brand function and enculturation conformance, confirming our proposed conceptual framework that contains two layers in brand function under Aerts (2009), and partially suggested by Mandler (1982).

(2) Brand function is not only built on a marketing strategy from a firm-based initiative, but also on a two-layered quantum structure in which SAB fit mediates product functionality, and GEEB consistency dictates brand relevancy by VIBS from a market-based perspective. The latter supports the value cocreation proposition (Vargo & Lusch, 2004) with the empirical results.

(3) The essence of a successful business is rested with pursuing congruities between product features and consumer can conceive in branding, but largely adjustable on a "dial" by a dominant emic-etic conformance of enculturation in context if wanting to attain distinguishable prominence.

(4) The consumers of demographic homogeneity with a high brand consciousness tend to view a mimic brand primer more consistent than those of the heterogeneity, suggesting the



dominant etic account of enculturation is more controlling than people of diversity.

(5) The consumer response of a mimic brand is largely a function of affordability in economics, and visibility of social status enculturation as people do genuinely prefer the authentic brands.

(6) Demographic and behavioral orientation variables, although some for being ascribed, can be socio-ethnologically prescribed over time to transcend by either firms' marketing strategy or social enculturation. However, their ostensible function is largely vested with a given set of appropriate interactions by product functionality with enculturation conformance in context.

(7) Our analyses found that market acceptance of a mimic brand is primarily assessed through brand function by the "layered lenses" in the mind of consumers – mediated by their enculturation conformance in K – for congruence. Incongruence per se in nature or accumulated lesser incongruities in degree would not necessarily render an unfit or inconsistency for a market rejection unless a threshold is broken in a mimic brand evaluation.

(8) Gender differences were also affirmed with no surprise. Females tend to be more stylistic, novelty conscious, and image sensitive than their counterparts. Males tend to be more functionality oriented than that of brand consciousness. As they grew in age and gain a better social status, the authentic brand will become more preferred as an identification icon matched for personality in their life.

Managerial Implications

This study provides for marketing practitioners and policy leaders of a new insight of how to understand brand function in business through a mimic brand evaluation in the sport apparel industry. First, the sport industry's current functionality as a marketing platform on which an established brand equity of sport or celebrity athletes are leverageable to consumer products is reaffirmed. However, the effectiveness of such functionality is contextually relevant and orthogonal determinacy in nature (e.g., the relationship of etic-to-homogeneity vs. emic-toheterogeneity in enculturation conformance).

Second, marketing practitioners should consider more on the contextually (i.e., ethnologically) determined and confined VIBS related to brand by enculturation than that of the DAWN related to the products. The congruence of VIBS through sport enculturation is a core for sport to deliver, while the fit of DAWN through commercial sponsorship or endorsement is a goal for business to attain.

Third, decision leaders of firms should consider the supplement of market analytics to intersect with financial analytics when investigating operating units such as sport events for sponsorship, or paid fees for endorsement of celebrity athletes. This will allow firms to select a suitable sport or athlete to provide the additional real value to product promotion for which a platform is made through sport social enculturation.

Forth, policy makers of a government should consider additional measures to the current legal framework governing the IPR protection. Beside the legal forfeiture at border customs, an educational program to discourage the purchase of nonauthentic brands should be adopted for people of status driven at their younger age. Demarking of the purchase of non-authentic brands seem to be also important in parallel to the marketing of authentic ones.

Thus, the proper question is not whether socio-ethnological variables should be appropriately assessed in brand valuation, but how to identify them in a holistic approach using a system modeling. This will allow pinpoint the respective congruity function of pertinent variables that contributes to the co-reaction of value in the process. The congruity assessment on those variables will help to reconcile issues related to future research, such as Brand-in-Valuation for Firms (BIV_{Firm}) and Brand-in-Value for Market (BIV_{Market}) in a cross-cultural setting. Therefore, we believe that the future research should shift from a firm-focused perspective to that of a market-focused one, integrating with enculturation conformance on a given, straddled, or crossed socio-ethnological context. RMA

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The Problems of Physical Inactivity of Young Adults in Hong Kong: Challenges Ahead

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Proven Benefits of Physical Activity (PA)

Department of Health of Hong Kong Special Administrative Region (HKSAR) published a Facts Sheet on PA which has tremendous benefits to our health and fitness (2008). The benefits include:

- ▶ **Reduces the risk of dying prematurely.**
- ▶ **Reduces the risk of dying from heart disease.**
- ▶ **Reduces the risk of developing diabetes.**
- ▶ **Reduces the risk of developing high blood pressure.**
- ▶ **Helps reduce blood pressure in people who already have high blood pressure.**
- ▶ **Reduces the risk of developing colon cancer.**
- ▶ **Reduces feelings of depression and anxiety.**
- ▶ **Helps control weight.**
- ▶ **Helps build and maintain healthy bones, muscles, and joints.**
- ▶ **Helps older adults become stronger and better able to move about without falling.**

Problems of Physical Inactive

Physical inactivity is a global public health problem. Globally, around 31% of adults aged 15 and over were insufficiently active in 2008 (men 28% and women 34%). Approximately 3.2 million deaths each year are attributable to insufficient physical activity. Physical inactivity is identified as the fourth leading risk factor for global mortality (World Health Organization, 2010). It was also emphasized that lack of exercise is one of the major risk factors for heart diseases, cerebrovascular disease, diabetes mellitus, hypertension, some types of cancers and obesity (Department of Health of HKSAR, 2008).

The Report on HK Physical Fitness Test for the Community 2011 showed the Health-related Lifestyle of Hong Kong people based on the "American Indicator" for adults and the elderly that they should accumulate at least 150 minutes of moderate or above intensity physical activity (PA) in a week; or 75 minutes vigorous intensity PA; or combinations of different intensity PA were classified as physically active.

The following Table showed that over 45% of young adults were Sedentary and only 28.5% were active or highly active when looking into their Health-related Lifestyle.

Category	Accumulation of moderate or above intensity PA in a week	Age 20 - 39	Age 40 - 59	Age 60 - 69
Highly Active	≥ 300 mins.	14.7 %	16.3%	16.7%
Active	150 - 299 mins.	13.8%	12.2%	12.6%
Some Active	31 - 149 mins.	26.4%	20.5%	18.6%
Sedentary	≤ 30 mins.	45.1%	51.0%	52.1%

The Report also found that people with sufficient PA (Active and Highly Active) possessed lower resting heart rate and waist to hip ratio, higher cardiovascular fitness, flexibility, forearm strength and abdominal endurance, shorter reaction time, but larger BMI. The Sedentary group possessed lower physical fitness level. It indicated that physically unfit is mainly due to Physical Inactivity.

The problems of Physical Inactive are not only affecting people's personal healthy & fitness levels, but also directly affecting their families, their productivities, social mobility, and at end it is affecting the community of Hong Kong as a whole.

Reasons for Physical Inactivity of Young Adults

A survey to study factors affecting Physical Activity participation of university students in Hong Kong was carried out from April to June 2013. Interviews in person with students of the following universities were conducted at their own campuses. Random sampling method was adopted and a total of 170 university students were invited to attend the interviews. Students studying PE as their major subject were excluded. The followings are the brief summaries of the interview reports:

Name of University:

The Chinese University of Hong Kong (CUHK)

City University of Hong Kong (CityU)

The University of Hong Kong (HKU)

Hong Kong Baptist University (HKBU)

The Hong Kong University of Science and Technology (HKUST)

Lingnan University (LU)

The Hong Kong Polytechnic University (PolyU)

Hong Kong Shue Yan University (SYU)

Q1: At your leisure time, which 3 activities will you choose to do?

The top 20 leisure activities were : play pc games, watch movies, sleeping, reading, shopping, running, listen to or play music, watch TV, sing karaoke, keep fit in the gym, basketball, badminton, meet friends, cycling, swimming, football, other sports, web surfing, dancing, cooking and eating.

Q2: Are you satisfied with your physique and fitness condition?

55% did not satisfy with their physique and fitness condition (n = 93), and 46% of students were satisfied with their physique and fitness condition (n = 78).

Q3: Do you know that physical activities or exercises can improve or maintain health and fitness?

Over 99% of students know that physical activities could improve health and fitness (n = 169).

Q4: Do you exercise regularly or living in an active lifestyle?

57% of students did not exercise regularly (n = 97). Most of them said that they were too busy. Some said that they were lazy, too tired and no motive. They don't exercise because there is no requirement, no friends accompany them and they don't like sweating.

44% of students had regular exercise (n = 74). Most of them exercised 2 to 3 times per week.

Q5: What will attract you taking part in physical activities?

The top ten factors were : accompanied with friends, had fun and interesting, can keep fit, convenience, if they have more free time, new sports games, challenging and exciting, required teamwork, indoor sports and release stress.

Other factors were: if they are free of charge, if they are compulsory, suitable level and attractive. Around 2% of students replied that there were no ways to attract them to take part in physical activities (n = 4).

Q6: What will keep you continuously attending physical activities?

The top ten factors were : accompanied with friends, can keep fit, have fun and interesting, when they have more free time, convenience, have satisfaction, have motivation, challenging and exciting, if compulsory and indoor sports.

Q7: What kind of sports you want to attend?

The top 20 sports were: dancing, fitness training, yoga, cycling, golf, new sports, swimming, archery, tennis, football, volleyball, rugby, bowling, basketball, thaiboxing, rock climbing, wingchun, fencing, snooker and taichi.

Summary of Findings

More than half of the students did not satisfy with their physiques and fitness conditions and almost all students knew that physical activities or exercise could improve or maintain their physical fitness and health. But they did not exercise regularly. Their reasons were too busy, too lazy and too tired.



Accompanied with friends and having fun and interesting were the main factors to attract students to participate in physical activities and would also keep them continuously participating. Students tended to select individual sports like dancing, fitness training, yoga, cycling & golf as a new sports game to learn which may be used as a lifelong sports pursuit.

The university students would unlikely take part in physical activities or exercises during their free time. They did not choose any physical exercise or sports games as their leisure activities. Most of them would like to play pc games, watch movies or sleep during their leisure time. A majority of students at about 66% of the respondents prefer compulsory sports program which are organized within their academic timetable. Because they don't want to sacrifice their precious leisure time to do exercise since they prefer to play pc games, watch movies and sleep as their leisure pursuit.

Recommendations on Promoting Physical Activities (PA) Participation

1. The most effective way to promote PA participation is to start as early as possible in the education sectors. "To enable every person to attain all-round development in the domains of ethics, intellect, physique, social skills and aesthetics according to his/her own attributes, so that he/she is capable of lifelong learning, critical and exploratory thinking, innovating and adapting to change". One of the Learning Objectives: Children are enabled to develop interest in and the habit of participating in physical activities (Curriculum Development Council, 2006). However, the problem is that most kindergarten teachers do not required the training on physical education and they themselves have not yet acquired the knowledge, skills and habits of PA. How can they influence or nurture their children to attain physical fitness through PA? Therefore, the first recommendation is to enhance the training of kindergarten teachers in physical education and make it a compulsory subject.
2. Secondly, we should increase the time for PE lessons in primary & secondary schools from around 1.3 hrs per week (5 – 8% of total lesson time) to around 2.6 hrs per week (10% of total lesson time). At the same time all students are encouraged to participate in at least one physical activity as an extra-curricular activity. So that they may come closer to meeting the recommendations for children or young people aged 5 – 17 years old that they should accumulate at least 60 minutes of moderate to vigorous intensity physical activity daily (World Health Organization, 2010).
3. Taking into consideration of the findings from the above survey on university students living habits that it is highly recommended to offer a kind of compulsory PE programs with more emphasis on health related fitness and quality lifestyle in higher education institutions and universities so that students will continue achieving an active and healthy lifestyle.
4. Government's policies will be one major contribution to the promotion and development of PA in Hong Kong. The guidelines listed on the Fact Sheet on Physical Activity issued by Department of Health, HKSAR are limited. More scientific & practical guidelines should be developed and introduced. The following guidelines are more comprehensive and sustainable examples :
 - a. "Healthy People 2020" was developed by Office of Disease Prevention and Health Promotion, US aimed at improving health, fitness, and quality of life through daily physical activity in 2008. The Physical Activity Guidelines for Americans (PAG) is the first-ever publication of national guidelines for physical activity. More than 80 percent of adolescents & adults do not meet the guidelines for both aerobic and muscle-strengthening activities. It is a multidisciplinary approach to increase the levels of physical activity and improve health in the United States.



- b. The CDC Guide to “Strategies to Increase Physical Activity in the Community” issued by Centre for Disease Control Prevention and “Strategies to Prevent Obesity & Other Chronic Disease” (Centers for Disease Control and Prevention, 2011).
- c. Global recommendations on PA for health issued by World Health Organization (2010) aimed at providing guidance on the dose-response relationship between physical activity and health benefits, i.e. the frequency duration, intensity, type and total amount of physical activity needed for health enhancement for prevention of noncommunicable diseases (NCDs) to assist policy makers in the development of public health policies on guidelines for health enhancing physical activity (World Health Organization, 2010).
- d. A complete physical activity program developed by American College of Sports Medicine (2011) recommended healthy adults to perform at least 30 minutes of moderate-intensity physical activity (working hard enough to break a sweat, but still able to carry on a conversation) five days per week, or 20 minutes of more vigorous activity three days per week.
- e. Exercise is Medicine (EMI) is a global health initiative managed by ACSM that is focused on encouraging primary care physicians and other health care providers to include physical activity when designing treatment plans for patients. EIM is committed to the belief that physical activity is integral in the prevention and treatments of diseases and should be regularly assessed and “treated” as part of all medical care.

Physical Fitness Association of Hong Kong, China (PFA) has organized “Exercise is Medicine, HK” with the following aims:

- To make exercise a standard part of treatment medical paradigm
- To emphasize exercise and physical activities are the essential components of disease prevention and treatment protocol
- To consider physical activity as a vital sign in every patient visit and medical examination

Good references can be found from the above programs or guidelines. It is hoped that the policy makers in the development of public health can share the valuable experiences of those reputable organizations and develop a comprehensive guidelines or policies so that every people in Hong Kong can be benefited by leading a healthy and active lifestyle and at the same time improving the quality of life.

- 5. Promotional strategies aiming at achieving the developed guidelines should be carried out by related departments or organizations such as Home Affairs Department, Department of Health, LCSD, EDB, District Boards, NGOs as well as commercial or private health/sports clubs. Hong Kong needs a strong leading organization to coordinate health & fitness strategies and implement policies regarding Physical Fitness



& Health among the above listed departments or organizations, with the mission to enhance quality of life of the population through PA participation.

- 6. Structural environments such as the availability of sidewalks, bike lanes, jogging trails, parks, swimming pools, sports grounds / stadia, etc. should be well planned and estimated according to the needs, interests, age groups proportion and density of the population by the Town Planning Board and Department of the government. More attention and effort should be made in the provision of up-to-date health & fitness training facilities which may attract people’s participation and inject vitality to the whole community.
- 7. According to Population Census (HKSAR, 2011), working Population by Occupation and Industry that the nature of work of more than half of the working population belongs to sedentary. In addition, Hong Kong is one of the most densely populated cities in the world. The living environment and mode of transportation are designed to be most cost effective, efficient, convenient, comfortable and maximized usage of space. To improve the productivity, health & fitness level of employees, sense of belonging to the company, reputation and social responsibilities, all industries, commercial firms, government or non-government organizations, etc. should follow some selected physical activity guidelines and provide their employees the time and facilities to participate in casual or organized physical activities.
- 8. A family is the basic unit for giving birth, raising and nurturing of children. Within this family unit, children should be given an environment in which they have favorable physical, social and emotional development. Parents should have the basic knowledge, skills and habits of physical exercise and provide children the time and environment to achieve favorable physical conditions. Active lifestyle and regular physical activities need the full support from family which is one of the main factors influencing children in PA participation.



Conclusion

Physical Inactivity is not a problem only found in Hong Kong but a global health issue. There are far more ways to enhance the quality of life through different aspects like wearing clothes, eating good food, living in nice big house, travel round the world, etc. However, Physical Activity is the most crucial and effective way to enhance physical fitness as recommended by WHO, ACSM, CDC and Department of Health, HK, etc. Without a healthy and fit body, we cannot enjoy the good food, travel round the world, and most important, cannot enjoy life in many other ways.

Who is going to lead the ways ahead in Hong Kong? There will not be a big challenge for a small city with around 7 million populations. As mentioned in Item 5 of the above recommendations that Hong Kong needs a strong leading organization to coordinate health & fitness strategies, develop and implement policies regarding Physical Fitness & Health with the mission to enhance quality of life of the population through Physical Activity participation.

The leading organization can be an advisory board or an existing department with the aims to plan and develop Physical Activity of guidelines which are suitable for the culture, living environment and lifestyles of Hong Kong people. The leading organization will have to administer the implementation and promotion of the guidelines. It has to coordinate and pull the strength and resources together from related departments such as Home Affairs Department, Department of Health, Town Planning Board and Department, LCSD, EDB, District Boards, NGOs and commercial or private health/sports clubs in terms of financial supports, premises and facilities, human resources, program/activities arrangement, etc. so that all resources and expenditures are properly utilized and to avoid overlapping of manpower or duplication/clashing of activities by different departments or organizations. In such a way that Hong Kong can find out her ways ahead and Hong Kong People including young adults will have better chances to leading a healthy and happy lifestyle. RMA

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Universal Design : Integrating the Principles into Camp Activities

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Introduction

Sport and Recreation Victoria (SRV) are a division of the Department of Transport, Planning and Local Infrastructure, formerly known as the Department of Planning and Community Development. The division attempts to provide greater access to and opportunities for participation by all Victorians in sport and recreation, with a focus on improving the quality of existing facilities (State Government Victoria, 2011).

In 2011, physical access audits were completed by architecture & access (formerly Davis Langdon) at five SRV camp sites across Victoria, with the aim of identifying non-conformances specifically regarding the access provisions for people with disabilities within the built environment. From these audits, recommendations for modifications to the internal and external built environment have been made based on the requirements of the Disability Discrimination Act (1992), associated Australian Standards and the principles of Universal Design (UD).

According to the National Construction Code (2012), the short-term residential nature of a camp would be classified as a 1b class of building, whereby access is required “to and within not less than of each type of room or space for use in common by the residents”. The aforementioned physical access audits were able to identify access issues to these common areas. However, an interpretation of “providing access within” common spaces would include providing access within the activities completed in them.

Further to the above National Construction Code interpretation, SRV understands that it is of the utmost importance, that a person can do more within the camp environment than just move around it. The activities and camp program are a significant part of the camp experience and should be designed for participation by people of all abilities.

There is no legislation within Australia to guide the design of sporting or leisure activities that enable participation by people with varied abilities. Additionally, often ‘accessible features’ that meet prescribed codes and legislation for use by people with disabilities is achieved by the provision of distinctive features for “special” user groups, often having the potential to segregate people with disabilities from other users (Story, 1998). Architecture & access has been commissioned to conduct a literature review to investigate examples where UD has been applied in camp activities and overall programs, in order to make evidence-based recommendations regarding recreational activities and overall camp programs within the SRV camps to ensure participation by all by eliminating segregation as much as possible in the process.

This paper outlined the importance of UD, and ways in which environments, activities and programs within SRV camps can be used and experienced by people of all ages and abilities.





Method

Initially, a review of the SRV camps was conducted in order to understand the purpose of their camps and what is trying to be achieved. Subsequently, research was conducted into known benefits of camp activities and what is important within the camp experience for an individual to gain the most out of their involvement.

A search was then conducted of activities currently provided within camps and similar facilities that were considered to be Universal in their design. These activities were then independently reviewed against the principles of UD in order to determine what could be considered to be appropriate to be implemented into SRV camps.

Literature was located using a search of Ebscohost, CINAHL, Pubmed and Psychinfo using the key words 'Recreation', 'Universal Design', 'Inclusive', 'Activities', 'Camps', 'Programs', 'Physical', 'Children', 'Disabilities', 'Adaptable', 'Sport', 'Accessible'. Literature was also identified through the bibliographies of selected articles.

While the validity of journal articles is considered to be high, there has been limited research conducted on the topic. In order to look closer into the activities within camps, resources were identified through websites and textbooks for camps and recreation. These secondary sources consisted of anecdotal evidence and presented practical applications in place within existing camps and were considered relevant and valuable to this review.

Findings

The Role of a Camp and Activities

In order to understand the importance of incorporating a UD focus to the design of camp activities and programs, the reasons that a person attends a camp should be recognised.

Camps have been shown to assist in the development of self-identity, self-worth, self-esteem, social, leadership and communication skills as well as independence in a challenging and active environment (American Camps Association, 2012; New South Wales Government, 2012). This can all be achieved through active participation in a wide range of activities and experiences. Activities are designed to be fun and engaging to individuals, as well as having an element that pushes individual limits. These benefits of attending a camp can however be lost if a person is unable to participate in these activities.

We currently live in a diverse community. Advances in technology and medicine have meant that people are living longer, surviving accidents and illnesses that were once fatal. Additionally, 18.5% of people living in Australia in 2009 had a disability of some kind (Australian Bureau of Statistics, 2011). Unfortunately, camp activities are often not designed in order to accommodate such diversity. Activities can often be designed in a way that excludes particular user groups; either by being completely inaccessible, or segregating. It is essential these activities be designed in a way that ensures that users are able to



participate equally to gain the full camp experience, regardless of age or ability. Furthermore, it is the full program (schedule of activities throughout the camp) that also needs to be recognised as important. It is essential that the program is designed in a way that acknowledges different user groups and elements such as fatigue.

Within camps, whether for children or adults, there is generally an emphasis on outdoor activities and other programs that have a hands-on and interactive nature. It has been found that there is a risk of children with disabilities having limited participation in recreational activities, such as those that may be undertaken in camps. Heah, Case, McGuire, and Law (2007) found that as little as 26.5% of children with disabilities were able to participate in physical recreation programs run within their community, something that Sanford, Story, and Ringholz (1998) argued was due to the design of the built environment and the activities undertaken within it.

Noting the above, it must also be emphasised that although it is beneficial for all people to participate in the full range of activities within a specific camp program, there should still be an element of challenge for each person. As discussed previously, camps are generally a forum for pushing individual limits, so to build independence and confidence. It is as of equal importance that the activities are experienced equivalently by all, inclusive of the risks and challenges that push each person to their individual limits. This is supported by Block (2000), who suggested 'standards' to guide team sport development that ensures appropriate involvement of students with disabilities specific to team sports. The first of these is that the design is challenging, so that it promotes "the maximum use of physical, cognitive, and social skills" of all people as too much or too little assistance reduces the ability for individuals to practice and develop skills.

In order to create an increase in the level of participation by all people in indoor and outdoor camp activities, we must ensure that the design of the activities and their surrounding environment is inclusive. Individuals have the right to use their environment just as others may use it and therefore it is imperative that these activities are made available and used in the same manner by all participants. By creating activities in this way, it will reduce the segregation, discrimination and exclusion of any individual of any age or ability. Activities therefore need to be organised and managed with a UD focus.



Universal Design

Sanford et al. (1998) defined UD as being an approach to creating everyday products and environments that are useable by all people to the greatest extent possible, regardless of age or ability. This type of design is a fundamental shift in thinking about accessibility. UD steers away from the idea that barriers need to be removed or that people require extra help or skills to navigate their environment; Story (1998) stated that UD involves “the design of products and environments that can be used and experienced by people of all ages and abilities, to the greatest extent possible, without adaptation” (p. 4), suggesting that it is thought of as a way of meeting the environmental needs of all users.

Often, when considering what is an inclusive environment, or one that is accessible, we can become narrow-minded. When discussing the accessibility of a building or its relevant elements, it is generally a measurement of the “fulfilment of legislative requirements” (North Carolina State University, 1997, p. 1). In short, a building or a site that is compliant with relevant standards that would deem it “accessible” is not necessarily indicative

of its functionality for a wide range of users. UD is an approach which enables use by the maximum number of users. Beyond that of “accessibility” UD is a sophisticated approach, whereby people of all abilities are catered for.

It is important to note that UD is there to assist everyone, not just those who have a disability. The benefit of this design style is that it is inclusive and it makes it possible to cater for the young and the elderly, people with varying abilities or a person pushing a pram or even a trolley.

When providing UD within camps, it is of the utmost importance that an individual is not segregated or excluded. When considering that exclusion can actually occur when providing ‘specialised accessible’ features, we must consider the seven principles of UD first and foremost to ensure that all people can use and experience the activity or program equally.

Seven principles of UD exist that can be used as guidelines to measure the extent to which a program, building, or product will be able to be used by the maximum range of people.



These principles are as follows:

1. **Equitable Use:** The design is useful and marketable to people with diverse abilities.
2. **Flexibility in Use:** The design accommodates a wide range of individual preferences and abilities.
3. **Simple and Intuitive in Use:** Use of the design is easy to understand, regardless of the user's experience, knowledge, language skills, or current concentration levels.
4. **Perceptible Information:** The design communicates necessary information effectively to the user, regardless of ambient conditions or the user's sensory abilities.
5. **Tolerance for Error:** The design minimises hazards and the adverse consequences of accidental or unintended actions;
6. **Low Physical Effort:** The design can be used efficiently and comfortably and with a minimum of fatigue.
7. **Size and Space for Approach and Use:** Appropriate size and space is provided for approach, reach, manipulation and use, regardless of a user's body size, posture, or mobility.

(North Carolina State University, 1997)

It is evident that the above principles are intended to assist in catering for a variety of people. The idea is that elements are designed in a way that makes them consistent in their usability by all people to ensure no discrimination occurs. Similarly, it can be seen that these principles exist to make the environment easier for everyone to navigate, whether it be from a strength or fatigue perspective or due to a variance in size between people. All people benefit from this type of design, but how can it be transferred into activities and outdoor participation?

Universal Design Guidelines

First we must consider how one gets to the specific activity, then once there what can be done to ensure that all people can participate equally? The seven principles of UD have a number of underlying guidelines that can assist in the design direction. The below tables detail the guidelines and offer suggestions based on each that are commonly used within outdoor recreation to ensure maximum participation by all.

Equitable Use

1. Provide the same means of use for all users; identical wherever possible, equivalent where not
2. Avoid segregating or stigmatising any users
3. Provisions for privacy, security and safety should be equally available to all users
4. Make the design appealing to all users

These guidelines focus on the principle that all individuals should be able to use the environment in the same manner as their peers. Within outdoor recreation, we could consider such things as ensuring that the path to the activity is one that can be used by all, and is wide enough to accommodate a number of people walking alongside each other, whether they are using a mobility aid, or carrying equipment. It is also important to ensure

that the paths are traversable by the maximum amount of people, by being a flat firm surface. Essentially, it is of the utmost importance to ensure that all people can arrive in the same way, not provide stairs for one group and ramps for another for example (Story, 1998).

Additionally, the activity itself should adhere to these guidelines. For example, a ropes course or challenge course can be developed using all ramps and no stairs; colour contrasting between elements; supporting harnesses for flying foxes or even the use of giant swings. All of these elements would be used in the same manner by all people. What is also noteworthy is that when elements are designed to be equitable in use, segregation is non-existent.

Flexibility in Use

1. Provide choice in method of use
2. Accommodate right- or left-handed access or use
3. Facilitate the users accuracy and precision
4. Provide adaptability to the user's pace

Flexibility in use guidelines focus on the ability for the activity to be used in a variety of ways by way of choice by the user in a way that does not provide one 'specialised' way of doing things for one person and another way specifically for another. Design that is based around this guideline means that decision in regards to the way in which the activity is to be undertaken can be made by the user rather than dictated by the design.

An example of flexibility in use within outdoor camp activities could be providing seating in archery stations so that people can choose to sit or stand. Stations would not have barriers in the front so that people of all statures can use the space. Additionally, arrows could be provided in a loose canister so that it can be moved to accommodate a left or right handed individual. Flexibility is also achieved as the time taken to complete this activity is entirely dictated by the pace of the user.

The benefit of providing flexibility in use is that there is a power of choice and an individualised take on each task for each person, no one 'specialised' adaptation for a specific user group, which as discussed, can lead to segregation.

Program development should also have an element of flexibility whereby activities are interchangeable within a program. The program may need to be adjusted if group members are fatigued, or may not have the capacities to complete the planned task. It is important that a range of activities are on offer, as although the best attempt may be made, it is not possible to accommodate all user groups with every activity within the camps. Have a number of activities planned that can be completed depending on the preferences and capacities of the group members.

Simple and Intuitive in Use

1. Eliminate unnecessary complexity
2. Be consistent with user expectations and intuition



4. Arrange information consistent with its importance
5. Provide effective prompting and feedback during and after task completion

It is essential to provide activities that require little explanation and that can be understood and undertaken by people with varying cognitive abilities. Bush walks and camp fires are activities that fit within these guidelines.

In addition, where possible provide pictorial instructions that are easy to follow or give demonstrations on how to perform a task, or the rules of a game.

Perceptible Information

1. Use different modes for presentation of essential information
2. Provide adequate contrast between essential information and its surroundings
3. Maximise legibility of essential information
4. Make it easy to give directions or instructions
5. Provide compatibility with a variety of techniques or devices used by people with sensory limitations

This principle is surrounded by the idea that information should be provided in a variety of ways in order to accommodate individuals with differing sensory abilities. It is recommended that information is provided using a multitude of methods. For example, when indicating for someone to 'GO', hold up a bright green card that says 'GO' in a contrasting colour, as well as verbally telling the individual to 'GO'. These types of techniques could be used with any individual and be transferred to a number of outdoor activities. It is also important to note that providing perceptible information is not limited to being used for individuals with vision or hearing impairments.

Tolerance for Error

1. Arrange elements to minimise hazards and errors
2. Provide warnings of hazards and errors
3. Provide fail safe features
4. Discourage unconscious action in tasks that require vigilance

The health and safety of individuals should always be considered when designing activities whether they are conducted in or outdoors. Minimising and managing significant risks is essential within a public place, as people should be able to navigate without risking physical danger. With regards to activities that could be implemented in tasks, we could consider archery, and the potential for a person to unconsciously go to retrieve their equipment while others are not finished shooting. Obviously, this action poses a risk. When working within these guidelines, recommendations could be made in a number of ways, provide a number of visual and verbal cues that would indicate when it is appropriate to 'GO' and when they must 'STOP'.

It is important however, that an element of challenge is still maintained when dealing with hazards. For example risks could also be managed through the provision of safety equipment. For example harnesses for a ropes course and barriers that would prevent a person from falling to the ground. Additionally, it is imperative that staff members be trained to supervise and provide information on the correct way of completing tasks and the maintenance or identification of faulty equipment.

As mentioned previously, health and safety must be included when introducing any new activity or program. An essential aspect to note within this guideline is that health and safety - like the other principles - is relevant to all individuals, not just those with disabilities. This said, management plans for emergency procedures and the like will need to be coordinated to have



specific procedures for assisting a person with a disability, and when considering the general health and safety of the site again, considerations will need to be made that acknowledge the use of the site by people with disabilities, for example, the provision of visual alarms.

Low Physical Effort

1. Allow user to maintain a neutral body position
2. Use reasonable operating forces
3. Minimise repetitive actions
4. Minimise sustained physical effort

Physical strength and endurance varies from person to person, between male and female, the young and the elderly, and basically just between individuals in general. For this reason, it is necessary to ensure that minimal operating forces are provided where possible to ensure the operation of equipment or engagement in activities is available to the maximum range of users.

Where possible, it is essential to ensure that a person may maintain a neutral body position, for example, being seated in a harness for flying fox or giant swing. This should be done to ensure that a person is not sustained in a position that poses any undue strain on their body. Additionally, physical effort should be reduced where possible, and substituted for where not. Ensure that activities are within a reasonable distance from primary camp areas, so that the distance required to travel is not excessive. A strategy for archery could be to provide a back-drop or barrier, to ensure that equipment retrieval distance is minimal for the person.

There are common camp tasks that do required physical effort, as that is the way in which they are designed, for example bush walking. The amount of physical effort can be reduced however, by providing trails of varying length and also providing rest points at areas where there may be wildlife or attractive scenery. This beauty of this type of UD is that it is not an obvious 'accessible' feature. Chairs can be provided for everyone to rest during a potentially arduous task, whereby the chair is disguised as a lookout area rather than a designated resting spot.

This principle can be used to look at the camp program as well as singular activities. Jason and Brown (2013) conducted a study into the relationship between time and fatigue intensity of individuals with Chronic Fatigue Syndrome using activity logs. It was identified that two out of three groups found that fatigue intensity increased as the day wore on. Morris, Cantwell, Vowels, and Dodd (2001) also found that self-reported fatigue increased in the afternoon in patients with Multiple Sclerosis, while a number of business publications also referring to the 'afternoon slump', whereby workers are observed to have decreased energy in the afternoons. It is important that low physical effort is considered especially in the afternoon, when individuals are likely to be tired and potentially less likely to be able to be attentive to instructions due to mental and physical fatigue.

Adelson (2012) provided general planning strategies to assist individuals with MS manage fatigue over the course of the day. These strategies were not found to be specific to this user group,

and can be used during the planning of programs to manage the fatigue levels of the group to ensure maximum participation throughout the activities of the day. The idea is to plan the day so that fatigue does not necessarily occur in the afternoons. Pacing is a technique that can be used to reduce the onset of fatigue; it is achieved by taking regular breaks, alternating between high energy and low energy tasks, rather than running a number of high intensity tasks for a group in the morning and having people collapse in the afternoon.

Size and Space for Approach and Use

1. Provide a clear line of site to important elements for any seated or standing user
2. Make reach to all components comfortable to any seated or standing user
3. Accommodate variations in hand and grip size
4. Provide adequate space for the use of assistive devices or personal assistance

The final UD guideline is one that focuses on the physical size of the environment for the participation in that activity. In general, size and space needs to be provided to the maximum capacity available. Not only does this mean the physical magnitude of a design element, but also relates to the line of site available with relation to the activity, for example providing a lower barrier on a pier when fishing to ensure that a person can view what they are doing.

Comfort is also a factor within this principle. Adjustable and moveable elements are always favourable to those that remain stationary, for example, providing fishing tackle on an adjustable stand and position next to the person at a height that is within easy reach for them. The size of actual equipment items is also required to be considered. A variety of sized paddles should be provided for canoeing or a variety of glove sizes for gardening, to ensure the majority of people are catered for.





Conclusion

People who attend camps have different needs and preferences, some of which may be facilitated by the general design of camp activities more so than others. This can create a social injustice as some individuals may not be getting equal opportunities to participate in these activities. It is necessary to break down these barriers, by designing camp activities universally to make them useable for everybody.

It was found that often, the environment and design of activities are the main barriers to participation by children with disabilities. If changes are not made within camp settings, and if the design of certain camp elements continue to force reduced participation levels by children with disabilities, negative feelings of frustration of exclusion could be affiliated with camps and the overall camp experience for some users. When considering the reasons to attend a camp, it emphasises how important it is to ensure that activities are designed for all people. Camps will not have the same benefit for certain individuals if they are unable to participate in the activities that are developed to encourage the development of an array of skills such as

leadership and increased independence as well as a fun and active experience for all individuals.

Activities must not merely be designed to be inclusive, however. It was found that activities within camps need to be designed with an element of risk and challenge that pushes each individual to their limits, no matter what those limits are. This guideline is based on what was found to be a distinguishing feature of a camp and the activities that are conducted within it.

Strategies have been identified within the literature and assimilated with UD principles that can be used within SRV camps to increase participation for all, while still having an element of challenge and stimulation. It should be noted that there will be some instances where specific needs cannot be catered in a universal way, and as a result, individualised actions will need to occur. The idea of UD is to limit these instances where possible. By keeping the principles and guidelines discussed in mind, and designing environments and activities accordingly, each person is allowed the best possible opportunity to participate, to their full potential rather than be limited by their environment. RMA

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Investigation of Cyclists' Demographics, Behaviors, Motivation and Satisfaction on Cycling Adventure Tour in China



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INTRODUCTION

Tourism, which has become a major industry in the world, plays an important role in the development of a nation's economy (Liu, 2012). In 2012, the total China's tourism income topped to RMB2.593 trillion and a year-on-year growth of 15.1% (China Tourism Academy, 2012). The tourism revenue would reach \$16 trillion worldwide and the number of tourists would increase to 1.8 billion by 2030 (World Tourism Organization, 2012). Nowadays, tourism is the largest industry in the world.

Sports tourism has been identified as the fastest growing type of tourism over the past twenty years (Hinch & Higham, 2001). Sport and adventure tourism appear to be growing as more and more people recognize the health benefits of active holidays (Smith et al., 2010). The sports tourism market makes about \$51 billion, it takes up 10% of the global tourism market and it is going to grow at a rate of 10% per year (Yeh, 2008). Based on the readership of Sports Travel Magazine, Schneider Publishing estimates that sports-related tourism accounts for at least \$118.3 billion in the United States alone (Hudson, 2003). The breakdown includes:

- Team and participant travel at \$6.1 billion
- Corporate incentive travel at \$2.1 billion
- Family and spectator travel at \$47.3 billion
- Adventure and fantasy travel at \$62.8 billion

It can be seen that as a form of sports tourism, adventure tourism is the most profitable one. Sports and adventure tourism is defined as the active, passive or nostalgic engagement with sports and sports-related activities whiles traveling away from one's normal place of residence (Smith et al., 2010). Adventure tourism consists of both "hard" and "soft" adventure tours, is expanding rapidly with an estimated annual growth of 15 percent (Robinson & Gammon, 2004). "Soft" adventure would involve very low risk and could be undertaken by anyone with a reason-

able level of fitness, such as cycle-touring, hiking, backpacking and camping (Shephard & Evans, 2005). With people's awareness of environmental protection and the development of ecotourism, cycling adventure tour become more and more popular. Nowadays, bicycle is not only a kind of traffic tools, but also know as an exercise, leisure and tourism tool (Miao, 2011). Cycle tourism is a growing and important niche tourism market that has the potential to provide a range of economic social and environmental benefits to regional areas and the wider community (Lumsdon, 2004; Tourism Australia, 2005). In western countries, cycling adventure tourism is developing rapidly. In America and other Europe countries, cycling adventure tourism occupancy 5 to 10 percent of the whole tourism market (Miao, 2011). In British, cycling adventure tourism has 635 million income every year and it is considered as the most rapid development part in the British tourism (Miao, 2011). The bicycle adventure travel agents in the United States increased from 12 in the last 1980s to over 100 at presents. Cycling adventure tourism, as a form of outdoor tourism experience, is also becoming more and more popular in China. Currently, there are more than 100 cycling adventure tourism websites in China and they are include a lot of cycling knowledge, cycling lines and cycling experiences. There are more than 107,000 formally register users in CHINABIKE BBS and there are many BBS in China have more than 10,000 register users. Cycling adventure tour would become a new development trend of tourism. A large number of people cycle in China, but the cycle-tourist is still an unusual sight. At present, the main forms of China's cycling adventure tourism are club organizations, online organizations and travel alone. What's more, there is no perfect software and hardware facilities, so cycling adventure tourism is not widely promote and has no mature market in China. Therefore, study of the cycling adventure tourists' perception and preference will provide important references for the development of cycling adventure tourism in China.

Objectives of the study

1. What are the demographic characteristics and participation behaviors of cycling adventure tourists?
2. Is there a significant correlation between tourists' motivation and satisfaction on cycling adventure tour?
3. Is there a significant difference among cycling adventure tourists' preference, motivation and satisfaction factors based on their demographic characteristics (such as gender, age, educational level, monthly income, residential locations, etc).

Significance of study

In China, professional team of bicycle travel patterns has not yet formed. It lacks of strategic positioning, professional marketing teams and full equipped facilities. China has a vast territory and diverse climate, cyclists can do cycling tour all the year round and they can choose different kind of cycling routes and terrains. China is a country with long history and rich cultural heritages, it is easy to visit historical sights and nature scenery on the cycling way. People in the rural regions are very friendly and they have different traditional culture in different part of China, so cyclists can experience different cultures and have more cognitive of this society. All these resources are provide good opportunity for China to develop cycling adventure tour.

Compared with other western countries such as America, Britain, Australia and so on, the development of sports tourism in China is still in the primary stage and there are seldom researches involving in adventure tourism. What's more, there is no research about cycling adventure tour. Nowadays, in China, more and more tourists choose travel to Tibet or Qinghai Lake by bicycle and the market development potential of cycling adventure tour is huge. So with more and more people participate in cycling adventure tour, investigation of cycling adventure tour development in China is necessary.

The research results could provide important information for tourism marketers to make proper strategies on how to arrange satisfactory package tours for special interest groups, how to design new cycling adventure products and how to provide better services to cycling adventure tourists.

METHODOLOGY

Participants

The participants (N=326) of this study were tourists who participated in the cycling adventure tour. The respondents are 18 or older and selected from cycling clubs and cycling adventure tour forums in China. Participants were approached through Internet such as China cycling tour, BBS-Cyclist, Bikezu, and BBS-Qixingquan.

Instruments

For measuring cycling adventure participants' motivation and satisfaction, Yeh's (2008) scale was used in this study. It was a reliable and valid instrument. The questionnaire was divided into three parts.

The first part was a demographic information survey (11 questions) includes gender, age, marital status, educational status, occupation, average monthly income, residential location, frequency of participation, preferred season for participation, preferred number of days for participation and preferred route to participation.

The second part is an adventure tourism motivation scale (22 questions) includes experience, physical fitness, relaxation, self-achievement, professional skill and international relationship.

The third part related to the construction of the cycling adventure tour satisfaction scale (20 items). The scale required the respondents to evaluate their overall satisfaction with cycling adventure tour. This satisfaction scale used in this study based on the study of Liao (2003), Kuo (2007), Chung (2007) and Chiang (2002). The four factors are environment and equipment, overall services quality, leisure and safety, spiritual experience.

Procedure

The survey questionnaire was translated into Chinese by the researcher and the translation was validated using the standard back translation technique (Marin & Marin, 1991). After devel-



opment of the questionnaire, a pilot study was carried out with 50 subjects who had the cycling adventure tour experience. The 50 subjects were selected from a cycling club. The purpose of the pilot was to test the validity and reliability of the survey questionnaire. When the pilot study was completed, then the online questionnaire survey was conducted from March 2013 to May 2013.

Data analysis

The study used the Statistical Package for the Social Science (SPSS) to analysis the gathered data. The statistical significant (alpha) level for all analysis was set at .05.

1. Descriptive analysis was used to analysis the participants' demographic characteristics to determine the cycling adventure tourists basic information and target participation group such as gender, age, educational level and residential location.

2. Pearson Correlation analysis was utilized to examine the correlations between participants' motivation and satisfaction among the dimensional factors influencing the participants engaged in the cycling adventure tour.

3. Independent t-test analysis was utilized to examine the different participant's demographic characteristics (gender and marital status) with participants' motivation and satisfaction on cycling adventure tour.

4. One-way ANOVA analysis was used to investigate different participants' demographic characters with participants' motivation and satisfaction to the influence of demographic variable on cycling adventure tour's motivation and satisfaction factors related to cycling adventure tour.

RESULTS

The demographic characteristics of participants were presented in Table 1.

Table 1
Descriptive statistics for demographic variable

Variables	Frequency	Percentage
Gender		
Male	186	57.1%
Female	140	42.9%
Age		
18-22	147	45.1%
23-30	175	53.7%
31-40	3	0.9%
41-50	1	0.3%
Marital Status		
Single	317	97.2%
Married	9	2.8%
Educational Level		
High diploma or below	8	2.5%
Associate degree	28	8.6%
Bachelor degree	233	71.5%
Master degree or above	57	17.5%
Occupation		
Student	270	82.8%
Full-time worker	39	12%
Part-time worker	5	1.5%
Freelance worker	12	3.7%

Monthly Income		
Below 2000 RMB	261	80.1%
2001-4000 RMB	38	11.7%
4001-6000 RMB	16	4.9%
6001 RMB or above	11	3.4%
Residential Location		
North of China	111	34%
East of China	80	24.5%
South of China	82	25.2%
Northeast of China	15	4.6%
West of China	38	11.7%
Cycling Times		
1-2	273	83.7%
3-4	34	10.4%
5-6	10	3.1%
7 or above	9	2.8%
Prefer Season		
Spring	190	58.3%
Summer	58	17.8%
Autumn	75	23%
Winter	3	0.9%
Prefer Route		
Sichuan-Tibet	79	24.2%
Qinghai-Tibet	16	4.9%
Dali-Tibet	16	4.9%
Qinghai Lake	79	24.2%
Hainan Island	63	19.3%
Shangri-la	15	4.6%
Silk Road	11	3.4%
Beijing-Mohe	44	13.5%
Xinjiang-Tibet	3	0.9%
Days of cycling		
7 or below	35	10.7%
8-14	83	25.5%
15-21	130	39.9%
22 or above	78	23.9%

A correlation analysis was conducted to examine the coefficient between participants' motivation and satisfaction. The result showed that there was a positive correlation between motivation and satisfaction ($r = .794$) (Table 2). The result indicated that people who have higher motivation also had higher satisfaction in their cycling adventure tour.

Table 2
The correlations of participants' motivation and satisfaction

Correlations			
		Motivation	Satisfaction
Motivation	Pearson Correlation	1	.794**
	Sig. (2-tailed)		.000
	N	326	326
Satisfaction	Pearson Correlation	.794**	1
	Sig. (2-tailed)	.000	
	N	326	326

** . Correlation is significant at the 0.01 level (2-tailed).

Independent t-test analysis and one-way ANOVA analysis

Independent t-test and one-way ANOVA were conducted to determine the group differences between participant's gender,



age, marriage status, education level, occupation, income, residential locations, number of cycling times, different seasons, cycling routes, length of cycling, satisfaction factors,

- ▶ The motivation factor “experience” has significant difference between male participants and female participants ($t=-.675$, $p<.05$) and other motivation factors have no significant difference between males and females.
- ▶ The result indicated that there is no significant difference in motivation among different age groups ($p>.05$).
- ▶ There is no significant difference between single and married cycling participants except for the motivation factor “interpersonal relationship” ($t=2.411$, $p<.05$).
- ▶ The motivation factor “professional skill” has significant difference among different education levels ($p<.05$) and other motivation factors have no significant difference based on educational levels of participants.
- ▶ There is no significant difference in motivation factors among different occupation ($p>.05$).
- ▶ There is no significant difference in motivation among different monthly income groups ($p>.05$).
- ▶ The result indicated that motivation factors “experience” ($p<.05$) and “physical fitness” ($p<.05$) have the significant difference among different residential locations.
- ▶ The result indicated that most motivation factors have significant differences based on different number of cycling times. Motivation factors “experience” ($p<.05$), “physical fitness” ($p<.05$), “relaxation” ($p<.05$) and “selfachievement” ($p<.05$) have significant difference among different number of cycling times.
- ▶ There was no significant differences based on cycling seasons based on different seasons ($p>.05$).
- ▶ The result indicated there is no significant difference among different cycling routes ($p>.05$).
- ▶ The result indicated that there is no significant difference based on length of cycling ($p>.05$).
- ▶ The result indicated that there is no significant difference between male and female for all the satisfaction factors ($p>.05$).
- ▶ One-way ANOVA was conducted to analyze the difference in satisfaction levels of all factors in the satisfaction list based on different age groups. The result revealed a significant difference in factor “environment and equipment” ($p<.05$).
- ▶ An independent t-test was conducted to examine whether the marital status had a significant difference on the satisfaction levels. The result revealed that there is no significant difference based on marital status ($p>.05$).
- ▶ A comparison was made by one-way ANOVA for all the items in satisfaction levels to determine whether or not educational level played a factor in making a difference on the satisfaction level. The result revealed there had no significant difference based on different educational levels ($p>.05$).
- ▶ One-way ANOVA was conducted for every sub-scale in the satisfaction questionnaire to determine whether or not occupation served as a factor influence participants’ satisfaction levels. The result indicated that no significant difference between in the satisfaction questionnaire except the sub-scale “environment and equipment” ($p<.05$).

- ▶ One-way ANOVA test was conducted to examine the satisfaction level as it related to the factor of monthly income. Among all the satisfaction sub-scales the result of one-way ANOVA showed that there is no significant difference based on different monthly incomes ($p>.05$).
- ▶ One-way ANOVA test was adopted to determine whether or not residential location served as a factor in influence participant cycling satisfaction levels. The result revealed a significant difference for the sub-scale “environment and equipment” ($p<.05$).
- ▶ One-way ANOVA test was conducted to examine whether or not number of cycling times served as a factor in influence participant cycling satisfaction levels. The result shows that there was no significant difference on satisfaction levels based on number of cycling times ($p>.05$).
- ▶ One-way ANOVA test was conducted to examine whether or not season served as a factor influencing participant cycling satisfaction levels. The result revealed a significant difference for sub-scales “environment and equipment” ($p<.05$) and “overall services quality” ($p<.05$).
- ▶ One-way ANOVA test was conducted to analyze the satisfaction level as it related to the factor of cycling route. Among all the satisfaction sub-scales, Results showed that there was no significant difference based on different cycling routes among all satisfaction sub-scales ($p>.05$).
- ▶ One-way ANOVA was conducted to analysis the difference in satisfaction levels of all sub-scales in the satisfaction list based on different days of cycling adventure tour. The result revealed that there was no significant difference based on different length of cycling days ($p>.05$).





DISCUSSION and CONCLUSION

Based on the demographic characteristics of the participants, it clearly indicated that cycling adventure tour participants tended to be younger (53.7% were 23-30 years old), and cycling adventure tour was popular among males (57.1%), single (97.2%), and students (82.8%). Most of participants were well educated (71.5% with bachelor degree) and most of them lived in north of China (34%).

Based on the statistical results, table 3 showed primary participation behavior of respondents.

Table 3
Respondents' primary participation behaviors

Variables	Level	Frequency	Percentage
Number of cycling times	1-2	273	83.7%
Prefer season	Spring	190	58.3%
Prefer cycling route	Sichuan-Tibet	79	24.2%
	Qinghai Lake	79	24.2%
Number of cycling days	15-21	120	39.9%

(1) Frequency of participating: Most subjects reported that they had less than 2 times cycling adventure tour experiences before; this group included 273 respondents (83.7%). Sung (2004) showed that American adventure travelers might take at least once adventure trip per year (91.8%). Cycling adventure tour is a new tourism category developed in recently years in China. As compared to other types of tourism, it is still in early stages and a lot of people still not familiar with it. While adventure tourism is mature development in America and most American are more likely adventure activities than Chinese. Therefore, the result of this study was different from Sung's, but it is suited to realities of China adventure tourism.

(2) Prefer season: The majority of respondents indicated that spring (from March to May) was their prefer season to take cycling adventure tour; this group included 190 respondents (58.3%). Following by autumn (23%). Kuo (2007) researched scuba diving holiday tourism participants and found that they preferred participating from April to September. Chiang (2001) studied golf holiday participants and found that most of them preferred spring and fall to participate. Therefore, these results showed that participants have different prefer seasons related to different types of sports tourism. In China, summer is too hot and winter is too cold for cycling adventure tour, while spring is a good time to go on a tour and close to the nature. Most university students have enough time to go on their graduation in spring. So the result was reliable.

(3) Prefer cycling routes: Sichuan-Tibet route and Qinghai Lake route were two preferred cycling adventure tour route reported by respondents; there were 79 respondents (24.2%) indicated they preferred Sichuan-Tibet Route and 79 respondents (24.2%) reported they preferred Qinghai-Lake Route. The results indicated that people preferred cycling to western region of China where have beautiful natural scenery, good ecological environment and far from the city crowd. Tibet and Qinghai are two mysterious places attract people eager to explore. Participants might find a sense of infinite peace during their tour. Most cycling adventure tour participants came from the regions which

are very developed, such as north of China, south of China and East of China. People in these regions have more work and study pressure, they desire for nature scenes, different experience and relax.

(4) Length of cycling days: The majority respondents reported that the length of cycling adventure tour lasted 15 to 21 days and this group included 120 respondents (39.9%). Sung (2004) investigated adventure travel market and found that most of travelers experienced more than seven days adventure vocation (54.7%). Cycling adventure has its special characters, long distance and long endurance, what's more, most participants choose Sichuan-Tibet route and around Qinghai Lake, it is reasonable for a cycling adventure tour lasts for a long time.

For motivation scale and satisfaction scale, table 4 showed the statistical result of the first rank items for cycling adventure tour. As it related to the motivation scale, majority respondent agreed "I can enjoy beautiful view". The mean of this item was 4.518 and it ranked to the top place. Yeh (2008) investigated snorkeling tourists' motivation, satisfaction and constraint in Taiwan and found that enjoy nature scenery was the major motivator. Lin (2007) also pointed out that people very appreciated the beautiful scenes during their tourism. As it related to the satisfaction scale, most of respondents agreed that "this is a good experience for me". The mean of this item also was 4.518 and it also ranked to the first place. Gao (2003) pointed out that participates satisfaction in leisure tourism was mainly based on their practical experiences. The results of this study showed that most of participants were satisfied with their experiences during cycling adventure tour.

Table 4
The top ranking items for motivation factors and satisfaction factors

Scale	Item	N	Mean	SD	Rank
Motivation	I can enjoy beautiful view	326	4.518	0.691	1
Satisfaction	This is a good experience for me	326	4.518	0.616	1

In accordance with the description of statistics for the sub-scales of motivation and satisfaction, table 5 showed top-ranking dimensional factors related to cycling adventure tour participants' motivation and satisfaction. The majority of respondents reported motivation factor "physical fitness" ranked to the top place; the mean of this motivation factor was 4.415. Shu et al.(2008) researched on the behavior and motivation of domestic sports tourist and found that the "health and fitness" was the most important motivator. The results indicated that physical exercise to enhance physical fitness is one of the features of sports tourism. People wanted to improve their health by participating sports tourism. As related to satisfaction factors, "spiritual experience" ranked to the first place and the mean of this factor was 4.270. Williams (2009) mentioned that adventure tourism satisfaction always related to positive emotional experiences, such as happiness, challenge, fulfillment and self-achievement. The result was consistent with Williams' studied. It indicated that satisfaction is a tourist's emotional state of mind after their experience in adventure tourism.

Table 5
Top-ranking dimensional factors related to motivation and satisfaction

Scale	Factor	Items	Mean	SD	Rank
Motivation	Physical fitness	5,6,7	4.415	0.571	1
Satisfaction	Spiritual experience	14, 15,16,17,18,19,20	4.270	0.544	1

As refer to the correlations of motivation and satisfaction, the statistical result showed that the overall coefficient between motivation and satisfaction was $r = .794$. It indicated that there is a positive correlation between participants' motivation and satisfaction. It showed that when the participants' motivation increased, the participants' satisfaction also increased. According to correlation analysis result, it indicated that when the participants' motivation was higher, they have enough motivation to engage in cycling adventure tour. When they delighted in the cycling adventure tour, the level of satisfaction increased. The result provided positive evidence to support the hypothesis four. The result was same as in Kuo's 2007 study, Tsai's 2007 study, Chien's 2008 study and Lu's 2007 study. Liang (2007) studied participation, motivation and satisfaction among golfers. The results showed that there is were positive correlations between participants' motivation and overall satisfaction with the court, services quality, facilities and equipment.

Conclusion

From the results, it can be seen that the majority cycling

adventure tour participants in China are males who aged from 23 to 30, single and most of them are university students with high educational levels and seldom income. Students or young people are always curious to pursuit new things and to pursuit different experiences. Students and young people will become the main force to promote cycling adventure tour development in China. For the participant's behaviors, Sichuan-Tibet cycling line and Qinghai lake cycling line are the top two favorite cycling routes which cyclists always chose to do their cycling adventure tour. Scenery and culture on these two cycling routes are very nature, beautiful and special, such as snow mountains, lakes, grassland and so on. The scenery was very different from other regions of China. What's more, the road conditions of this two routes are really not good and they are in the Tibetan Plateau, so good physical conditions and persistent spirit are needed. Young participants would like to choose these cycling routes. They not only could appreciate beautiful views, but also could have a different spiritual experience. The results also showed that enjoy the beautiful views was the most motivator item and the physical fitness was the most motivator factor to encourage participants to do the cycling adventure tour. For the satisfaction, the most satisfaction part of their cycling adventure tour was the experience, especially the spiritual experience. RMA





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