

The Behavior of Leisure Participation of College Table Tennis Athletes

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Abstract

The purpose of this study was to analyze the mediator effect of degree of sport participation between exercise self-efficacy and behavior of leisure participation, and to explore the current situation of exercise self-efficacy, degree of sport participation, and behavior of leisure participation of college table tennis athletes at 2008 National Intercollegiate Athletic Game. A total response of questionnaires was 400, and the valid sample was 329. The data was analyzed by the descriptive statistics and hierarchical regression. The results of this study were as followed:

1. The current situation of exercise self-efficacy, degree of sport participation, and behavior of leisure participation of college table tennis athletes.

(a) The mean of the total exercise self-efficacy of the subject was 2.88. (b) The percentage of the different degree of sport participation was almost the same. (c) The mean of behavior of leisure participation was 2.71, and the static leisure behavior had the highest mean score (M=3.84).

2 There was partial mediator effect of degree of sport participation between exercise self-efficacy and behavior of leisure participation.

Key Words : Exercise Self-efficacy, Degree of Sport Participation, Behavior of Leisure Participation, Mediator, College Table Tennis Athletes

1. INTRODUCTION

1.1 Research Background and Motive

Making collegiate table tennis team as example, players are divided into two types: "Open Group Physical Education Course" and "General Group General Courses". For open group players, in addition to regular training, they have to sustain professional training loading and the pressure of results breakthrough. To do training or to rest seems to be their daily routine. Comparatively, players of general group have more freedom in time management.

The ways players arrange and utilize their leisure time after training affect training effects and competition results. However, San-Chai Tu (2003) found that domestic players mostly engage in taking alcoholic drinks, strolling around, playing cards, playing computer games, and other activities which affect athletic training effects and competition results. Therefore, it is necessary to understand collegiate table tennis players' leisure participation and the factors affecting leisure participation as to provide the coach as reference for physical fitness restoration in addition to professional training.

A research on recent university alumni physical activities in the United States of America (Sparling & Snow, 2002) indicates that physical activity patterns during college years are important influences on habitual physical activity during overall adult life. There are 84.7% of college students had been regular exercisers persevere in their physical activity in the years following graduation. Conversely, 81.3% of those who had been nonexercisers during college time do not voluntarily participate in any exercises and even do lesser exercise after graduation. Domestic researches also pointed out that (Szy-Chao Lee, 2000; Rui-Chee Chen, 2001 ; Chien-Li Huang, 2002, Miao-Chun Lai, 2003; Li-Fong Lin, 2004)also pointed out there is positive correlation between college students' exercise self-efficacy and regular exercise behavior. With this, it is derived that the general public exercising

habits is formed during college life. Through physical education or leisure activity courses, college students are exposed to positive sports and leisure experience. At the same time, sports and leisure behavior become a part of daily life which is not easily be affected by weather or any other external factors (such as money, time, transportation, etc.) which then further influence individual exercise capacity determination; this is known as exercise self-efficacy. Dzewaltowski (1989) and Garcia and King (1991) pointed out that exercise self-efficacy refers to individual confidence degree of initial or sustaining exercises under the specific exercise circumstance of short of support or with limitation. Domestic researches show that (Tai-Chang Hsu, 2000; Rui-Chee Chen, 2001) in general public, there is positive correlation between exercise self-efficacy and degree of exercise participation. Besides, exercise self-efficacy is the important predictive factor of degree of exercise participation

(Guan-Ru Chen, 2004). But, among all the researches related to exercise self-efficacy and degree of exercise participation, there is very rare discussion on the influence of athletes' exercise self-efficacy on the degree of exercise participation. For this reason, this research uses collegiate table tennis players as the research objects in analyzing the moderating effects of degree of exercise participation between exercise self-efficacy and leisure participation behavior.

1.2 Research Objectives

- (1) To understand the current conditions of exercise self-efficacy, degree of exercise participation, leisure participation behavior of collegiate table tennis players.
- (2) To examine the moderating effects of collegiate table tennis players' degree of exercise participation between exercise self-efficacy and leisure participation behavior.

2. RESEARCH METHODOLOGY

2.1 Research Object

Making table tennis team participated in 2008 National Intercollegiate Athletic Game as the main research object, this research examines the relations among players' exercise self-efficacy, degree of exercise participation, and leisure participation behavior. Convenient sampling is adopted. There are 400 questionnaires issued to 22 colleges. Total of 362 questionnaires retrieved with 90.5% of valid response rate. After deleting 33 invalid samples, the effective questionnaire return ratio is 82.25%.

2.2 Research Tools

(1) Exercise Self-Efficacy Scale

The exercise self-efficacy of this research adopted Li-Fong Lin (2004) "Exercise Self-Efficacy Table" for evaluation purpose. Total of 15 questions with 0.87Cronbach's α . Scoring is based on Likert scale, from "5 points" to "1 point", the levels are divided according to the sequence of "absolute confidence", "80 percent confidence", "50 percent confidence", "20 percent confidence", and "absolute no confidence". The higher the score is, the higher the object's exercise self-efficacy is. Lower score means lower exercise self-efficacy of the object.

(2) Degree of exercise participation

This research adopts the formula of Blair (1984), Chi-Chiang Chong (2000) . Calculation is base on the product sum of exercise frequency, exercise hours, and exercise intensity. The higher the score is, the more exercises are participated. The formula is as follow:

Degree of Exercise Participation = $8 \times$ weekly vigorous exercises frequency \times exercise duration + $4 \times$ weekly exercise frequency \times exercise duration + $1.5 \times$ weekly mild exercise frequency \times exercise duration

The degree of exercise participation of all the research objects is divided into three groups. Percentile rank is used to divide the participation degrees into: high degree of exercise participation, medium degree of exercise participation, and low degree of exercise participation.

(3) Leisure participation behavior scale

The leisure participation of this research refers to the types and frequency of collegiate table tennis players' leisure activities. This scale is made by referring to the leisure participation scale of Shun-Cong Cheng (2001). The types of activities are divided into three dimensions: physical fitness, consumptive, and static leisure. Likert scale is used for participation frequency measurement. "Never participated", "Seldom participate", "Occasionally participate", "Often participate", and "Regular participate" are given with "1 point" to "5 point" in sequence. The higher the score is, the better the leisure participation is. The lower the score is, the worse the leisure participation is.

2.3 Data Analysis

This research adopts SPSS 12 .0 Chinese edition as statistical analysis software. Statistical analysis methodologies are as follow:

- (1) To understand the current conditions of research objects' exercise self-efficacy, degree of exercise participation, and leisure participation behavior by descriptive statistics.

- (2) To analyze the moderating effects of collegiate table tennis players' degree of exercise participation between exercise self-efficacy and leisure participation behavior with the use of hierarchical multiple regression.
- (3) The significance level of all statistical tests of this research is set as $\alpha < .05$.

3. CONCLUSION AND DISCUSSION

3.1 Current Conditions Analysis

- (1) The current exercise self-efficacy of collegiate table tennis players.

As shown in Table 1, under the circumstances of short of support or with limitation, collegiate table tennis players only reaches the average value of confidence degree in maintaining regular exercises. From this finding, it was necessary to reinforce the willingness of collegiate table tennis players in putting more effort and maintaining exercises under all kinds of limitations and difficulties.

Table 1 Exercise Self-Efficacy of Collegiate Tennis Players Fact Sheet

Exercise Self-Efficacy	Average	Standard Deviation
1. When I am out of time, I still manage to get some time to do regular exercises.	3.08	0.94
2. When I feel tired, I still can do regular exercises.	2.89	0.91
3. When the weather is no good, I still can do regular exercises.	3.11	1.01
4. When I am not feeling well, I still can do regular exercises.	2.43	0.94
5. When I am not in good mood, I still can do regular exercises.	3.27	1.04
6. When I feel lazy, I still can do some regular exercises.	2.85	0.96
7. When I have no companion for exercise, I still can do regular exercises.	2.87	1.07
8. When I have a lot of homework to be done (such as test, assignment), I still can do regular exercises.	2.64	1.00
9. When I need to do part-time job, I still can do regular exercises.	2.84	1.00
10. When I need to spend more money on exercise, I still can do regular exercises.	3.00	0.96
11. When my whole body feels ache and discomfort, I still can do regular exercises.	3.00	1.03
12. When there is no appropriate venue for exercise, I still can do regular exercises.	2.71	0.96
13. When my close friends ask me out to have fun, I can still reject them and do the regular exercises as planned.	2.70	1.06
14. When there is something more interesting available (such as watching television), I still can do regular exercises.	2.90	1.07
15. When there are a lot of house chores need to be helped out, I still can do regular exercises.	3.01	0.97
Grand Average	2.88	0.62

- (2) The current condition of collegiate tennis players' degree of exercise participation

According to the findings from Table 2, there is no significant difference among collegiate tennis players distribution variance among high exercise participation degree, medium exercise participation degree, and low exercise participation degree. Presumably, this is related to the objects. The players are divided into open group and general group. Training time for open group is longer and the frequency and intensity of training content are higher too. Particularly, when there is competition, the open group players are under stress. Comparatively, general group players have more relaxing training and the content is mostly focuses in basic movements. That is why open group players' training frequency and intensity are low. They have no pressure on competition results. And, their training time is spontaneous.

Table 2 Collegiate Table Tennis Players' Degree of Exercise Participation Fact Sheet

Degree of Exercise Participation	Number	Percentage (%)	Average
High exercise participation degree	112	34.0%	5373.86
Medium exercise participation degree	105	31.9%	2273.74
Low exercise participation degree	112	34.0%	794.09
TOTAL	329	100%	2825.39

(3) The current condition of collegiate tennis players' leisure participation behavior.

According to Table 3 findings, current collegiate table tennis players mostly participate in indoor and static leisure activities such as watching television, watching video tapes, listening to radio, listening to music, and sleeping. These findings match with the research findings of Ching-Chong Yu (2003) on the current conditions of athlete leisure activities. The research shows that the players always participate in those static leisure activities which are not physical vigor consuming and help in settling the body and mind. This phenomenon can be explained with The Compensatory Theory by Friedrich Engels and Marx (translated by Shu-Fang Tu, 1996). Compensatory Theory stated that when someone has the chance to avoid from his regular routine job, he will do something which is completely contrary. Meaning, people use leisure time to balance their jobs or the depressing feelings of bored from work. This illustrated that some leisure activities (translated by Shu-Fang Tu 1996) of athletes or porters were more on static leisure activities when they were off from duties (translated by Yi-Guan Ye and others, 2005)

Table 3 Collegiate Table Tennis Players' Leisure Participation Behavior Fact Sheet

Activity Classification	Activity	Average	Standard Deviation
Physical Fitness	1. Jogging, hiking	3.05	0.98
	2. Swimming	2.43	0.96
	3. Mountain-Climbing	2.37	0.94
	4. Aerobics	1.86	0.96
	5. Canoe, boating	1.42	0.83
	6. Cycling	2.55	1.15
	7. Skateboarding	1.40	0.83
	8. Rock Climbing	1.35	0.80
	9. Weight Training	2.47	1.18
	Average Score	2.10	0.96
Consumptive Leisure	10. Shopping	3.33	1.01
	11. Movie Watching	3.21	1.04
	12. Singing in KTV	2.90	0.96
	13. Going to internet cafe	2.04	1.07
	14. Enjoying concerts	1.99	1.01
	15. Soak in Hot Spring	2.17	0.96
	16. SPA	1.96	1.04
	17. Billiards	2.04	1.04
	18. Golfing	1.59	0.95
19. Shopping in night market	3.60	0.99	
	Average Score	2.48	0.63
Static Leisure	20. Watching television, video tapes	4.01	0.93
	21. Listening to radio, music	4.06	0.97
	22. Playing computer games	3.33	1.26
	23. Internet Surfing or Online Game	3.82	1.13
	24. Sleeping	4.22	0.98
	25. Reading	3.50	1.08
	26. Chatting	3.94	1.00
	Average Score	3.84	0.55
	Grand Average	2.71	

3.2 The moderating effect analysis of degree of exercise participation between exercise self-efficacy and leisure participation behavior.

(1) The moderating effect of the degree of exercise participation between exercise self-efficacy and physical fitness leisure participation behavior.

From the data of Model 1 in Table 4, there were 2% explained total variance. There was 0.2% explained of total variance in Model 2, 2.2% in Model 3, and 2.8% in Model 4. There was significant positive influence of exercise self-efficacy on the degree of exercise participation. And, there was also significant positive influence of exercise self-efficacy on physical fitness leisure participation behavior. However, there was no significant influence of the degree of exercise participation on physical fitness leisure participation behavior. Further tested with chows test, F value of 3.08 ($< F^*=3.84$) does not reach significant level. Therefore, the degree of exercise participation did not play moderating role between exercise self-efficacy and physical fitness leisure participation behavior.

Table 4 Physical Fitness was Dependent Variable of Hierarchical Multiple Regression Analysis

Dependent Variable / Independent Variable	Exercise Participation	Leisure Participation Behavior (Physical Fitness)	Leisure Participation Behavior (Physical Fitness)	Leisure Participation Behavior (Physical Fitness)
	Model 1	Model 2	Model 3	Model 4
Exercise Self-efficacy	.152*	---	.157*	.172*
Degree of Exercise Participation (moderating)	---	-.070	---	-.097
R Square	.023	.005	.025	.034
Max-rescaled R-Square	.020	.002	.022	.028
Chow Test of Model 3 and Model 4	F=3.08 < F*=3.84			

* p < 0.05

(2) The moderating effect of the degree of exercise participation between exercise self-efficacy and consumptive leisure participation behavior.

From the data of Model 1 in Table 5, there were 2% explained total variance. There was 1.1% explained of total variance in Model 2, 0.9% in Model 3, and 2.5% in Model 4. There was significant positive influence of exercise self-efficacy on the degree of exercise participation. And, there was also significant positive influence of exercise self-efficacy on consumptive leisure participation behavior. However, there was positive significant influence of the degree of exercise participation on consumptive leisure participation behavior. Further tested with chows test, F value of 6.34 (< F*=3.84) has reached significant level. Therefore, the degree of exercise participation played moderating role between exercise self-efficacy and consumptive leisure participation behavior.

Table 5 Consumptive Leisure was Dependent Variable of Hierarchical Multiple Regression Analysis

Dependent Variable / Independent Variable	Exercise Participation	Leisure Participation Behavior (Consumptive Leisure)	Leisure Participation Behavior (Consumptive Leisure)	Leisure Participation Behavior (Consumptive Leisure)
	Model 1	Model 2	Model 3	Model 4
Exercise Self-efficacy	.152*	---	.110*	.131*
Degree of	---	-.119*	---	-.139*

Exercise Participation (moderating)				
R Square	.023	.014	.012	.031
Max-rescaled R-Square	.020	.011	.009	.025
Chow Test of Model 3 and Model 4	F=6.34 > F*=3.84			

* p < 0.05

(3) The moderating effect of the degree of exercise participation between exercise self-efficacy and static leisure participation behavior.

From the data of Model 1 in Table 6, there were 2% explained total variance. There was 0.1% explained of total variance in Model 2, 0.5% in Model 3, and 0.8% in Model 4. There was significant positive influence of exercise self-efficacy on the degree of exercise participation. And, there was also significant positive influence of exercise self-efficacy on physical fitness leisure participation behavior. However, there is no significant influence of the degree of exercise participation on static leisure participation behavior. Further tested with chows test, F value of 1.92 (< F*=3.84) did not reach significant level. Therefore, the degree of exercise participation does not play moderating role between exercise self-efficacy and static leisure participation behavior.

Table 6 Static Leisure was Dependent Variable of Hierarchical Multiple Regression Analysis

Dependent Variable / Independent Variable	Exercise Participation	Leisure Participation Behavior (Static Leisure)	Leisure Participation Behavior (Static Leisure)	Leisure Participation Behavior (Static Leisure)
	Model 1	Model 2	Model 3	Model 4
Exercise Self-efficacy	.152*	---	-.089	-.100
Degree of Exercise Participation (moderating)	---	.062	---	.077
R Square	.023	.004	.008	.014
Max-rescaled R-Square	.020	.001	.005	.008
Chow Test	F=1.92 < F*=3.84			

of Model 3 and Model 4	
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* $p < 0.05$

4. CONCLUSION

The findings of the research showed that there is average of 2.88 of collegiate table tennis players' exercise self-efficacy. This reveals that the confidence level of objects in maintaining regular exercise gets close to average under special circumstances. In another word, collegiate table tennis players' exercise self-efficacy is low. There are 112 players of high exercise participation which account for 34.0%, 105 (31.9%) players of medium exercise participation, and 112 players of which account for 34.0% of low exercise participation. These show that there was not much difference of distribution in terms of collegiate table tennis players on the degree of exercise participation. There was total average of 2.71 leisure participation behavior of collegiate table tennis players during their leisure time. Among all, static activities occupy the most ($M=3.84$), with comparatively higher proportions in watching television, watching video tapes, listening to radio, listening to music, and sleeping. Tested and verified by hierarchical multiple regression and chow test, the degree of exercise participation only has moderating effect between exercise self-efficacy and consumptive leisure participation behavior. Meanwhile, between exercise self-efficacy and static leisure participation behavior, the degree of exercise participation plays no moderating role.

5. PROPOSAL

The findings of this research revealed that collegiate table tennis players' self-efficacy in overall exercises only reach the average of 2.88 average. Coaches have to focus on the ways to increase table tennis players' exercise self-efficacy in future professional trainings. Relevant units shall reinforce the leisure education concepts of basic level coaches so that training is focuses more on players' overall development rather than limited to special-type training. Train up the players for voluntarily exercise participation or competition desire as to increase their exercise self-efficacy.

It is found in the findings that there was low leisure participation frequency of most of the collegiate table tennis players. According to literature reviews (Chuan-Tsou Chen, 1993), if the players are able to arrange positive leisure activities during non-exercising and sleeping hours, their bodies and minds for sure obtain adequate rest which is helpful in future trainings and upgrades of competition results. This is to propose colleges shall carry out proper planning on campus leisure facilities with more diversified leisure activities information, reinforce leisure education courses, upgrading collegiate students' cognition and skills of leisure. Meanwhile, coaches shall train up table tennis players with different leisure skills in making choices of balance leisure participation. Expose the players with new activity varieties and effective time management. Choosing the suitable leisure activities contribute to physical fitness restoration as well as the advancement of training effects and competition results.

Research findings also showed that degree of exercise participation only possesses moderating effect between exercise self-efficacy and consumptive leisure participation. But, there was only 3.1% of R Square value. Meaning, there are 96.9% of unexplained. Therefore, this was to propose to future researches that other variables can be obtained from literature review or practical experience as for further examination and analysis.

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