

行政院國家科學委員會專題研究計畫 成果報告

台灣脊髓損傷者運動參與及困難之研究

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# 行政院國家科學委員會補助專題研究計畫成果 報告

## 台灣脊髓損傷者運動參與及困難之研究

### Sport Participation and Barriers among Individuals with Spinal Cord Injury in Taiwan

計畫類別： 個別型計畫            整合型計畫

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關鍵詞：身心障礙運動，運動參與，運動障礙，脊髓損傷，社會化

## 中文摘要

全民參與休閒活動或運動一直是人們的基本權力,然而有關身心障礙者參與運動這一方面之研究從未在台灣深入的探討,在國際上類似之研究也僅有少數幾篇(以歐洲、北美、及澳洲身心障礙者進行研究);本篇研究的目的是在於探討台灣脊髓損傷者休閒運動參與之社會化因子、環境情境及參與之原因與困難,資料的收集將採用 Wu & Williams(2001)所發展之脊髓損傷者運動參與問卷以及使用質性研究訪談進行,568 名台中縣市脊髓損傷者經隨機抽樣填寫本研究問卷,經聯絡三次後共計 245 名回覆本問卷,之後 10 位脊髓損傷者被深入訪談以進一步了解運動或活動參與之社會化過程,經由本篇之研究結果發現僅有 32 名脊髓損傷者(13.1%)有每週例行參與休閒運動的習慣,有例行參與休閒運動者其健康情況與體能狀況明顯優於沒有例行參與休閒運動者,而限制脊髓損傷者參與休閒運動之因素主要為身體因素(64.5%)、交通因素(37.1%)與經濟因素(28.2%);另外男性參與休閒運動比例明顯高於女性,未婚者參與休閒運動比例明顯高於已婚與離婚者,有固定工作者與交通工具者其參與休閒運動比例明顯較高。而每週例行參與休閒運動者其在受傷前有 78.1%即有參與休閒運動的習慣,而復健中心為他們首次參與休閒運動的地方,介紹他們參與休閒運動之社會因子主要為參與運動之殘障朋友(56.3%)、次之為物理治療師(15.6%),在參與之過程中主要遇到的困難包括使用專用之運動輪椅與器材、訓練場地、學習運動技巧、經費等問題,參與休閒運動之主要原因以健康與體適能最為重要、競賽之原因最不重要。經由本研究可初步了解台灣脊髓損傷者若參與運動或活動之社會化過程與經歷之困難;在社會環境之因子中,醫院之復健計劃與特定之身心障礙俱樂部或組織對於脊髓損傷者初期參與運動之影響性;及台灣脊髓損傷者參與運動之主要原因與可能潛在之困難;經由本篇研究之結果可提出建議以改善台灣脊髓損傷者復健運動計劃之方向,特別是將休閒運動之觀念融入臨床復健治療之中以克服可能之困難,同時本研究也可幫助台灣脊髓損傷者發展適當之策略以增進其參與運動及休閒活動。

## 計畫英文摘要：

Keywords : disability sports, sport participation, sport barriers, spinal cord injury, socialization

### Abstract

People participate in recreational activities or competitive sports are their basic human rights. However, this issue has not been investigated in Taiwan in any depth. Even in international research, this topic is only discussed in a few countries (e.g., European, North America and Australia). The purpose of this study was to identify socialization agents, contexts, reasons and barriers of recreational sport participation among individuals with spinal cord injury (SCI) in Taiwan. Quantitative data were collected through the revised questionnaire of “Sport Participation for People with Spinal Cord Injury” (Wu & Williams, 2001) and qualitative data were collected through interview. Five hundred and sixty-eight people with SCI in Taichung city and county were selected to complete the questionnaire in this study. Through contacting subjects in three times, two hundred and forty-five people with SCI returned the questionnaire. Then, 10 active people with SCI were interviewed to clarify the socialization process and episodes of sport participation in detail. Results showed that (a) only thirty-two people with SCI (13.1%) regularly participated in recreational sports at least once per week, (b) regular participants in recreational sports were better than non-regular participants in perceived physical fitness and health, (c) the main barriers of influencing recreational sports were factors of physical body (64.5%), transportation (37.1%), and financial problems, (d) men were more than women in participating in recreational sports, (e) single participants were more than married and divorce participants in participating in recreational sports, (f) participants who had jobs and vertices for transportation had higher participated rate in recreational sports, (g) 78.1% regular participants in recreational sports before lesion, (h) rehabilitation center was the first place in participating in recreational sports, (i) the main introductory social agents in recreational sports were disabled friends (56.3%) and then physical therapists (15.6%), (j) the main difficulties in participating in recreational sports were using specific wheelchair and equipments, finding training facilities, learning sporting skills and financial problems, and (k) the main reasons for participation are for health and fitness not for competition. Through this study, the socialization process and difficulties of Taiwanese SCI people participate in recreational sports and physical activities were identified. In the social environments, the role of the in-hospital rehabilitation program and specialized disability clubs and organizations for introducing disability sports and physical activities to people with SCI were examined. In addition, the main reasons and difficulties for people who participated in disability sports and physical activities were clarified. The results of this study may recommend the Taiwanese government how the direction of the improvement of rehabilitation and exercise programs for people with SCI can be given. In

particular, the concepts of sport for rehabilitation should be included in rehabilitation programs. The application of this study can also help the development of appropriate strategies to encourage people with SCI to participate in sports, recreation and physical activities.

## Introduction

Recently, more research studies focus on quality of life <sup>(1, 2, 3)</sup> and long-term care and treatment of spinal cord injury (SCI) <sup>(4)</sup>, physical activities and sport participation become increasingly important in SCI rehabilitation <sup>(5, 6)</sup>. An awareness of sport and active leisure participation allows rehabilitation and sport science professionals to offer programs that can enable patients with physical impairments (e.g., spinal cord injury, poliomyelitis, amputation, cerebral palsy, etc) to maintain their active lifestyle and enhance future actively expectations. Physical activities and sport participation have been proved to offer many benefits for people with physical impairments. For example, they may help to reduce emotional depression, decrease re-hospitalization, improve family and social interactions, and prolong life expectancy among patients <sup>(7, 8)</sup>.

With regard to sport participation among people with physical impairments, the related research is little. Most research studies concern individuals with spinal cord injury (SCI). Individuals with SCI in Great Britain <sup>(1, 2)</sup>, Sweden <sup>(9)</sup>, Australia <sup>(10)</sup>, and the United States of America <sup>(11)</sup>, for example, have noted that their return to the community is accompanied by restricted participation in sport, leisure and physical activities. This finding is consistent across most studies and, given the extent of the research, supports the contention that the lifestyles of people with SCI tend to be sedentary or less active. Below 5% people with SCI actively participate in physical activities or sports in previous studies. In addition, the previous studies did not have any Asian and Taiwanese data of people with SCI for comparison. Thus, it is difficult to develop appropriate strategies to help people with SCI in sport rehabilitation, recreation activities and sports regarding different cultures and countries. In addition, different countries may have different policies to encourage their people with disabilities to participate in physical activities or sports.

According to the study of Wu and Williams<sup>(2)</sup>, most active people with SCI in Great Britain are often affected by their disabled friends to participate in sports. Medical professionals are not important social agents to influence on their sporting experience and participation. Concerning the reasons of active SCI people in sports, they noted that physical benefits and social interactions are very important. Through this study, it only clarified the social agents and contexts of active British people with SCI in sports. However, sport participation of non-active people with SCI have not been mentioned and discussed in their study. Thus, the total rate of sport participation of people with SCI has not been examined in any depth.

The purpose of this study was to examine sport participation and barriers among individuals with SCI in Taiwan. The objective was to compare the biographical and sport participation profiles and barriers of those people. The particular concern was

the patterns of socialization into disability sports and physical activities. These included (a) the biographical elements of their disability sport and physical activity careers; (b) the individuals who introduce them to their current disability sport and physical activity; (c) the contexts in which they are introduced to the sport and physical activity; (d) the difficulties they encounter when first introduced to the disability sport and physical activity; (e) the sources of information they found useful; and (f) their reasons for participating in their particular disability sport and physical activity. By focusing on these topics it was possible to establish a preliminary picture of the different ways in which routines for active lifestyle can get successfully produced, reproduced and transformed by individuals with SCI in Taiwan.

### **Methods**

The subjects in this study were individuals with SCI living in the area of Taichung city and county. Data collected were through two stages. In the first stage, 568 people with SCI were randomly selected. The two SCI associations in Taichung were contacted in order to collect the basic information of all members in the two SCI associations. The including criterion as subjects in this study was that the person's injury was over 2 years. Then, the questionnaire was mailed to 568 people with SCI around Taichung. If the subjects did not complete or return the questionnaire, the same questionnaire was sent again in order to increase the return rate. Through three times of contacting these people, 256 people with SCI returned the questionnaire. However, 245 questionnaires were valid. The valid return rate was 43.13%.

In the second stage, 10 active people with SCI were interviewed in order to identify the socialization process, social context and agents, reasons and barriers during their previous sport participation and physical activities.

### **Questionnaire**

A Disability Sport Participation questionnaire, which was constructed by Wu & Williams (2001), was used for data collection. This questionnaire was translated into Chinese with approval because the principal investigator was one of the authors of the Disability Sport Participation questionnaire. However, a few questions needed to be modified because of cultural differences between Great Britain and Taiwan. In addition, interviews with people with SCI and administrators were

conducted to identify relevant items and to refine the question wordings, question order and response formats. The revision of the previous version of the questionnaire helped to maintain the content validity of the instrument. The questionnaire was piloted with the help of individuals from several disability sport clubs and SCI associations. In addition, the test-retest reliability was examined in this study. The test-retest reliability was  $ICC=0.824-0.978$ .

Questions in the questionnaire were arranged into five groups under the headings of personal (including gender, age, employment, occupation, sport participation, car use, training information), impairment (including level of SCI, age when impairment acquired, lesion level and severities, years of disablement), socialization (including introductory agent, introductory context), participation (including frequency of current sport participation, reasons and importance for sport participation), and barriers (including transportation, financial, occupation, environment, equipment, coaches, social support, and other significant agents and contexts).

### **Interview**

After the statistical analysis of the questionnaire, the general patterns and rate of sport participation of people with SCI were clarified. Then, 10 represented people with SCI through purposive sampling (the snow ball method) were interviewed to identify their experiences of sport and physical activity during their SCI careers in depth. Most questions in interview were arranged as open questions which were related to process of sport participation, social contexts and agents, reasons and barriers. In particular, episodes during their SCI careers were noticed. All interviews were taped and then translated.

### **Data collection and analysis**

Questionnaires were administrated with the aid of the local Taichung City and County associations of spinal cord injury in Taiwan. The questionnaire with a gift was sent to people with SCI to encourage the higher return rate. Descriptive statistics (e.g., frequencies and percentages) were used to understand introductory socialization agents, contexts, reasons of sport participation and barriers of those Taiwanese people with SCI. Comparisons between different genders and age groups were made using either chi-square. Sport participation and barriers of active and non-active people with SCI were also compared through using chi-square or t-test analyses. An alpha level of .05 was chosen for statistical significance in all tests in this study.

Qualitative methods were used to analyze data collected through interview. Notes through coding and sorting were to identify categories and concepts to interpret

the socialization process of sport participation and related problems.

## **Results**

In this study, there were 245 people with SCI completed the questionnaire. They were 191 males and 54 females. Ninety-four people were single, 134 people were married and 17 people were divorced. There were 79 people (32.2%) who had full-time or part-time jobs and 158 people (64.5%) who did not have any job. Over 80% of people had income below 20000 Taiwanese dollars every month. Over 90% of people lived with their family. Also 107 people (43.7%) can drive cars or ride motorbikes. About 29% and 18% of people had the hobbies to smoke and drink, respectively. Most people reported that their health was fair (59.6%). About 50% of people had the fair fitness condition. However, also 33.9% and 44.5% of people reported that their health and fitness were poor or bad. One hundred and four people (42.4%) had injury in cervical spine. The main reasons to occur SCI were car accident (47.8%) and fall down (26.5%). There were 140 people (57.5%) who participated in routine exercise or recreational sports before injury. In this study, however, it was found that only 32 people (13.1%) had regular recreational sport participation after injury.

Barriers for people with SCI to participate in recreational sports were listed in Table 1. The top three barriers to recreational sport participation were due to physical body, transportation, and financial problem. The least barriers for recreational sport participation were due to the reasons of friend and social pressure.

Although there were only 32 people (13.1%) participated in recreational sports in this study, there were only 2 females (6.3%) participated in regular recreational sports. More single people (59.4%) participated in recreational sport. Seventeen people had full-time or part-time jobs and 12 people did not have jobs. In addition, 25 people (78.1%) reported that they could drive a car or ride a motorbike. Regarding the health condition of active people with SCI, 22 people (68.8%) had good or fair health conditions and 26 people (81.3%) had good or fair fitness conditions. In addition, 25 people (78.1%) reported that they regularly participated in physical activities before injury. However, there were only 5 people with cervical injuries (15.6%) who participated in recreational sports.

Barriers for active people with SCI to participate in recreational sports were listed in Table 2. The top three barriers to recreational sport participation were due to employment, time, and financial problem. Although physical body and transportation were still the main barriers for active people with SCI, they were not ranked in top three barriers. The least barriers for recreational sport participation were due to the

reasons of friend and social pressure.

The results of the introductory socialization agents and the contexts of active people who started their recreational sport careers are reported in Table 3. Over 50% of active people in this study were introduced to recreational sports through friends (e.g., disability sport playing friends and non-disability sport playing friends). In particular, disabled friends (56.3%) were the main introductory agents in different social contexts. Therapists introduced 15.6% of active people with SCI to the recreational sports. In addition, other agents (e.g., teachers, physicians, and family) play non-significant roles in the introduction of recreational sports or physical activities for people with SCI.

With respect to the socialization contexts of people with SCI into recreational sports, the highest rate of the context occurred in the rehabilitation centers (34.4%) and disabled sport clubs (18.8%) through introduction of the disabled athletes and other social agents. Disabled friends may play main roles in different contexts, such as current disability sport clubs, education, rehabilitation, and sport clubs for the disabled. The contribution of therapists is not limited to the rehabilitation context but extends to the other contexts of disability sport clubs and education. In particular, the contexts of rehabilitation were the most important in this study, 34.4% of active people with SCI recognized that they were introduced to recreational sports in the rehabilitation centers or spinal units.

For active people with SCI, they may face some difficulties when they participated in recreational sports. In particular, the money problem, using sporting equipment (e.g., wheelchair) and finding proper training facility were the main three difficulties. However, traveling was not the main difficulty for most active people with SCI (Table 4). In this study, most active people with SCI participated in recreational sport between one and three times per week. Also 18 active people (56.3%) spent between one and two hours per time on recreational sport (Table 5).

The results of the main reasons for athletes to participate in disability sport are reported in Table 6. It is clear that seven main reasons in this study were recognized significantly important. In particular, most active people (over 80%) answered that the reasons of fun, health, and fitness were 'very important' or 'important' for them to participate in recreational sports. About sixty percent of active people with SCI answered that social aspects, rehabilitation and recreation were also important for them. However, the reason of competition was the less important comparing with other reasons.

Active people with SCI in this study were asked which sources of recreational sport information were the most useful to them. A number of sources had been identified in the instrument development phase of the study and active people with

SCI were asked to rate their importance using a 4-point rating scale from 'very important' to 'not very important'. They both rated their coaches the most important sources of information, followed by physical therapists. In this study, however, disabled friends, physicians and disabled magazines were considered slightly unimportant sources (Table 7).

In this study, there were only two people (6.2%) who participated in the international level of disability sports. They participated in physical activities and practiced in sports for competition. In addition, 17 people used to attend the national disability sport championships. Although 13 people (40.6%) never participated in competitive sports, their regular participation in physical activities was mainly for fun, health, fitness and recreation. Concerning different variables to influence active and non-active people with SCI on recreational sport participation, the results were reported in Table 10. In this study, different genders, marriage, age group, employment condition, and drive a car or ride a motorbike are main factors to affect participation in recreational sport. In addition, active and non-active people with SCI had significant differences on fitness, impairment condition, and pre-injury recreational sport participation (Table 8).

## **Discussion**

This study has identified that people with SCI seldom participated in recreational sport in Taiwan. In addition, the main factors influencing the participating rate of people with SCI were also examined. In particular, the barriers for people with SCI to participate in recreational sports were also found.

The results of this study have highlighted three important concepts 'socialization agents', 'socialization contexts' and 'the reasons of recreational sport participation' among active and non-active people with SCI to try to develop active lifestyles. The active lifestyle means regular weekly, often daily, participation in physical activity, exercise or even sport training and competition. Those active people with SCI were obviously influenced by other active disabled friends and partially influenced by therapists and other social agents in different social contexts. They may reach the similar level of recreational sport participation but by different paths. In other words, they get help in developing and adapting routines from different agents and in different contexts.

It is recognized that disabled friends, coaches and physical therapists played an important role in introducing recreational sports to people with SCI in Taiwan in this study. However, in this empirical study it was found that the importance of teachers and physicians who introduce disability sports or activities to people was not like

other disabled friends who may help new people or patients with SCI to realize the values of participation of sports and physical activities.

The importance of the rehabilitation and disability sport club introductory contexts for those who had participated pre-trauma suggests that they responded well to the in-hospital programs and, post-discharge, they were attracted to the specialized disability sport clubs. Participation in rehabilitation and disability sport clubs, especially when increases in functional performance are expected, requires the adoption of similar habits (e.g., regular sessions) and similar disciplined, repetitive behaviors to those found in able-bodied sport contexts.

Some clear principles guide recreation or disability sport participation that are supported by particular socialization agents. Health, fitness, fun, and socializing aspects were all rated as important reasons for continuing participation in physical activities. Rehabilitation and competition, however, were not principles with which the people with SCI were mainly concerned. They appear to recognize the benefits of participation in maintaining a level of function but the fact that individuals thought were either very fit or fairly fit, would indicate that increased function or 'comeback' is not relevant when their original SCI trauma took place long ago. Their more experienced disabled peers passed on these values, personal experience and associated social practices to the active people in a manner and to an extent found previously in British wheelchair racing.

Although this study has identified socialization agents, contexts and reasons of recreational sport participation among active individuals with SCI, some of the features of the socialization process require more detailed examination. For example, the role of physical activity in spinal injury units needs to be considered. Wu and Williams (2001) have examined that rehabilitation professionals in spinal injury units do not have more influence in the process of initial socialization into disability sport in the United Kingdom. Physical activity is important in SCI rehabilitation and many spinal injury units and rehabilitation professionals in the UK have historical links with the sports that make up the British Wheelchair Sport Federation. We need to ask, then, whether the relatively low contribution of therapists among athletes is an indication that SCI rehabilitation professionals should educate patients more with respect to sports training and knowledge of disability sports. Should patients be provided with the relevant principles, strategies for actions and social practices as part of their in-hospital programs? If this guidance is offered, could rehabilitation professionals make more use of disabled athletes in their in-hospital programs? Several spinal units in the UK have welcomed and encouraged ward visits by active ex-patients. For example, ex-patients who are present athletes are allowed to talk to current patients in SCI units and use the spinal unit gymnasias or other fitness facilities for training.

Identification of the reasons of sport participation among athletes with SCI in the UK may help people with disabilities in Taiwan to participate in sports and physical activities. Actually, most current people with SCI or other kinds of disabilities in Taiwan do not realize that they can participate in competitive or recreational sports. In this study, it was found that only 13.1% people with SCI were active. The main reasons were that people with disabilities do not have opportunities to obtain appropriate information and ask for relevant resources, and they may be inadequately informed about various matters, such as, house, occupation, transportation, and money. As a result, sports or physical activities may not be their priority in their present lives. In addition, most doctors in hospitals or lecturers in medical universities may still lack the expertise to inform athletes and medical students about disability sports adequately. However, physical therapists were identified they were an important introductory social agent for people with SCI in this study. Thus, the introductory agents for people with disabilities in Taiwan may not be the same as those in the United Kingdom. In this study, only two people with SCI used to participate in international sporting arena. This result was significantly lower than people with SCI in Great Britain.

Although there were 13.1% of people with SCI who participated in recreational sport, some biases may also occur in this study. First, only 43.13% people with SCI replied the questionnaire within three-time contacts. The rest of people who did not complete the questionnaire may have high percentage of non-active people. Thus, the routine participation rate in recreational sport may be even lower than 13.1%. If this is true, most people with SCI in Taiwan who did not participate in any exercise or physical activities may be an unusual situation comparing with the developed countries. Second, this study focused on examination of people with SCI who lived on Taichung area. Thus, the sample of this study may not fully represent the whole population in Taiwan. Third, the selection of subjects in this study only chose people with SCI who joined the SCI associations in Taichung city and county. If people with SCI did not register as a member, this potential subject may be missed. Regarding the above three reasons, the implication of the results in this study needs to be concerned.

In this study, SCI people with specific characteristics may less participate in recreational sports, such as female, marry, old, poor or bad fitness condition, without transportation, without employment, without recreational sport experience before injury, and more severe impairment. Concerning the main difficulties of recreational sport participation, many people with SCI perceived that their physical bodies had problems so they may not be like as the able-bodied to participate in physical activities. Sometimes when they push wheelchair in the street, this occurred strange views from strangers. Thus, when they appeared in public places to play ball games or

do exercise, they may not feel comfortable. In this situation, they prefer not to participate in outdoor physical activities or sports. In the developed countries, people with severe impairments used to stay at isolated environment and not walk outside. Gradually, this manner changed and people with impairments can always join their active lifestyle if they like. However, this situation is still happened in developing countries, such as Taiwan.

In addition, in this study we found that active people with SCI perceived better physical fitness than non-active people. This finding matches the general idea that routine exercise and physical activities can help to improve or maintain physical fitness. However, exercise for people with disabilities have many physical, psychological and social benefits. In this study, the direct evidence to show the physical effects although active people with SCI did not perceive that they had better health conditions than non-active people with SCI. Thus, from the physical perspective, it is essential to promote the participation of physical activities, exercise and recreational sport for people with disabilities.

Clearly, we need to consider the SCI recreation and disability sport career with respect to lifelong care and the management of SCI. It is not only the ways in which SCI individuals become active in recreation and disability sport that should interest rehabilitation professionals but how they continue their participation and their eventual disengagement from disability sport are just as important. This study has identified some of the general features of these recreation and disability sport careers, but there is still much that needs to be uncovered in the lifestyles and biographies of active and non-active SCI individuals.

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**Table 1. Barriers for People with SCI to Recreational Sport Participation**

(n=245)

Variable		Frequency	Percentage
Employment	Yes	40	16.3%
	No	205	83.7%
Physical Body	Yes	158	64.5%
	No	87	35.5%
Financial Problem	Yes	69	28.2%
	No	176	71.8%
Transportation	Yes	91	37.1%
	No	154	62.9%
Information	Yes	17	6.9%
	No	228	93.1%
Time	Yes	57	23.3%
	No	188	76.7%
Psychological Problem	Yes	27	11.0%
	No	218	89.0%
Social Pressure	Yes	5	2.0%
	No	240	98.0%
Family	Yes	41	16.7%
	No	204	83.3%
Training Facility	Yes	42	17.1%
	No	203	82.9%
Friend	Yes	3	1.2%
	No	242	98.8%
Interest	Yes	46	18.8%
	No	199	81.2%

**Table 2. Barriers to Recreational Sport for Active People with SCI (n=32)**

Variable		Frequency	Percentage
Employment	Yes	12	37.5%
	No	20	62.5%
Physical Body	Yes	7	21.9%
	No	25	78.1%
Financial Problem	Yes	12	37.5%
	No	20	62.5%
Transportation	Yes	7	21.9%
	No	25	78.1%
Information	Yes	4	12.5%
	No	28	87.5%
Time	Yes	12	37.5%
	No	20	62.5%
Psychological Problem	Yes	2	6.3%
	No	30	93.8%
Social Pressure	Yes	1	3.1%
	No	31	96.9%
Family	Yes	7	21.9%
	No	25	78.1%
Training Facility	Yes	9	28.1%
	No	23	71.9%
Friend	Yes	0	0%
	No	32	100%
Interest	Yes	2	6.3%
	No	30	93.8%

**Table 3. Introducing Social Agents and Places in Recreational Sport Participation (n=32)**

Variable		Frequency	Percentage
Social agents	Disabled friends	18	56.3%
	Non-disabled friends	3	9.4
	Physical therapists	5	15.6%
	Physicians	2	6.3%

	Teachers	1	3.1%
	Others	3	9.4%
Places	Disabled sport clubs	6	18.8%
	Schools	2	6.3%
	Hospitals	3	9.4%
	Rehabilitation centers	11	34.4%
	Others	10	31.3%

**Table 4. Main Difficulties in Recreational Sport Participation (n=32)**

Variable		Frequency	Percentage
Sporting equipment	Yes	17	53.1%
	No	15	46.9%
Lack of information	Yes	5	15.6%
	No	27	84.4%
Training facility	Yes	17	53.1%
	No	15	46.9%
Coaching	Yes	9	28.1%
	No	23	71.9%
Learning skills	Yes	11	34.4%
	No	21	65.6%
Travel	Yes	6	18.8%
	No	26	81.2%
Money	Yes	11	65.6%
	No	21	34.4%

**Table 5. How often and how much time in Recreational Sport Participation (n=32)**

Variable		Frequency	Percentage
How often	1 time	14	43.8%
	2-3 times	17	53.1%
	4-5 times	1	3.1%
How much time	Below 1 hour	6	18.8%
	1-2 hours	18	56.3%
	2-3 hours	7	21.9%
	Above 3 hours	1	3.1%

**Table 6. Main Reasons of Recreational Sport Participation Among People with SCI (n=32)**

	Competition	Health	Fitness	Social Aspects	Rehabilitation	Fun	Recreation
Very Important	4 (12.5%)	13 (40.6%)	11 (34.4%)	5 (15.6%)	9 (28.1%)	6 (18.8%)	4 (12.5%)

Important	7 (21.9%)	15 (46.9%)	17 (53.1%)	14 (43.8%)	15 (46.9%)	20 (62.5%)	17 (53.1%)
Somewhat Important	14 (43.8%)	2 (6.3%)	2 (6.3%)	4 (12.5%)	4 (12.5%)	3 (9.4%)	7 (21.9%)
Not Important	7 (21.9%)	2 (6.3%)	2 (6.3%)	4 (12.5%)	4 (12.5%)	3 (9.4%)	4 (12.5%)

**Table 7. Receiving Recreational Sport Information for Active People with SCI (n=32)**

	Disabled friends	Coaches	Physical therapists	Physicians	Disabled magazine
Very Important	7 (21.9%)	11 (34.4%)	10 (31.3%)	7 (21.9%)	6 (18.8%)
Important	12 (37.5%)	16 (50.0%)	15 (46.9%)	12 (37.5%)	13 (40.6%)
Somewhat Important	9 (28.1%)	2 (6.3%)	6 (18.8%)	9 (28.1%)	9 (28.1%)
Not Important	4 (12.5%)	3 (9.4%)	1 (3.1%)	4 (12.5%)	4 (12.5%)

**Table 8. Comparison of Active and Non-active People with SCI**

Variables	Current situation		Significance (Chi-square analyses)		
	Active	Non-active			
Gender	Male	30	161	$\chi^2 = 5.341, df = 1, P < .05$	
	Female	2			52
Marriage	Single	19	75	$\chi^2 = 7.037, df = 2, P < .05$	
	Marry	11			123
	Divorce	2			15
Age	Below 20	4	1	$\chi^2 = 26.950, df = 4, P < .001$	
	21-30	8			33
	31-40	9			40
	41-50	7			77
	over 51	4			62
Employment	Full time	14	39	$\chi^2 = 16.742, df = 3, P < .001$	
	Part time	3			23

	Student	3	5	
	No job	12	146	
Car or	Yes	25	82	$\chi^2 = 17.759, df = 1, P < .001$
motorbike	No	7	131	
Fitness	Good	6	11	$\chi^2 = 16.105, df = 3, P < .01$
	Fair	20	99	
	Poor	6	62	
	Bad	0	41	
Lose	Arms, trunk and legs	4	90	$\chi^2 = 13.367, df = 3, P < .01$
functions	Trunk and legs	10	43	
	Legs	18	71	
	Other	0	9	
Pre-injury in	Active	25	115	$\chi^2 = 6.617, df = 1, P < .01$
sports	Non-active	7	98	

Using the chi-square tests, there were no significances between active and non-active people with SCI on education, drinking, stay at hospitals, health conditions, walking conditions, and use of equipment technology.

### **Self Evaluation in this Project**

The researchers have examined the issue of sport and recreational participation among people with SCI in Taiwan. The results match the expected outcomes. We plan to publish the results in the Journal of Medicine and Science in Sports and Exercise and also in Taiwan Journal of Adapted Physical Activity. In addition, we also expect to present this study in the 2004 Asian Symposium of Adapted Physical Education and Exercise. Thus, the results of this project can be presented in national and international academic journals and also international conferences.

## 可供推廣之研發成果資料表

可申請專利

可技術移轉

日期：92 年

10 月 2 日

<b>國科會補助計畫</b>	計畫名稱：台灣脊髓損傷者運動參與及困難之研究 計畫主持人：吳昇光 博士 計畫編號：91-2614-B-039-002-M47 學門領域：醫
<b>技術/創作名稱</b>	中文化脊髓損傷者運動參與量表。
<b>發明人/創作人</b>	吳昇光
<b>技術說明</b>	中文： 本研究之中文化量表可以應用於評量脊髓損傷者之休閒運動參與之調查，未來經過修正後可以應用於不同障礙類別休閒運動參與之調查與分析。
	英文：
<b>可利用之產業及可開發之產品</b>	開發中文化脊髓損傷者運動參與量表。
<b>技術特點</b>	研究工具與方法之建立。
<b>推廣及運用的價值</b>	了解身心障礙者休閒運動參與之現況並與健康狀況進行比較分析，以藉由休閒運動參與改善身心障礙者其健康與體能，並能節省全民健保之支出。