2017 2(1) 26-33
Submission: 2017/04/30, Peer review: 2017/05/10, Accepted: 2017/06/25, Published: 2017/06/30

International journal of martial arts

Publication state: Japan
ISSN: 2423-835X

Publisher: J-INSTITUTE
Website: http://www.j-institute.jp

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Peer reviewer
E-mail: editor@j-institute.jp

http://dx.doi.org/10.22471/martialarts.2017.2.1.26

Effects of Guard MARTIAL ARTS Education on the Task-Reated Physical Fitness and Gait Ability in Private

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Abstract

This study was to investigate the effects of Guard Martial Arts Education on Task-Reated Physical Fitness and Gait Ability in the Private Security Guard. In order to achieve the purpose of this study, 40 security guards working at the Y security company in S city were selected. The participants were divided into two groups: Exercise group (n=20) and Control group (n=20), and after observing the effect of the guard martial training on Task-Reated physical fitness and functional gait ability, the results were as follows. The participants were divided into two groups: Exercise group (n=20) and Control group (n=20). The Guard Martial Arts Education for 12 weeks. The results of this study were as follows: First, As for the Task-Reated Physical Fitness, there were significantly increased in Grasping power, push-up, sit-up, 100m, 1000m in the exercise group. Second, As for the gait Ability, there were significantly increased in speed and stepin the exercise group. As conclusions, this study confirmed that the guard martial arts education could improve the task-reated physical fitness and gait ability of private security guard. However, there is a need for more specific exercise programs to be developed for the continual improvement of athletic performance in guard martial arts education along with further studies to confirm the physiological benefits of those programs.

[Keywords] ***Guard Martial Arts, Task-Reated Physical Fitness, Guard Physical Fitness, Gait Ability, Private Security Guard***

1. Introduction

Due to the complicated and rapid process of social development in last few decades, it is difficult to expect a pleasant living environment without protecting the safety of individuals, companies and properties in modern society, and as the society has been developing in all fields due to the social change and the development of information and communication technology nowadays, our society has been experiencing economic imbalance as a result of the rapid industrialization. The social irregularities in this unstable society has increased the desire for safety of the lives and properties of individuals more than ever before, and especially, various social anxiety about the life safety of the individual citizens is increasing[1]. Furthermore, the crimes and social problems have been increasing rapidly as the economic level of the modern society is growing, and thus private security guard, a private crime prevention organization, serves a very important role in solving the safety problems of the people and fulfilling various security demands from different social stratum[2].

The private security is based on the beneficiary-burden theory as the client makes payment to protect himself or herself from injury

or physical harm that may come from crimes, and especially because the security guards are paid from their customers, they are obliged to play a role in preventing crimes or economic loss. In addition, private security is an individual, organization or for-profit company that is paid from certain clients to provide a service of protecting personal profit, life and property from various dangers, so it is especially necessary to manage and identify the environment and the status of performing security guards[3].

The private security guard has the characteristics of protecting the life, body and property of the citizens in a dangerous situation, and due to the characteristic of the private security guard such as working hours, risk of job and irregular life, their mental, physical, and environmental stresses are relatively high compared to other occupations, and thus these factors are major threat to them[4]. In addition, psychological stresses, which is an unavoidable part of modern people, causes physical changes due to a series of excessive tension and anxiety, which may lead to negative consequence such as decrease in the efficiency of the entire organization and decrease in job performance[5]. Although various educational programs have been implemented to fundamentally solve these problems, yet the most important part of the training is an education that can enhance the physical ability to protect ownself as well as others. The guard means to eliminate the danger and anxiety due to the direct or indirect threat that occurs accidentally against the basic desire of the client to live safely, and to protect the client safely by minimizing the physical attack from the attempter and to serve as safety measure[6], so in order to take an immediate action in an unpredictable situation, the necessity of polishing guard martial training can not be overemphasized at all.

A guard martial has a different characteristic than other marital arts since it has to apply appropriate technique to a situation when a unpredictable threat occurs in various situations to protect the client. The guard martial and the other martial arts are similar in the method of overpowering the opponent, yet differences can be found depends on the situation and the purpose. The purpose of the guard martial is to protect the client from the dangers in various situations such as walking in the street, riding in the car or participating in the official or informal venues, yet the purpose of the other martial arts is to protect oneself and to promote health through competing with each other according to certain game rules[7]. In addition to guard martial which is to protect the client, the other task that needs to be done for the private security guard is to maintain or improve strong physical ability. The physical strength, which is the foundation of survival and life, can be divided into health related physical strength and technical related physical strength[8], and especially as the importance of the health related physical strength, which decides and improves the quality of the life, has been reported more than before[9], so not only the technical strength, but also the basic physical strength should be emphasized to perform safeguard successfully.

Likewise, the rapid social changes in modern society require security guards more than before, but there are very few studies related to the performance and health of civil security guards, and thus continuing research on job performance and health of them are needed. Therefore the purpose of this study is to compare and analyze the effect of the guard martial on job performance and walking ability, so it can be used to improve work performance and walking ability of the civilian security guards.

2. Materils & Methods

2.1. Subject of study

The subject of this study is composed of civilian security guards working in Y security company from June 2016 to September 2016, and the subject is divided into two groups through random sampling: guard martial trained group (EG/20 people) and non trained group (CG/20 people). Originally 60 people participated in the research for each group early in the study, yet those who abandoned (EG/11 people, CG/14 people) were excluded

so 40 people were selected for each group. The physical characteristics of the subjects are shown in <Table 1>.

Table 1. Physical characteristics of subjects. M±SD

	Age(yrs)	Height(Cm)	Weight(Kg)	BMI(㎏/㎡)
Exercise group (N=20)	20.23±3.22	176.43±5.42	68.86±8.83	21.82±2.84
Control group (N=20)	20.62±2.52	175.88±6.62	69.02±9.02	22.02±2.22

2.2. Measure and method

2.2.1. Task-reated physical test

Task-Reated physical ability is based on physical strength test of police officers, and the measurement variables are shown in <Table 2>.

Table 2. Task-reated physical fitness test.

Items	Measuring tools	Manufacture company
Push-Up	DW-732E	Deawoo sports industry, (Seuol, Korea)
Sit-up	DW-731E	
Grasping power	DW-781	
100M running	DW-765E	
1000M running	DW-750A	

2.2.2. Gait ability examination

To examine functional gait Ability, 50M walking test was performed. 50M walking test is a method that can comprehensively assess basic mobility, balance and gait Ability, which measures stride and the time of walking 50 meters. Before and after the experiment, the test was performed 3 times right after each exercise and the average score was calculated.

2.3. Data process

For the data processing of the study, the mean and standard deviation of all collected data was calculated using SPSS 20.0(window statistical package), and for the significance test of before and after the experiment within the group, paired t-test was performed and for the significance test of before and after the experiment between the groups, independent sample t-test was performed. The significance level was $p < .05$ at this time.

3. Results

3.1. Change in task-reated physical fitness

Changes in Task-Reated physical fitness as a result of guard martial training are shown in <Table 3>. For the changes within the group of EG, statistically significant differences were found in all variables such as grip power of left hand(p=.000), grip power of right hand(p=.000), sit-up(p=.000), push-up(p=.000), 100m(p=.000) and 1000m(p=.000), and for the changes within the group of CG, statistically significant differences were not found in all variables. In addi-

tion, there was no statistically significant difference in all variables in the pre-test between the groups of trained and non trained group, yet in the post test, statistically significant differences were found in all physical variables such as grip power of left hand(p=.000), grip power of right hand(p=.000), sit-up(p=.000), push-up(p=.000), 100m(p=.021) and 1000m(p=.026).

Table 3. The change of task-reated physical fitness M±SD.

Items		CG(n=20)			EG(n=20)			t**
		Pre	Post	t*	Pre	Post	t*	
Grasping power	L	38.82±10.82	39.21±9.39	-0.337	40.18±9.28	49.72±8.22	-11.327††††	0.966a 8.228b†††
	R	41.68±9.66	41.32±9.22	0.274	41.36±8.62	56.02±6.88	-16.824††††	0.430a 10.017b††††
Sit-up		42.92±8.28	43.11±7.22	0.455	41.93±8.61	54.66±8.03	-14.429††††	-1.122a 9.166b†††
Push-Up		36.33±11.21	37.07±10.82	0.340	36.63±10.88	52.26±14.22	-21.002††††	0.039a 11.126b††††
100m running		13.88±0.95	13.91±0.89	0.126	13.83±0.76	13.42±0.51	4.887†††	0.105a -2.589b††
1000m running		4.82±0.58	4.72±0.51	-1.041	4.68±0.51	4.36±0.42	2.362††	-0.527a -2.424b††

Note: * Paired t-test between pre-and post-values in a group

** Independent sample t-test' results between pre-and post-values in both groups

†,††, and ††† mean P < 0.05, P < 0.01, and P < 0.001, respectively.

3.2. The change in functional gait ability

Changes in functional gait ability as a result of guard martial training are shown in <Table 4>. For the changes in functional gait ability with in EG group, walking speed (p = .000) was statistically significantly decreased and the stride (p = .000) was statistically significantly increased. For the changes of functional gait ability within CG group, there was no statistically significant difference in both of the walking speed and stride length. In addition, in the pre-test of functional gait ability as a result of guard martial training between the groups, there was no statistically significant difference in all variables, yet in the post-test, statistically significant differences were found in all physical variables such as the walking speed(p=.000) and stride length(p=.000).

Table 4. The change of gait ability. M±SD

Items	CG(n=20)			EG(n=20)			t**
	Pre	Post	t*	Pre	Post	t*	

Gait velocity (sec)	36.63 ±6.48	36.48 ±6.36	0.170	37.77 ±6.19	33.92 ±4.96	- 3.556†††	-1.004a 3.045b†††
Step length	46.76 ±8.55	47.09 ±7.28	-0.183	46.89 ±7.63	53.49 ±6.72	4.078†††	0.264a 3.875b†††

Note: * Paired t-test between pre- and post-values in a group

** Independent sample t-test' results between pre- and post-values in both groups

†, ††, and ††† mean $P<0.05$, $P<0.01$, and $P<0.001$, respectively.

4. Discussion

As a result of comparing and analyzing the effects of the guard martial arts training on the Task-Reated physical fitness and gait ability of 40 bodyguards (exercise group of 20 people, control group of 20 people), following discussion is made.

Although the physical strength is the physical ability that underlies and maintains human life, it can also be expressed in terms of athletic ability or work ability depending on the scenes of activity. Yet physical strength is defined in various ways depending on the scholars and times, and Seok[10] explains that physical strength does not simply indicate physical aspect but it is a comprehensive concept that includes all of physical, mental, social, and spiritual aspects and is the sum of all the abilities that are fundamental to human life. Although physical strength consists of behavioral strength, which is the strength required for activities, and defense strength, which is a physical strength that adapts to climate change and resists the invasion of germs, yet in the most studies, physical strength is assessed by cardiovascular endurance, body composition, strength, muscle endurance, flexibility, agility and so on[11].

In this study, in order to improve the chronic diseases of the private security guard and the degradation of the work efficiency due to excessive work stress and the deterioration of physical ability, 5 work related physical strength (grasping power, push-up, sit-up, 100m, 1000m) and 2 functional walking ability (walking speed and stride length) are measured.

Private private security guard work requires a high level of physical strength and strong physical strength enhances work efficiency of bodyguards so the exercise of private security guard are promoted lately[12], and the exercise of bodyguards not only promotes the health of the guards who are member of the organization, but also contributes to the security of the client's properties and safety, so guard martial and fitness promoting program for private security guard are actively progressed. It is reported that participating in sports activity is effectively improves depression and level of anxiety for private bodyguards, who protects the safety of client, and police officers, who protects safety of the people, and improves their performance and health as well[13]. In addition, the physical variables were higher for those who work outside than those who work in the office[14], and this is because they can participate in the physical management program easily due to the work environment. However, as a result of the long hour of standing or walking with poor posture, many bodyguards are suffering from neurological dysfunction and back pain, and most of them are chronic patients. This is consistent with the findings of this study that the guard martial arts training has an effect on improving the physical strength of the private security guard. Furthermore, this is also consistent with the study that the higher the participation of the bodyguards in the physical fitness program, the better the work efficiency and their physical fitness[15], and thus this supports that the guard martial arts training influences the work performance and physical strength of the private security guard. In addition, due to the characteristic of the work which requires

long hours of standing or walking with poor posture, the number of patients of neurological dysfunction and back pain is increasing, and most of them are chronic back pain patients. This has been a factor that affects adversely on the private security guard who are walking or standing for a long time and hinders job performance. The guard martial arts training positively influenced functional walking ability in this study, and this is consistent with a research result of Jeong[16] on the effect of regular spinal stabilization exercise of private security guard on muscle function and gait ability, and this supports the research result that regular exercise helps to stabilize the body and is effective in improving back pain[17]. However, most private bodyguards are aware of the importance of physical fitness and the value of exercise, but they are not able to exercise as much due to the working environment. In addition, although health of private security guard are absolutely critical to the safety of client's property and personal safety, but they are suffering from various illnesses and injuries due to heavy work and stress. Considering these realities, it is needed to look into the actual exercise condition of the private security guard and to analyze how the exercise affects job performance.

All of these results suggest that the guard martial arts training is helpful for the occupation related fitness and functional walking ability of the private security guard, reduces the work stress of the private security guard, and reduces the incidence of metabolic syndrome and diseases from stress of modern people[18]. Yet the study about the effects of the exercise on job performance of the private security guard is very rare, and it is needed to develop a program that connects the physical strength of the private security guard and their job performance.

5. Conclusion

The purpose of the study was to find out the effects of the guard martial arts training on the Task-Reated physical fitness and functional gait ability, and ensured the fact that the improvement of the Task-Reated physical fitness and functional gait ability of the private security guard can be achieved through the guard martial training. In order to achieve the purpose of this study, 40 security guards working at the Y security company in S city were selected, and after observing the effect of the guard martial training on Task-Reated physical fitness and functional gait ability, the results were as follows.

1. For the changes of Task-Reated physical fitness with in group EG as a result of guard martial training, statistically significant differences were found in all variables such as grasping power of left hand, grasping power of right hand, sit-up, push-up, 100m and 1000m, and there was no statistically significant differences in all variables within CG group. In addition, there was no statistically significant difference in all variables in the pre-test between the groups, yet in the post test, statistically significant differences were found in all physical variables such as grip power of left hand, grip power of right hand, sit-up, push-up, 100m and 1000m.

2. For the changes in functional gait ability with in EG group, walking speed was statistically significantly decreased and the stride length was statistically significantly increased. There was no statistically significant differences in both walking speed and stride length within the CG group. In addition, in the pre-test of functional gait ability as a result of guard martial training between the groups, there was no statistically significant difference in all variables, yet in the post-test, statistically significant differences were found in all physical variables such as the walking speed and stride length. As a conclusion of the study, it is confirmed that the guard martial training is an effective exercise for Task-Reated physical fitness and functional gait ability of security guards, and the improvement of health variables and the development of professional fitness training will lead to enhancement of job performance of private security guard.

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