

## EFFICIENCY OF AN AUDIOVISUAL TRAINING PROGRAM ON TEACHING SHACKLED PROCEDURES

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**Abstract.** *The aim of the present research was to analyze the effect of a short audiovisual training on the shackled technique efficiency in three different stress situations. Technical shackle techniques procedures in 3 different situations of 26 male soldiers were analyzed after an audiovisual session. The situations were normal, alert and danger. Shackle maneuver was divided in approach to the subject, subject control, placing the first shackle, limb immobilization, placing the second shackle, frisk and transfer actions. The audiovisual training was composed by a video of shackled technique in normal, alert and danger situation that soldiers could watch a maximum of three time previous to the realization of the evaluation test. A decrease on shackled maneuver efficiency was measured with the stress. Limb immobilization presented the lowest values in alert and danger situations, a fact that has to be improved. Shackled maneuver time was twice in danger than in normal and alert situations, fact related to the stress of the situations. With these results we can conclude that a short audiovisual training was a useful technique to learn the shackled procedure in non experimented soldiers in normal situations, but no in alert and danger situations.*

**Keywords:** Audiovisual, learning process, shackled, soldiers, stress, subject control

### 1. INTRODUCCIÓN

Researches in soldier and police population have been focused on the study of psycho-physiological response in combat (Clemente-Suárez y Robles-Pérez, 2013),

physical performance of soldiers (Lester et al, 2010; Simpson, Gray and Geraint, 2006) and coordination and decision making of officers (Braganca, 2004; Calvo, 2005). The results of previous studies have been used to enhance the actual combat technical training in operation areas. Currently, in many missions soldiers have to conduct peacekeeping missions in which become important a nonlethal immobilization techniques. The shackled is an important tool that is used daily in the current peacekeeping missions and operations areas. Furthermore, there is a specific technique not only used by the army, also is a commonly technique used by police, civil guards, gendarmes and security corps.

The shackled manoeuvres training is not incorporated into the programs of the defence corps even though this is essential for proper security and to arrest the offender. Therefore, it is necessary to provide a fast and effective training program that allows the inexperienced soldiers to learn quickly the shackled techniques before to serve in a mission. Moreover, the rapid growth of new technologies of information and communication could help to improve the learning process of shackled, as previous studies demonstrated that the use of video protocol improve performance in tennis players (Menayo, Moreno, Reina and Fuentes, 2009) or improve learning process in pharmacology (Ferrándiz, Terencia, Úbeda, Ivorra, & Montesinos, 2010), engineering (Cherrett, Wills, Price, Maynard, & Dror, 2009) and mathematic areas (de la Fuente et al., 2013). Therefore, the aim of the present research was to analyze the efficiency of a short audiovisual training on the execution of a shackled technique in three different stress situations, normal, alert and danger. It was hypothesized that after a short audiovisual training, soldiers could perform the shackled procedure in normal, alert and danger situations with at least a medium level of actuation.

## 2. METHODS

Technical procedures in shackled techniques in three different situations of 26 male soldiers ( $20.2 \pm 2.3$  years) were analyzed after a short audiovisual training program. Soldier had not experience in shackled procedures and all of them had conducted the basic military training. The study intended to analyze the efficiency of a short audiovisual shackled training in non experimented soldiers, for this reason soldiers did not conducted a pre-training sample, with the aim that soldiers had no previous experience with shackled.

The three different shackled situations were as follow: normal situation, alert situation and danger situation. The shackled procedures in each situation are showed in figures 1, 2 and 3. The audiovisual sessions and the technical evaluation were performed randomly in different days with a separation of one day between them. The short audiovisual training was conducted before each technical evaluation.

In the procedure followed, soldiers were divided in pairs to watch a training video in a *tatami*. Only one instructor and the pair of soldiers were in the *tatami*. The instructor give instructions to soldiers to watch the video, in which were explained how to realize a correct shackled procedure, a maximum of three times, with the premise of when they understood the technical procedure they had to stop the reproduction finishing the audiovisual session. The pair of soldiers decided how many reproduction of the video required. After that, the soldiers received orders from an officer who

explain the specific situation in which they had to procedure to perform the shackled action. The characteristics of each of the three situations conducted were according to real situations occurring in current missions. Then, soldiers had to perform a shackle action with an unknown subject, who was the same for all the participants of the study. All the shackle interventions were filmed by a video camera (Panasonic SD40), and were analyzed by three different instructors in shackled procedures to determinate the punctuation in the different part of a shackle maneuver. The instructors were military martial arts professors and also teach shackled procedures to the troops, they had an experience in the area higher than 8 years each one.



*Figure 1. Phases of shackled manoeuvre in normal situation. Soldier had to shackle an unarmed pacific person. In this technique even the person cooperates, the soldier maintains the control over it to perform the process of shackled after order the person to place the arms extended and the legs separately.*

Shackle maneuver was divided in the following parts: approach to the subject, subject control, placing the first shackle, limb immobilization, placing the second shackle, frisk and transfer. Each part of the shackled maneuver was evaluated with 10, 5 or 0 point depending on the following criteria:

Approach to the subject: 10 points when the soldiers approached to the subject by their dominant

Subject control: 10 points when the soldier had a firm grip, strong and proportional appropriate point on the limb to shackling

Placing the first shackle: 10 points when the first ring was placed properly depending on the situation of the soldiers respect to the subject.

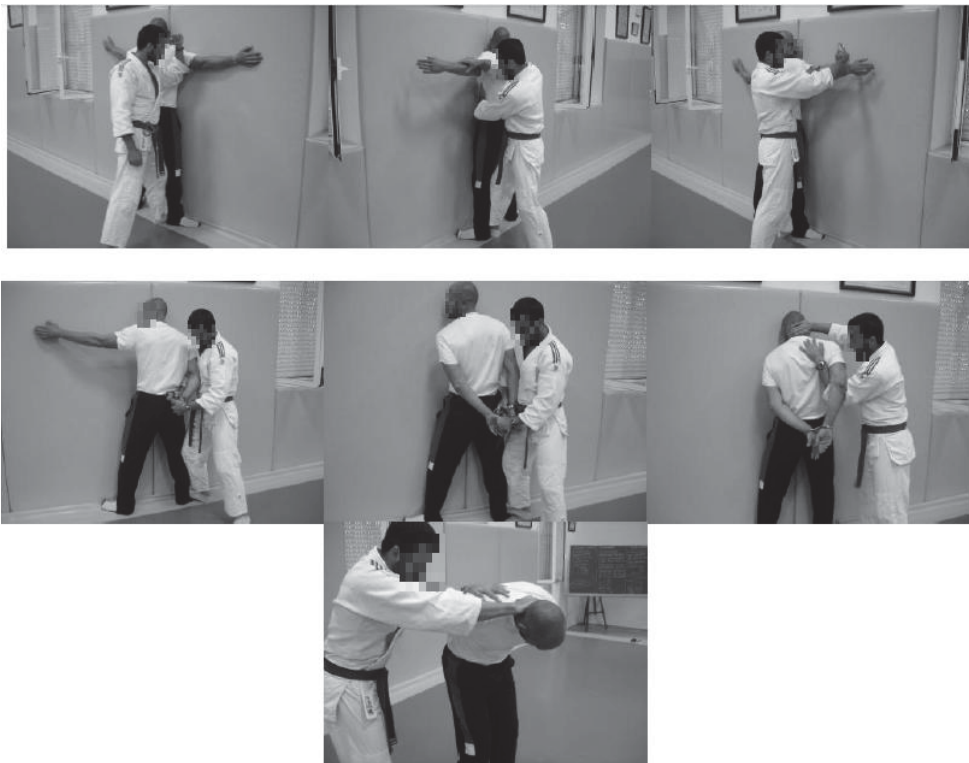
Limb immobilization: 10 points when after placed the first ring, a rotation of the tip and dislocation of the hand was performed.

Placing the second shackle: 10 points when soldier proceed to place the second ring in the subject performing a technical or normal shackle technique.

Frisk: 10 points when was executed methodically and controlled.

Transfer: 10 points when subject was placed sit in the floor and got it up and also the soldier dislocated shoulder and placed his other hand on the neck of the subject.

The punctuation of the shackle technique was conducted watching the video of the maneuver by the 3 instructors. They had to decide the punctuation for each part of the shackle maneuver. We used this evaluation system because it is the Army standard evaluation system and it uses to evaluate the technical efficiency of soldier in shackle procedures.



*Figure 2. Phases of shackled manoeuvre in alert situation. In this situation soldier had to shackle a person which could carry a concealed weapon and did not cooperate with the soldier. Then, soldier order the person to place the hands on the nape and the legs separately. Soldier ensures control points and then starts the shackled manoeuvre.*

Data were analyzed using the SPSS 17.0 statistical program. The Shapiro-Wilk normality test was used to test homogeneity of each variable. Analysis of variance was used to analyze the differences between the three shackled situations in each part of the shackled maneuver. The level of significance for all the comparisons was set at  $p < 0.05$ .

### 3. RESULTS

Technical analysis results are shown in table 1.

Table 1. Technical analysis results obtained in the three situations analyzed.

Situation	Approach to the subject	Subject control	Placing the first shackle	Limb immobilization	Placing the second shackle	Frisk	Transfer	Mean Punctuation	Shackled manoeuvre time
Normal	5.9±3.3	4.6±4.0	5.9±4.4	5.2±3.2	5.9±3.3	3.5±4.1	4.3±4.3	5.0±2.3	41.2 s
Alert	5.0±3.0	5.4±2.6	5.9±3.9	1.5±2.4*†	4.6±4.0	3.9±4.5	5.9±4.2	4.6±2.0	42.9 s
Danger	5.7±4.3	3.0±2.5	3.0±3.9	1.7±2.9*†	3.9±3.7	6.3±4.1	4.3±4.1	4.0±2.2	82.6 s†‡

\* p<0.05 vs. mean punctuation; † p<0.05 vs. normal situation; ‡ p<0.05 vs. alert situation.



Figure 3. Phases of shackled manoeuvre in danger situation. In this situation soldier had to shackle a person identified previously as a terrorist, he possibly carry a concealed gun or knife and did not cooperate and tries to escape from the soldier. Then, soldier order the person to lie in prone position with the arm extended and separately from the trunk. With one knee control the neck of the person and then star to shackle one arm, after immobilize it soldier shackle the other arm.



The number of video reproduction of soldiers is shown in table 2.

Table 2. Soldiers' percentage and number of video reproduction in the three situations analyzed.

Number of video reproductions	Normal (%)	Alert (%)	Danger (%)
1	65.2	57.1	34.8*
2	17.4†	19.0†	56.5*†
3	17.4†	9.5*†‡	8.7*†‡

\* p<0.05 vs. normal situation ; † p<0.05 vs. 1 reproduction; ‡ p<0.05 vs. 2 reproductions.

#### 4. DISCUSSION

The objective of the present research was to analyze the effect of a short audiovisual training on the shackled technique efficiency in three different stress situations, normal, alert and danger. Results showed a decrease on shackled manoeuvre efficiency and an increase on manoeuvre time with stress. The actuation level of soldiers in normal situation was medium but in alert and danger situation was lower, then the initial hypothesis was partially complied.

Soldiers analyzed were more effective in shackle procedures in normal than in danger and alert situations, then when stress increased the effectiveness of manoeuvre decreased. Furthermore, a higher perception of danger produced an increase in the time to conduct the shackled manoeuvre and an increase in the number of video reproductions. The higher time to realize the manoeuvre could be related to the decrease in information processing and cortical activation produced by the stress, that produce a decrease in the cortical control and a decrease in quality of actions performed by soldiers (Clemente-Suárez and Robles-Perez, 2013). In addition, during these situations the cortex can perceive any action as a possible hostile threat that can damage the integrity of the soldier. This process could cause a state of anxiety (Martens, Vealey and Burton, 1990) that negatively influenced the technical manoeuvre.

In normal situation there was a deficit in the frisk and transfer actions. Possibly soldiers relaxed their actuation because it was a safe situation and for this reason the performance on these two actions obtained the lowest score. By contrast in danger situation, frisk was the action that reached the highest score. This fact could be explained because of it is one of the more important actions in danger situations due to in this moment the soldier or police can detect concealed weapons and explosive and then protect his physical integrity. The lowest score reached in alert and danger situations was the limb immobilization action; therefore it is necessary to focus the learning process in these phases to try to improve it.

The results obtained showed that audiovisual training strategies could be used to complement specific soldiers training in operations area. The training actions should be performed in a high stress situation to conduct the maneuver in a specific ambient that could produce a higher improve in shackled procedures performance, as reported previous studies, that showed the necessity to improve stress management training systems (Clemente-Suárez and Robles-Perez, 2012). This is also related to the importance of psychological training and the increase of the ability to deal with stressful situations, which are related to the tunnel effect and the decision and reaction time in a close quarter combat situations (Clemente-Suárez and Robles-Perez, 2013), situations that might precede the shackled actions. Numerous studies conducted in car drivers (Edmons, Tenenbaum, Mann, Johnson and Kamata, 2008) and combat sport athletes (Blumenstein, 1999) have showed the importance of the use of technical video training. The duration and frequency of video viewing was superior in the literature than in the present study, but, with a short time audiovisual training soldiers could learn the different shackled techniques, performing them with a sufficient level of efficiency in normal situations.

The new requirements of current missions make it necessary to have a standardized and efficient training of the principal military abilities that soldiers have to use in the operations areas and that could be learned and realized by soldiers in a short period of time with the minor use of recourses. The implementation of the new technologies of information and communication could be an important tool to teach the shackled procedures in a short period of time to improve their traditional training before conducting a mission.

## **5. CONCLUSION**

A short audiovisual training was enough to learn the proper shackled procedure in non experimented soldiers in normal condition. By contrast, the increase in stress caused an increase in the manoeuvre time, number of video reproductions and a decrease on shackled procedure performance, fact to improve in future researches.

## **6. PRACTICAL APPLICATION**

In the current context of the inclusion of higher military education in the university education system, in which the military career is complemented with a civil degree formation, the implementation of the learning procedures showed in the present study could be an effective tool to improve the formation of the future officers of the Army in specific subjects related to close quarter combat and immobilization actions.

In the same line, officers' police, gendarmes and civil guard academies could use this information to implement their basic and continuous learning programs of shackled techniques.

Finally, the sport science schools, specifically the combat sports subjects could use these methodologies to implement learning procedures of different techniques as immobilization, luxations... to improve the efficiency of classical direct instructional methodologies

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