INTRODUCTION

The motor skill learning process includes various phases where one of its main pointers is the transfer of information about the task that is intended to be performed. According to MAGILL (2000), the learning of any motor ability may be easier since the model that contains all the information is crucial for the performance of this same ability. Therefore, verbal instruction and the demonstration of the activity that is intended to be performed are two of the most important parameters frequently used as instruments in teaching, when it comes to motor learning.

Verbal instruction includes information about the purpose, the specification and the method of the task (PUBLIO NS., TANI G. & MANOEL EJ. (1995). Through the transfer of information, the instructor looks to clarify the movement pattern that the individual must achieve at the end of practicing session (TANI et all, 2004). When a new motor ability is involved, the beginner brings to the situation a collection of all the acquired capacities and knowledge and tends to use them to perform as best as possible the determined action. When trying to solve the motor skill problem. Due to this, the verbal instruction serves to help the beginner to find better solutions for the performance of the activity.

The demonstration, in its turn, represents a form of motor skill learning where one movement is demonstrated (model) to the person who is being taught, and must be capable of taking in important information that will help in the organization and the performance of the same activity that was demonstrated, using their own individual motor skill actions. This phrase offers a clear idea of information related to the space and time needed for the task intended to be performed (PUBLIO NS., TANI G. & MANOEL EJ., 1995).

BANDURA (1977), in his theory of social skill learning, was pioneer to affirm the effect of observation on motor skill learning. The Theory affirms accepting the social skill learning concept of a given learning behavior, does not always occur based on practical experiences or during the performance of responses that are intended to be learned, but also through the observation of responses of other individuals. The Theory suggests that the observation of and appropriate method during the performance of a motor ability may be effective due to the need of a clear idea of what is needed to be achieved (PUBLIO NS., TANI G. & MANOEL EJ., 1995).

Based on the BANDURA Theory (1977) a number of existing studies were performed with the intention of discovering the importance of using demonstrations and verbal instructions in the organizing, performing and the assessment of motor skill learning (TONELLO MGM & PELLEGRINI, 1998, TANI et al., 2004, PUBLIO NS., TANI G. & MANOEL EJ., 1995).

According to NEWEL (1981) the most popular methods for the transfer of information concerning what is to be achieved and the appropriate sequence for action are both considered verbal instruction and demonstrated. For some authors, verbal instruction serves to help the beginner in finding the best solutions. Based on this, TILLYING (1985) suggested the existence of three memory systems that aid these individuals: the semantic memory, which represents all conceptual and factual knowledge, episodic memory related to the events according to the time of existence axle of the individual, and finally, the process memory that represents the methods or procedures to be taken when performing a certain action.

To understand these processes of achievement of the motor abilities, ANDERSON (1987) proposed the existence of “Processing”, in which the individual deciphers the stimuli related to the motor skill problem in form of declared knowledge, and therefore, decides which actions should be taken for the solution of the problem. With practice, production systems are prepared, or in other words, a combination of specific instructions is given to perform the specific action. This processed knowledge derives from the declared knowledge, with the advantage of being specific to the task and ready for action in the memory, without involving the subconscious. Based on these facts, verbal instruction must be presented in form to help the beginners, in the transfer of the declared knowledge to the process knowledge.

Authors, for example SCHMIDT (1993), confirm that the instructor must add verbal instructions to the demonstration of the action (model) and should emphasize to the beginner the important aspects of the action that is being observed. When speaking of the demonstration model TONELLO & PELLEGRINI (1998) verified the way which the model is used in visual situations of teaching and learning, confirming that the demonstration of the activity transmits information concerning what is to be achieved by the action. This study came to a conclusion that the visual information has a preponderant roll in determining the human motor behavior, specifically, the process of teaching-learning of motor abilities.

According to TANI, et al (2004), in a revision of literature about motor skill learning, recent studies focused on a number of aspects, for example, the characteristics of the model (level of ability and/or stages of skill learning), time distribution of the demonstration (relative and absolute frequency, before and/or during the performance), and the relation to other types of information (verbal and self modulation Instruction).

Relating to the characteristics of the model, the results of LEE & WHITE (1990) and MCCULLAGH & CARID (1990) that showed that the observation of amateur models produces similar or even greater experience when comparing them to the observation of professional models. On the other hand, existing studies that showed that the observation of skilled models produces similar or even greater experience when comparing them to the observation of amateur level models and individuals that perform by the self modulation (BOSCHKIR & BAKER, 2002; ZETOU, FRAGODU & ZETEIS, 1999). In relation to the presentation of the model, some studies verified that the controlled presentation by the beginner leads to a higher fixation then that controlled by the study (WRISBERG & RAE, 1995). The observation of the model was also verified before the initial performance and the first attempts (WEEKS & ANDERSON, 2000). Finally, in relation to the use of the demonstration and the verbal instruction, the relation of these two aspects has been more effective for skill learning when each one isolated (ADAMS, 2001; McCULLAGH, WISS & ROSS, 1989; PUBLIO, TANI & MANOEL, 1995).

Finally, TANI & MANOEL (1995) investigated the effects of demonstration and verbal instruction in the achievement of acquiring the motor abilities of gymnasts through two protocols performed in a real situation of skill teaching-learning. The results of GD and GDI showed greater results then the GI group. No difference was observed between the GD and GD groups. The same results were observed when the same activity was performed with experienced children, but the GDI group presented an increase in performance, when compared to the GI group. These results, based on the Theory of BANDURA (1977), were interpreted as a mental image of the intended performed movement, obtained through the observation of the demonstration, which may be of great importance in younger children when verbal abilities concerning the movements are not yet developed, so the aspects of space
and time needed would verbally be represented adequately. Therefore, the practice of a motor ability is influenced by a number of aspects, primarily when verbal instruction and a demonstration is used. For this reason, in agreement with recent studies, the purpose of this study is to examine the real efficiency of the verbal instruction and demonstration in learning dart throwing in individuals of the masculine sex, military aeronautics, who have no experience in this ability.

Methods

7.1 - Sample: Eighteen adult male subjects, military marines, in between the ages of 22 and 28 years, that have no experience in the ability of dart throwing.

7.2 - Instruments: A dart, diameter of forty centimeters (40cm) with target with three point levels; duck tape to mark the measured distance; a two meter taping measure; a Philco Television of 14"; an individual with experience serving as a model of the same age to demonstrate; and a Sony digital Camera.

7.3 - Outline: The protocol tested eighteen individuals, with no experience in the ability at hand, divided into three groups of six each: Demonstration Group (GD), Verbal Instruction Group (GI), and the Demonstration and Verbal Instruction Group (GDI). The protocol was executed in two phases, the Acquisition Phase and the Transfer Phase.

7.4 - Procedure: This protocol used the following procedure: Individuals with no experience in the tested ability were selected. After this step, in the Acquisition Phase, the individuals were divided into three groups: GI, GD, and GDI. Each group received instructions according to what task was to be performed. All subjects of groups had 60 attempts in the Acquisition Phase, at a distance of two meters (2m) from the target, and the target was at a height of one meter and seventy two centimeters (1,72m) from the center of the target.

After a pause of three and a half hours, the Transfer Test was performed. In the Acquisition Phase, each group performed 10 attempts at a distance of three meters (3m) from the target.

An Examining Committee was created with two examiners, who were orientated about the procedure so that the same evaluation of results could be used for each individual.

Pointing Distribution:

0 (points) - missed the target
1 (point) - hit the outer part of the target (black area)
2 (points) - hit the intermediate part of the target (yellow area),
3 (points) - hit the middle of the target, (red area)

ACQUISITION PHASE:

Before the first attempt two instructions were given to the respective groups. At every 10 attempts the model performed the exercise once (CP) for each group.

GI: a verbal instruction was given on how to perform the movement before the initial attempt of the individuals. The subject being tested would have both feet parallel one before the other with weight distributed equally between feet, knees slightly bent, hips in position, upper body erect, elbow at the height of the shoulder, both eyes open, holding the dart with the thumb and index finger. Afterwards the subjects extended the elbow. At the moment of elbow extension the dart is released and the dart flies in a parabola to hit the target.

GD: a model with experience of the same age was filmed to demonstrate the technique to be used in the throwing of the dart.

GDI: verbal instruction along with a model (video demonstration) was used before the attempts of the individuals.

TRANSFER TEST:

Each group threw the dart 10 times at a distance of three meters, and then again with the parameter modified.

Statistical Analysis:

For the evaluation of the Acquisition Transference Test the Independent Student T-test was used. Level of significance used was p<0.05.

Results:

The graph shows that in the acquisition phase the three groups improved the performance during the training blocks. However, the initial score of the groups GD (1,90) and GDI (1,73) superior was shown to the first block of GI (1,40). The graph also display that in the blocks 2 and 4, moment in that the performance knowledge was accomplished by the instructor, there was a fall of revenue of the groups GD and GDI.

The table 1 display that in the between groups comparison, Test-t Student showed the existence of significant difference (p <0.05) in the comparison among GI x GD and GI x GDI. In the comparison GD x GDI there was not significant difference. In the transfer Test significant differences were not observed (p>0.05) among the three groups.

The Table 2 display they measured and deviation-pattern of GI in the transfer phase.

The Table 3 display they measured and deviation-pattern of GD in the transfer phase.

The Table 4 display they measured and deviation-pattern of GDI in the transfer phase.

Graph: Result of the experimental groups in the phase of acquisition and in the transfer test
DISCUSSION

The literature evidences that the representation imaginary or visual transmits more information concerning a certain task and of the goal to be reached than simply the verbal instruction, contributing more efficiently to the acquisition of a motive ability (BANDURA, 1977; PUBLIO NS, TANI G & MANOEL EJ, 1995; TANIELLO MGM. & PELLEGRINI AM., 1998 AND TANI ET ALL, 2004).

The graph shows that three groups increased their performance during the training blocks. However, the initial score of groups GD (1.90) and GDI (1.73) proved to be greater than the GI first block (1.40). The results evidence that in the beginning of the training the demonstration groups and demonstration with verbal instruction superiors were already shown to the of verbal instruction (BANDURA, 1977; PUBLICO NS, SCHMIDT, 1992; TANI G & MANOEL EJ, 1995; TONELLO MGM. & PELLEGRINI AM., 1998 e TANI et all, 2004).

The graph also evidenced that in the blocks 2 and 4, moment in that the performance knowledge was accomplished by the instructor, there was a fall of revenue of the groups GD and GDI. That happened, probably, due to the interruption of the activity, however are scarce the studies that demonstrate that theory.

The comparative analysis among the groups through Test-t Student showed the existence of significant difference (p <0.05) in the comparison among GI x GD and GI x GDI. Those given agree with the results of the work of PUBLIO, TANI & MANOEL (1995) that investigated the effects of the demonstration and verbal instruction in the acquisition of motive abilities of the Olympic gymnastics and it also showed the superiority of the groups GD and GDI in relation to GI.

In the transfer test significant differences were not observed (p>0.05) among the three groups. The explanation for that fact might have been the increase of the distance of 2 meters for 3 meters between the release area and the target, in the transfer test. However, the performance of the groups GD and GDI was superior the one of the group GI. That findings suggest, that even the Test T student showing exist not significant difference, the demonstration groups were superior qualitatively to the verbal instruction.

Another possible justification for that fact would be the reduced sample of the study.

The superiority found in the groups of GD and GDI in relation to GI, be in the acquisition phase or in the performance of the Test of Transfer they might have happened because, according to PUBLICO, TANI & MANOEL (1989), the demonstration, based on the Theory of BANDURA (1977), it is retained in the memory it activates in form of representation imaginary or verbal and it is used in the production and evaluation its motor skill actions. In opposition the verbal instruction is a declarative knowledge that it should be transformed in procedural knowledge to be used in the production and evaluation of the movement, and that involves a process of cognitive elaboration. To summary, according with the Theory the observation of a model is responsible for allowing the apprentice to elaborate references, symbols or representations in the memory concerning the motive ability to be learned. That elaboration involves two sub cases related to the acquisition of the answer - attention and retention - and two sub cases related to the reproduction of the answer - reproduction and motivation (TANI et all, 2004).

The study also emphasized the importance of the demonstration in showing useful particularities for the learning of an ability, reducing the uncertainty on how it should be accomplished as well as the study of TONELLO & PELLEGRINI (1998).

To summarize, in activities that involve a demonstration of the task that is to be performed, in the memory of the beginner, it becomes clear while a verbal instruction should still be processed in the brain and transformed into an action. This affirmative also explains the inexistence of a significant difference between GD and GDI, for the addition of the verbal instruction may not have led to a
CONCLUSION

Le travail a révélé des différences significatives entre les groupes GI X GD et GI X GDI pendant la phase d'apprentissage, et il n'a pas montré de différences significatives entre GDI et GI dans l'apprentissage et la comparaison entre les trois groupes dans le test de transfert. Ces résultats pourraient avoir été influencés par l'utilisation d'une fléau avec des subdivisions peu prononcées (trois niveaux de punctuations) et à une réduction du nombre d'essais de chaque groupe. Une autre possible justification serait la réduction du nombre de sujets dans l'échantillon. Le futur de l'étude devrait être accompli en étudiant avec plus de fideïnguidance son influence sur l'utilisation de la technique de démonstration et d'instruction verbale et de la démonstration dans l'apprentissage d'une habileté motrice.

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EFFECTS OF THE USE OF THE VERBAL INSTRUCTION AND DEMONSTRATION IN THE MOTOR SKILL LEARNING OF THE TECHNIQUE OF DART THROWING.

ABSTRACT

The Motor Learning Process includes a number of stages and one of its main factors is the transfer of information about the task that is intended to be performed. The verbal instruction and the demonstration of the task at hand are two of the most important parameters frequently used as instruments of the teaching field of motor skill learning. Verbal instruction includes information about the main point, the specification of the task and how it is to be performed. The demonstration, in its turn, represents a form of motor skill learning, in which a movement is demonstrated (model) to the beginner, who should be able to take in important information that will aid in the organization and performance of that shown activity using their own individual motor actions. The study intended to test the influence of these activities in adult men who have no latter experience in the activity, when learning dart throwing. The sample contained 18 male individuals (marines from the military), in between the age group of 22 and 28 years, divided into three groups of 6 individuals each: Demonstration Group (GD), Verbal Instruction Group (GI), and the Demonstration and Verbal Instruction Group (GDI). The test included two phases, the Acquisition Phase and the Transfer Test. The Independent Student T-test was used for the evaluation of the Acquisition Phase and the Transfer Test. P<0.05 was used as the level of significance. The study showed significant differences between the GI and GDI groups in the Acquisition Phase, and no significant differences in the between the GD and GDI in the Acquisition Phase and in the comparison between the three groups in the Transfer Phase.

The study also emphasized the importance of demonstrating the important useful aspects of the action for learning the ability, clearing up doubts about how the action should be performed. KEY-WORD: Motor learning, verbal instruction and demonstration.

ÉFFETS DE L'UTILISATION DE L'ORAL DANS L'APPRENTISSAGE ET LA DEMONSTRATION DE L'EMOTIONNELLE
O processo de aprendizagem motora engloba várias etapas e tem como um de seus pontos centrais a transmissão da informação sobre a tarefa que se pretende realizar. A instrução verbal e a demonstração da atividade a ser realizada são dois dos mais importantes parâmetros frequentemente utilizados como instrumentos de ensino no campo do aprendizado motora. A instrução verbal abacar informações sobre a meta da tarefa, sua especificação e seu modo de execução. A demonstração, por sua parte, representa uma forma de aprendizado motora que é feito em um movimento demonstrado (modelo) para o aprendiz que deve ser capaz de extrair importantes informações que o auxiliarão na organização e execução da mesma atividade demonstrada utilizando-se de suas ações motoras individuais. Este estudo pretende testar a influência dessas atividades em aprendizagem de lançamento de dardos em pessoas, não praticantes da habilidade em questão. A amostra foi composta de dez eito indivíduos do sexo masculino, militares da aeronáutica, na faixa de idade de 22 a 28 anos, divididos em três grupos de seis: grupo de demonstração (GD), grupo de instrução verbal (GI) e grupo de demonstração e instrução verbal (GDI). O teste foi realizado em duas etapas, a fase de adquisição e o teste de transferência. Para analisar a fase de adquisição e o teste de transferência se utilizou o Test-t Student independente. O nível de significância utilizado foi p<0.05. O estudo mostrou diferenças significativas entre os grupos GI X GD e GI X GDI na fase de adquisição, e não mostrou diferenças significativas entre GD X GDI na adquisição e na comparação entre os três grupos no Teste de Transferência. PALAVRAS-CHAVE: Aprendizagem motora, instrução verbal e demonstração.