EFFECT OF TRAINING INFORMATION TECHNOLOGY AND COMMUNICATION DRIVING SCHOOL

Case of the teaching of O'Brien shot put style

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Abstract. The purpose of this study was to compare three different pedagogical approaches to training of complex motor skill: shot put style translation (O'Brien). The first is to introduce learning situations using an 'Audiovisual Projection' '(APA). The second is essentially based on demonstration of gesture, supported by verbal instructions (ADG). The third is based exclusively on verbal instructions (ACV). To do this, a group of 87 trainees from three classes of 7th base year participated in this study. Their average age was between 12 and 14 years, an average height of about ± 1.60m and a weight of 55 kg ±. All they had no practical experience in athletic activity, specifically in Shot Put. To each of three classes one of the three approaches was applied as well as 8 sessions alternating with three assessment sessions. The results showed that performance of trainees after using of the first approach (APA) was relatively better than that was achieved with using of other two approaches, especially when training of complex motor tasks, specific to the chosen style of throwing. This allows to deduce the existence of a relationship between complexity of the motor action to be reproduce and interpretation of audiovisual messages, presented by the coach in the middle of training cycle.

Keywords: Pedagogical approaches, complex motor skill, Audiovisual Projection, style translation, verbal instructions.

Introduction

In the area of motor skill acquisition, the theoretical framework of observational learning can be identified in the study of Carroll and Bandura (1982). Researchers reported that in a first phase the observation of an external model is effective in early learning for the acquisition of a new coordination complex consisting of motor sequence. While the second phase is particularly dedicated to knowledge of the performance that is delivered through video feedback, which helps to refine the internal model. In continuation of the work of Carroll and Bandura (1982), experimenting with Magill and Schoenfelder-Zuhdi (1995) highlights the complementary nature of the demonstration and knowledge of the performance for the acquisition of a series of rhythmic gymnastics sports rope. Specifically, the model, provided by the demonstration, gives information about body and positions of the various segments, while knowledge of the performance of the subject informs about travel of the machine.

The work of Lafont (1994) Cadopi (1995) & Laugier (1995) also highlights the effectiveness of simulation and demonstration, explained during the early phases of acquisition.

Numerous recent studies and researches have shown that acquisition of athletic ability by children can be optimized with the help of the same structuring of learning content. Bertsch (1995), and Scanff Bertsch (1995) showed the importance of environmental design for clarification of the task's purpose. This arrangement relates to the constraints of motor tasks in order to adapt the requirements of these processing resources for the beginner. It also involves the training sequence in order to introduce enough variability that beginners can build an engine program adapted to the problem that is posed to them.

Thus, in this work, we allow them to recognize the modes of instruction centered mainly on the repetition of ability to acquire and the constancy of learning conditions. According to Grehaigne and Mahut (1998, 2000) the acquisition motor skill by a child seems to depend more on ability of teacher to analyze characteristics of the proposed tasks, to identify requirements for adaptation to the constraints resources issues and to monitor the effects of changes introduced.

In summary, it appears that all motor skills, acquired by a student, are influenced by the quality of education of the teacher. Indeed, the acquisition involves the simultaneous consideration of environmental and plant data. It requires a suitable physical structure of a learner as well as taking into account the rules that allow the resolution of the engine problem.

Finally, it is necessary to take into account individual distinctions between learners, especially in cognitive and motor predispositions, taught in the process of physical activity.

Thus, during learning by observation, based on a pedagogical approach using audiovisual projection, how students from 7th year, not having a basic level of driving experience in the shot put style of O 'brien, can receive benefit from the training, offered to them? Do they obtain more benefit both qualitatively and quantitatively in a learning cycle engine of a motor action for the first time?

Methodology

Purpose of the Research

The purpose of this study is to highlight the effect of three pedagogical approaches of the quality of acquiring various technical tasks, necessary for learning the shot put (O'Brien style).

Experimental Sample

A group of 87 students participated in this study. Their ages range between 12 and 14 years, their average size is ± 1.60m and weight is 55kg ±. This group was from three basic classes of 7th , characterized by lack of practical

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experience in athletic functioning, specifically in Shot Put.

Similarly, this group has no practical experience in the shot put.

However, it should be noted that teacher with professional experience of ten years is a specialist in 'Handball'.

Experimental Procedures

The experimental task is to teach students the art of throwing weight by adopting the translation style (style of O'Brien). In this respect and to acquire this complex motor skills, 11 meetings have been scheduled; to 2 sessions per week for a period of 50 minutes each.

During this learning cycle, three assessments were planned: the first, predictive, - at the beginning of the cycle, the second was formative and conducted after the 5th session of learning, and the third, summarizing assessment was carried out after the 10^{th} training.

Three different teaching approaches have been proposed and put to test:

• The first approach is a demonstration gesture coupled with verbal instructions (ADG) of various motor tasks, offered during the cycle of the shot put.

• The second approach is a verbal description (ACV) - educational activities pointed to undertake and carry the part of students in each learning situation.

• The last approach is presenting of teaching situations at each session using an 'Audiovisual Projection' '(APA) content aimed to learn before taking action.

The projection of the training sequences specific motor skills in shot put (O'Brien style)

is based on the work of "Didier POPPE " (" path " - Illustrations IAAF Level 1) and the " Programming Cycle " and qualitative criteria used in the observation.

The experiment was conducted on a tray athletics basement, with 4 circles throwing regulations.

The technical performance of students at all trainings of the cycle were recorded by a Canon digital camera (25 frames in PAL) and performance is measured using a double tape measure.

Statistical Procedures

We processed the data of observation by "percentage calculation" and "chi-square" with a threshold of less than 0.05 probability.

Calculating the percentage was applied to identify the benefits of students, learning at different spots in specific motor launch weight (O'Brien style).

The chi-square calculation permitted to determine contribution of educational approaches, used in the acquisition of quality different motor tasks, necessary for learning the shot put (O'Brien style).**Results and Interpretation**

Effet of three pedagogical approaches on the quality of motor skill acquisition in shot put (Obrien style) .

Table 1

Increase the quality of students' performance during the first five learning sessions.

APPROACH / SKILLS	ACV		ADG		APA		Comparison of three approaches
	% H.M	% H.N.M	% H.M	% H.N.M	% H.M	% H.N.M	
Tenue of the craft	65.52%	34.48%	72.41%	27.59%	79.31%	20.69%	khi2= 1.381 ; ddl= 2, NS à P=0.501> 0.05
Position elbow	58.62 %	41.38 %	65.52 %	34.48 %	68.97 %	31.03 %	khi2= 0.702 ; ddl= 2, NS à P=0.704 > 0.05
Sursaut side	48.28 %	51.72 %	58.62 %	41.38 %	72.41 %	27.59 %	khi2 = 3.537 ; ddl= 2, NS à P=0.171 > 0.05
Extension of the free leg.	44.83 %	55.17 %	48.28 %	51.72 %	58.62 %	41.38 %	khi2 = 1.196 ; ddl= 2, NS à P=0.550 >0.05
Thrust Arm	48.28 %	51.72 %	55.17 %	44,.83 %	62.07 %	37.93 %	khi2 = 1.115 ; ddl= 2,NS à P=0.573 > 0.05

The analysis of the above rendered in Table 1 statistical data in shows that there is no significant difference between three teaching approaches (LCA, ADG and APA) regarding the quality of service for students during the first five sessions of scheduled training (P> 0.05).

However, difficulties have been identified mainly in learning 'Sursaut side', 'Laying the resumption of double support' and 'Driven arm' by (LCA) (failure rate exceeds 50%). Similarly, it is noted that the resumption of the "Placement double support " by (ADG) is a subject of an embarrassing learning with an equal 51.72% failure rate.

Influence of three pedagogical approaches on quality of motor skill's acquisition in shot put (Obrien style) .

Table 2:

Increase of the quality of students' performance at the end of the learning cycle.

APPROACH / SKILLS	ACV		ADG		APA		Comparison between the three approaches
	% H.M	% H.N.M	% H.M	% H.N.M	% H.M	% H.N.M	
Tenue of the craft	68.96%	31.04%	75.86 %	24.24 %	82.76 %	17.24 %	khi2 = 1.506 ; ddl= 2, NS à P=0.471 > 0.05
Position elbow	62.07%	37.93%	68.97%	31.03%	72.41%	27.59%	khi2 = 0.737 ; ddl= 2, NS à P=0.692 > 0.05
Lateral Sursaut	51.72%	48.28%	62.07%	37.93%	75.86%	24.24%	khi2 = 3.658; ddl= 2, NS à P=0.161 > 0.05
Investment recovery Double appuit	48.28%	51.72%	51.72%	48.28%	62.07%	37.93%	khi2 = 1.203; ddl= 2, NS à P=0.548 > 0.05
Thrust Arm	51.72%	48.28%	58.62%	41.38%	65.52%	34.48%	khi2 = 1.137; ddl= 2,NS à P=0.566 > 0.05
The Pulse by extending the free leg.	24.14 %	75.86 %	55.17 %	44.83 %	68.97 %	31.03 %	khi2 = 12.232 ; ddl= 2, SN à P=0.002 < 0.05.
Startle shaving	24.14 %	75.86 %	51.72 %	48.28 %	58.62 %	41.38 %	khi2 = 7.808 ; ddl= 2, SN à P=0.02 < 0.05.
Rotation of the pelvis	17.24 %	82.76 %	51.72 %	48.28 %	65.52 %	34.48 %	khi2 = 14.5 ; ddl= 2,TS à P=0.001 < 0.05.
Extension de la jambe libre	17.24 %	82.76 %	48.28 %	51.72 %	62.07 %	37.93 %	khi2 = 12.509 ; ddl= 2, TS à P=0.002 < 0.05.
Rotation of the body	17.24 %	82.76 %	44.83 %	55.17 %	58.62 %	41.38 %	khi2 = 10.708 ; ddl= 2, TS à P=0.005 < 0.05.

Analyzing the results, rendered in Table 2, we see that there is no clear and confident difference regarding the usage of three instructional approaches in learning the first five spots in specific motor launch weight (O'Brien style) throughout the programmed cycle (P> 0.05). Spots drive is also considered by experts athletics to be simple and easy to reproduce.

However, the data of the same table tell us that pedagogical approach based on audiovisual projection resulted inthe best quality performance, regarding specific learning complex motor tasks in shot put (O'Brien style) in Example of: the pulse of the free leg, start shaking, pelvic rotation, extension of free leg and body rotation. (P <0.05).

Discussion

The results,obtained in this study, show that usage of pedagogical approach, based on audiovisual projection, proves to be much more effective for the acquisition of the art of shot-style translation, compared with the use of the approach, based on gestures or demonstration and using of only verbal instructions.

By using the benefit of students during the interim assessment , we deduce through the percentage of motor control tasks scheduled for students, who were trained, basing on audiovisual projection (APA) and developed a good degree of sizeable assimilation for technical information, related to simple and easy to replicate sports (control rate exceeds 58.62%). So, referring to benefits for student summarizing assessment, we found that motor control tasks, scheduled throughout the cycle, are more prevalent than non-control ones (control rate exceeds 58.62% and up 82.76% for the Conduct of gear and 75.86% for the lateral Sursaut).

Indeed, with APA we have seen a gradual improvement in the performance of different motor sequence techniques. These results are consistent with the study of Sheffield FD (1961), which states that the observation should be combined with physical practice.

However, the beneficial effects of observation appear as soon as observers have opportunity to practice the task physically.

They also join the analyzes and Nachon Kohler (2001), in which the acquisition and retention of a motor skill, mastered for the first time, are being gradually built up by information of exteroceptive characters. This information is provided in this case by the audiovisual presentation, playing the role of director and finalizes representation of motor ability to reproduce.

It should also be noted that through audiovisual presentation the experienced can extract information about the activity presented; transform, assimilate to its own operational schemes, precisely to the extent of these patterns (Zetor, 1996). These results are proved by the work of 'Philippe Giroud'et 'Bettina Debu' (2004) who enhanced the effectiveness of learning by observation procedures for the acquisition of an educational hurdles in children, who begin the activity. Similarly, Rodrigues ST (Percept Mot Skills.2010) reports that audio-visual projection provides students with relevant information, necessary for learning very complex skills.

Therefore, we agree with the proposal of Sheffield FD (1961), who states that observation should be combined with physical practice to give the best results. Moreover, Shea CH et al. (2001) found that compliance is a "variable learning" during the phases of long-term retention.

On the other hand, in addition to what was presented, Möhnsen BS et al (2001) showed that audiovisual presentation provides a more flexible learning, interesting for the use of movement; the action can be viewed for several times and at different speeds. It can also be stopped at a specific element to be analyzed. All of these capabilities permit the practitioner to better discern different phases of movement and facilitates acquisition.

Regarding the effect of the pedagogical approach, based solely on the demonstration gesture (ADG), the analysis of performance of learners during interim assessment confirms that control motor skills programmed are much more distinguished (control rate exceeds ≈50%).

At the summarizing evaluation, difficulties have been identified mainly in learning of different specific complex motor sequences shot put (O'Brien style). Indeed, the failure rate exceeds 50% in learning the "extension of the free leg" (51.72%) and "body rotation" (55.17%).

However, the demonstration of gesture can be an effective way for learning of complicated tasks of simpler drive; this is confirmed by the theory of Bandura (1969) who states that the transmission of knowledge is established on engine on the basis of sign language model's reproduction. The level of learning complex motor tasks, the contribution of the ADG is very simple for the quality of execution.

This is entirely consistent with what has been advanced by Mrayeh et al, (2007), who showed that the demonstration gesture coupled with verbal instructions ensures better quality of sign language learning at demonstration of sport science to students, regardless of their driving experience in complex motor skills (Throwing Weight rotary style).

Regarding the effect of pedagogical approach, based solely on verbal instructions (LCA), we found that it does not have a significant effect on the quality of execution of various motor sequences (simple and complex) by novice students throughout the cycle of shot put style translation.

Indeed, during the interim assessment we found that students have difficulties in learning 'Sursaut side', 'Laying the resumption of double support' and la'Poussé arm '(failure rate exceeds 50 % during the interim assessment).

However, during the summarizing assessment, students have experienced significant difficulties in learning of complex motor tasks, such as Impulse leg free ',' Startle skimming ',' Rotation of the pelvis ', Extension of the free leg' and 'Rotation of the body' (the failure rate exceeds 75%). This performance of insufficient quality during the interim and summarizing assessment is directly related to difficulties, encountered at times of the reproduction of different sequences drive, following simple verbal instructions. Abstract tasks actually evoked an image with a low probability of reproduction (Famose, 1996). Similarly, Quintillon (1992) assumes that speech is only sequential, she says one thing at a time, one thing after another, it is fragmented; the gesture is itself more syncretic, providing more comprehensive view.

Also, weakness of qualitative performance comes from difficulties in learning of the principles of execution sequences of throwing art (Famose, 2000).

This is entirely consistent with what has been advanced by Mahut (2001), the higher is level of skill, the lower learner misinterprets and abstracts information model; these misinterpretations can bring to failure in identifying the learning context or style of throwing involved.

By using the benefit of the students during the intermediate and summarizing assessment, we can confirm percentage of mastery of different criteria, obtained for students, whose motor learning based on verbal information, to limits. These limits, as they were raised by Lafont (2002) are related to both the complexity of the proposed motor activity and degree of interpretation of verbal code from the learner.

This finding is supported by Juare and Pargman (1991) who have tstudied dance sequence in a series of six photographs of a hand, and used a corresponding set of six records, written on the other. They conclude superiority of photographic format on the verbal format. Indeed, during the implementation of instructions for a motor task, the subject is required to make the transition between two distinctly different sides of its business: understanding of verbal message on the one hand and the execution of motor action on the other (Annett, 1986).

However, many theorists of Physical Education as Hébrard, Famose, Simonet and Vives emphasized the need to go through phases of verbalization, or explicit, to promote learning and transfer and neglect the use of observational learning. We try to show that the relations between knowledge and skill are complex and must be approached with caution.

For Famose, Hébrard, Simonet and Vives (1979) and Hébrard (1986), observational learning is a very effective strategy. They suggest that children can not draw beneficial information, simulating (observational learning) in the heart of learning. While Wiese-Bjornstal and Weiss (1992) concluded that, in contrast to their predictions children were able, without verbal signal, to detect crucial information from the observation of the performance and correctly translate the

information into action.

Based on this debate, Wulf, Hob and Prinz (1998) showed that in the beginning, learning is optimized, when it directs attention to learning about the influence of their movements on the environment. Similarly, in the context of athletics, Arnaud (1996;. Arnaud et al 2000) distinguish information about body, organizing those on the spatial organization and advocate the use of instructions on the spatial organization in the beginning. Finally, the use of a visual model comforted the appropriateness of an external focus.

Similarly, the effectiveness of the instructions for execution of driving task can actually be analyzed from the standpoint of the compatibility between the format and the encoding mode, corresponding to the mental representation. (Denis 1990).

We can then consider that the construction of prior pictorial representation, as suggested by Annett (1986), is further facilitated by a figurative image type of information, video, drawing or diagram action by verbal instruction. Indeed, based on an audiovisual projection, learning helps students to focus on "right" information (Cornus S. 2007), while Adatte, G. (2008) argues that the subject must know the criteria to be successful with the taskm, so that it can be used with profit video. These results are confirmed by PL Laguna. (J Sports Sci. 2008), who states that the acquisition of a simple skill is benefited by the combination of observed patterns and physical practice, while the acquisition of a complex skill is enjoyed more by the combination of patterns observed and knowledge of performance practice.

In this respect, it is noted that the construction of a pictorial representation (or video) has also been explored in the comprehension and retention, particularly in the processing of spatial information (Denis & Robin, 1990). Indeed, this representation can increase the cognitive resources of working memory and visual-spatial imaging capabilities. This is confirmed by Philip G. (2004) in learning of complex sport skills, such as hurdling. Accordingly, he argues that learning, based on audiovisual projection, appears to be an effective teaching strategy for children, starting as if a number of tests sufficient practice is performed to obtain meaningful results for the objective task.

On the other hand, referring to the concept of proximal development zone - (which is the distance between what subject can do alone and what it can be achieved with the help of an adult or an expert (Vygotsky, 1934/1985)) - Mc Cullagh and Weiss (2001) discuss the effect of the level of skill demonstrated by model and the relevance of a "coping" model, i.e. a based on a model, which shows the audiovisual projection, adjusted to increase the demand for the task. This type of model seems to be useful in difficult situations and when the task is complex. Hence, we can assume that training of shot put with an audiovisual support allows to "work" closely within the zone of proximal development of novice trainees.

Using the difficulties, encountered by students during the execution of different motor sequences along the training cycle, can be explained, as Winnykamen (1990) argued, by the fact that with limited driving experience (such as the case of our present research) being in a situation,in which trainee has no exact reference to past experience, he must select all relevant information from current situation; this may justify, in our opinion, the usefulness of using an additional source of information, such as audio-visual projection in the acquisition of complex motor skills for novice trainees.

To complete we affirm that our results confirm the effectiveness of simulation procedure with audiovisual projection in process of training of complex sport skills such as shot put (O'Brien style). Consequently, the introduction of new technologies in training process, leads to new forms of coaches' practices (Marcel JF., 2007) and training (Barthes D. & S. Losfeld, 2008). The analysis of environments mediated formations leads to renewal of the framework and analysis of these environments (B. Albero, 2010) methods. In presenting of motivational aspect, the introduction of new technologies in education, put questions to the future of training content and the teaching-learning situation (Vérillon A., 2005)

The use of new technologies in education, where hardware support comes to play an intermediary role in the didactic situation (D. Barthes, 2006) puts questions to training environments instrumented (Rabardel, 1995); it also examines the types of offered teaching methods and underlying learning models (B Albero, 2010). This is entirely consistent with what has been advanced by Cloes Piéron M. & M. (1995), the ability to observation is a skill of teaching. Hence, it can be a learning and systemic development.

Conclusion

This study of complex motor skills' acquisition (shot put style translation) by examining of the effect of three different training approachesm, showed that audiovisual projection ensures better quality of training for trainees, who have no practical experience in athletic activity, specifically in Shot Put.

The influence of the audiovisual approach was observed in execution of different driving sequences. It resulted in efficiency of percentage up to 82% for certain motor sequences, which are necessary for the execution of the shot put (O'Brien style).

It is also noteworthy: this study found that more information about driving ability to be reproduced is easy to be read (the contribution of audiovisual projection during motor training) and reproduction quality is better (control rate exceeds 70% and up to 82.76% for "keeping the machine"; 72.41% for the "elbow position" and 75.86% for the "lateral jump").

However, it should be noted that usage of only demonstration at training sessions, trainees face difficulties predicted especially regarding the different specific training complex motor sequences of shot put (style O'Brien) the example of the "extension of the free leg" (failure rate equal to 51.72%) and "body rotation" (failure rate equal to 55.17%).

We also found that by using of verbal information at training sessions, trainees face difficulties in execution of different sequences of motor skills offered. This may be related to absence of movement's to be reproduced mental representation, its technical complexity and the degree of interaction with others, especially with the coach and model itself.

These first results, obtained in the observed training of complex motor skill, should lead us to extend our research in direction of increasing effect of the intervention methodology of a coach for him to promote interactive imitation in class.

Conflict interests

The authors declare absence of any conflict interests.

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