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Original article

THE INFLUENCE OF USING VIDEO FEEDBACK RELATED TO THE DEMONSTRATION IN THE IMMEDIATE EXAMPLE

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Abstract

Aim. We intend to identify through this study what are the training features that help to direct attention to relevant information in dynamic connections between the teacher demonstration and video feed-back. In this study, we did not aim to achieve a higher level of sports craftsmanship since the group of subjects does not aim entirely to become specialists in the training of rugby players, the group of clients will try to complete the bachelor studies with the objective of becoming physical education teachers. We also anticipated that by using skill-specific craftsmanship models, this would also be likely to increase self-efficacy.

Methods. The subjects of the study are the university's clients, in the last year of the bachelor's cycle. A total of 24 subjects were included and assessed for eligibility and meeting the criteria and were included in this study, subjects who had played rugby or received previous training did not participate in the group.

Results. The results noted and analyzed statistically show an improvement in the level of technical execution, results that are highlighted the difference between the average of the notes between pre-test 6.67 and the average of the notes at post-test 8.16. The T-test value is 6708 and confirms the statistically significant difference between averages.

Conclusions. The accumulated motor skills are in accordance with the basic requirements of a physical education teacher, exceeding the level previously achieved. The results of the research show that the superiority of the technical level obtained was possible by using the videos and their use after the explanation and demonstration made by the professor in practical activities, compared to the static presentation in learning motor skills in the game of rugby.

Keywords: correlation, video feedback, coordination, courage.

Introduction

Literature investigating feedback has become extremely rich since the establishment of the cyber approach to learning (Wiener, 1948). I've been following this topic for the last two decades, scientific literature provides specialists with a multitude of open resources and suggestions for the use in teaching video recordings and in learning motor skills in general. Feedback is inextricably linked to processes of learning and teaching (Bangert-Drowns et al., 1991) and its use during the teaching process has been the focus of many studies (Georges & Pansu, 2011). It has been shown that mirror neurons are responsible for our ability to engage in imitative learning (Rizzolatti & Craighero, 2004). Clients' desire to complete theoretical content is based on the time of use of mobile terminals, the average daily incomparably higher compared to the last decade. After the conditions imposed by Covid-19 customers started to use phones more frequently, The Covid 19 pandemic in 2020 increased screen time as people stayed indoors, adding to concerns about the effects of excessive screen time. Specialists called for limiting screen time and for living a more active lifestyle (Nwankwo, Shin, Al-Habaibeh & Massoud, 2019). The positive role and use of learning/repeating a movement from a screen picture in a classroom has been recently investigated and the studies showed that exposure to the movement tasks can be helpful for the attitudes of pupils towards physical activity (Glapa et al., 2018, Mok et al., 2020). Knowing these negative aspects, we must accept and use this customer skill in order to increase the accumulation of knowledge and increase the understanding and interdisciplinary correlation of theoretical content. Looking at this situation, the question arises as to the degree to which these concerns of the clients represent a support for learning motor skills in physical education. So, this study uses the data analyzed in a previous research, but also the results of the use of video recordings in practical activities with the clients participating in the study using them as a method of training and feedback. Executions of the subjects were reviewed and recorded. A large amount of empirical research in the field of motor learning has emerged over 50 years, providing rich insights on the role of feedback on performance, learning and behavior change (Bilodeau & Bilodeau, 1961; Bilodeau, 1969; Brunelle, 1980; Piéron and Piron, 1981; Brunelle & Carufel, 1982; Brunelle et al., 1983; De Knop, 1983). The correlation between the two means used in this study, its own example and the use of video recording in which the client tries to perform the action that was demonstrated by the professor did not reveal a linear relationship in all cases and throughout the study. More recently, the non-linear pedagogy approach has suggested the need to consider feedback, not to prescribe movement solutions, but to encourage exploration of learning strategies to exploit natural self-organization processes that emerge during practice (Renshaw et al., 2010; Chow et al., 2016). Our study tries to optimize

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the use of video and feedback. In both theoretical frameworks, video feedback is considered as an essential strategy for facilitating the acquisition of new motor skills by facilitating learners adaptations during practice. In this respect, numerous studies have demonstrated the effectiveness of video feedback in the acquisition of various sports skills over relatively short learning periods, such as the golf swing (Guadagnoli, Holcomb & Davis, 2002). This is because the information they convey involves non-human movement and thus requires extra resources to integrate them in memory (Bétrancourt & Tversky, 2000). In the physical education context, dynamic visualizations such as videos are increasingly being employed to communicate tactical and motor skills that are difficult to verbalize. Studies assessing the instructional and cognitive benefits of videos show that they are more effective than static pictures, when content-to-be learnt involves acquisition of a human movement (Van Gog, 2018). Other research, however, has shown that complex dynamic representations such as videos or animations are not necessarily more effective than static ones for learning (Mayer, 2005). Various types of feedback have been identified in pedagogical research in physical education setting, such as augmented feedback (Fishman & Tobey, 1978), information feedback (Newell & Valvano, 1998), congruent feedback (Rink, 2003), aligned developmental feedback (Cohen, Goodway & Lidor, 2012) or interrogative feedback (Swalus, Carlier & Renard, 1991; Driouch et al., 1993). Therefore, a video showing a human movement automatically can activate the mirror neuron system which is supposed to reduce the difficulties associated with processing transient information (i.e., the human movement effect (Paas & Sweller, 2012). Traditionally, it is presumed that especially early in learning, in the so-called verbal-cognitive stage (Fitts & Posner, 1967), augmented instruction and feedback is necessary for motor learning to proceed. Instruction and feedback help a novice learner to consciously understand not only the goal of the activity, but also how to perform the activity. It helps the learner to build a reference of correctness through which they can identify errors and develop strategies to avoid them (Schmidt & Lee, 2011). We have sought to find the effective way to generate a high level of efficiency in the flow of information to the client, using the results of previous studies. There are some indications that children require higher frequency of instruction and feedback, but it appears that also for children a diminishing schedule is most effective (Chiviacowsky et al., 2008; Ste-Marie et al., 2013). However, for a teacher of physical education it is not always feasible for all individual students and sometimes it is downright impossible (Van der Kamp et al., 2015) to find a way to induce progress in a similar way. Therefore, we examined what type of instructional features, verbal explanations, only verbal explanations with visual markings or verbal explanations with demonstrations of the teacher, which is the best way to help customers. I watched carefully all the subjects participating in the study, encouraging them to focus their attention on the video sequences related to theoretical information. Through this approach we aimed to understand if certain aspects are identified that can be considered as negative transfer in motor performance and if the video model contains errors. However, even with verbal guidance, beginner learners encounter difficulties in selecting important information from video models, especially when - as would be typical for physical activities - dynamic models are used (Jarodzka et al., 2013). Therefore, researchers investigated the use of visual instruction in video modeling for learning new skills. They did this by editing video displays, for example, overlapping markers such as arrows, circles, lines, etc. (Janelle et al., 2003), for example, demonstrated that instruction by visual signs and verbal explanations increases the learning of a football subscription in (young) adults relative to healing only by verbal explanation.

Methods

In this study, we did not aim to achieve a higher level of mastery, since the group of subjects does not aim entirely to become specialists in the training of rugby players, the group of clients will try to complete the bachelor studies with the objective of becoming physical education teachers. The effectiveness of the video analysis presented to the subjects was measured compared to a group that did not benefit from video feed back. We decided to use video models, (video feedback) but only according to the criteria at the level of physical training correlated with the accumulated motor luggage. We introduced in this study two important moments of the game of rugby, plywood and pushing in the ordered pile. In both situations, the position of the body at the time of contact and physical engagement shows a number of similarities. The results from the preliminary study carried out in previous years bring to the attention some aspects of the methodical learning path that we completed in both situations by introducing video feed-back. Video footage was used without verbal commentary from the models presented at the theoretical meetings. We decided so, because we assumed that they would allow us to best adapt the difficulty level of the model to the level of qualification of the student, which turns out to be important (Hodges & Ste-Marie, 2013). Each subject was noted, the evaluation was done on a grid from 1 to 10. The results were compared and analyzed statistically. The subjects of the study are the clients of the University of Ovidius, in the last year of the bachelor cycle. A total of 24 subjects were assessed for eligibility to the criteria and were included in this study, which did not include subjects who had played rugby or received previous training. The age of participants ranged from 20 to 28 years. They received a full explanation of the research project, purposes and benefits of using in teaching technical elements or processes from sports games to video feed-back. The study was conducted over 6 weeks between October and December 2023.

Results

As a result of this study we can bring to the attention of specialists that the use of video feedback brings significant changes within the groups where it was used. Awareness of the less correct steps was easier to understand for the study subjects when a clear and analytically explained view of the requirement was formed. When the subject realizes the defense action (figure 1) shows that he has overcome the psychological barrier and manages to hit the training bag with his shoulder. The distance of more than 90 cm between the last footprint and the training bag (figure 1, figure 2) implies a strong impulse in the ground and the design of the trunk forward, sometimes achieving a short flying phase until contact with the training bag. Keeping your back straight and descending below the average level of your opponent, in our case, indicates an understanding and demonstrates that using the three didactic vectors significantly shortens learning time. As we have seen in previous studies, fear is an important barrier to motor learning. The shorter distance between the trail of the last leg and the base of the training bag (figure 4) is the consequence of some subjects experiencing reluctance to uncommon or first-time situations, or a transfer from other sports disciplines (figure 3), in which the impulse is achieved in both feet simultaneously.

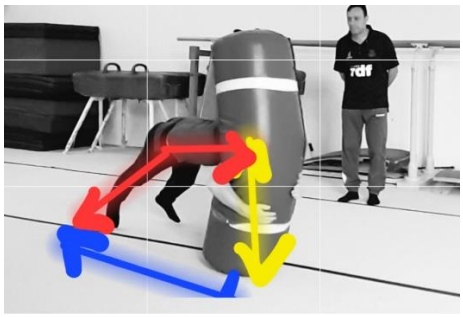

Figure 1. Tackles from running

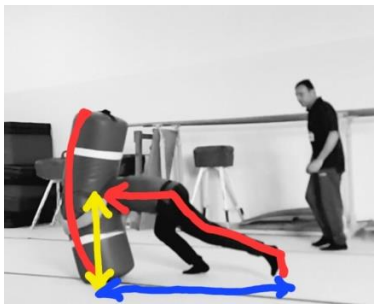

Figure 2. Tackles from running

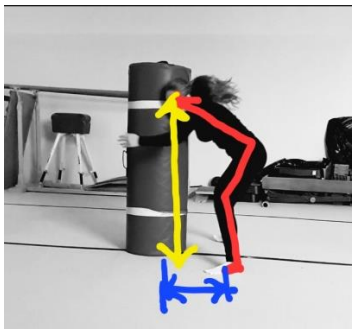

Figure 3. Tackles from running

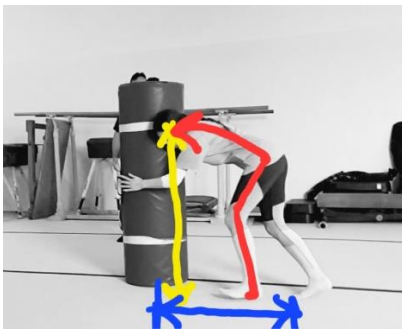

Figure 4. Tackles from running

The results noted and analyzed statistically show an improvement in the level of technical execution, results that are highlighted the difference between the average of the notes between pre-test 6.67 and the average of the notes at post-test 8.16. The T-test value is 6708 and confirms the statistically significant difference between averages.

Table 1. Statistical values of technical evolution for the initial and final testing in girls groups - values result from the tackle

	Pre-test	Post-test	
Average	6.67	8.16	
Coefficient of variation	12.23	4.99	
Standard deviation	0.81	0.4	
T-test	6.708		P<0.005

The values obtained by boys in the defense exercise are compared to those of girls and are for pre-test of 7 compared to the average of post-test 8.25 with T-test of 5, statistically significant. A less expected result is generated by the comparison between the two groups, girls and boys. We note that the progress achieved by the girls who participated in this study is compared to that achieved by the group of boys, both managed a statistically significant improvement of the

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execution technique. We believe that the level of understanding of the requirements, the self-confidence, the way of presenting the sport discipline and the teacher's demonstration (figure 5) contributed to achieving these results in both groups (figure 6). The position of engagement in the forward package has many aspects similar to the positions in the technique of execution of the defender.

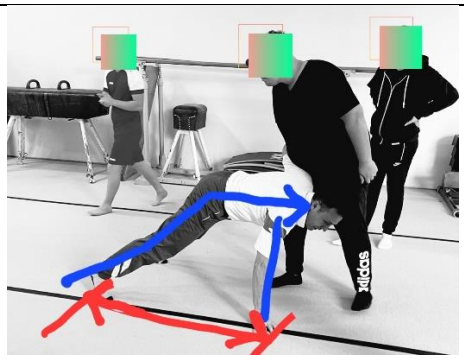

Figure 5. The demonstration made by the teacher

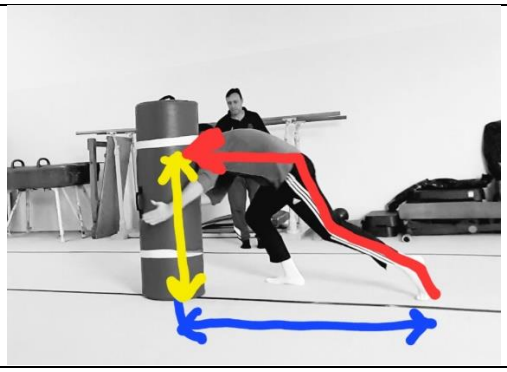

Figure 6. Tackles from running

In the case of scrum, the explanations did not have a significant contribution, the first stage (figure 7) brought to our attention several aspects, most related to the level of muscle preparation. The comparative illustrations of the two positions, which correct with the legs much behind (figure 5) and the one made by the subjects (figure 8) reveal great differences but also deficient in general physical development.

Figure nr 7. The scrum

Figure nr 8. The scrum

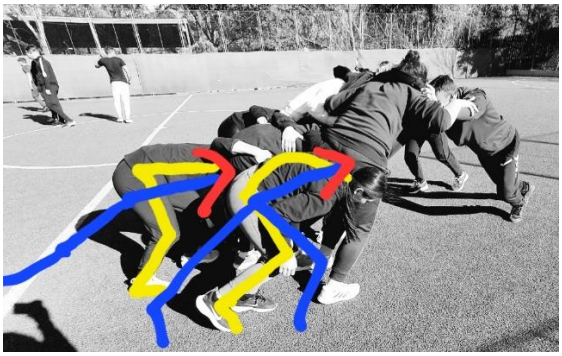

Figure nr 9. The scrum

Figure nr 10. The scrum

The contribution of the use of shooting and demonstrations has visibly improved the ability of coordination in scrum (figure 9) and the understanding of each stage where the subjects were able to perform the specific tasks of the scrum players correctly. The results recorded by using video feedback in the weekly schedule of practical activities brought to attention the need to permanently introduce this technique in the work with the university's clients. In support of this need is also the positive perception that customers have expressed regarding the use of video feedback. The interaction between the subjects and the teacher by visualizing and making the videos did not disrupt the planning designed for practical meetings at the rugby discipline.

Table 2. Statistical values of technical evolution for the initial and final testing in boys groups - values result from the tackle

	Pre-test	Post-test	
Average	7	8.25	
Coefficient of variation	10.8	5.61	
Standard deviation	0.75	0.46	
T-test	5		P<0.005

Significant differences between groups of boys are illustrated (figure 11), the raising of the technical level within the group that followed the practical work video recordings with their own executions recorded an increase of the technical level in the case of conducting the bag tackle very close to the level of craftsmanship demonstrated by trained rugby players.

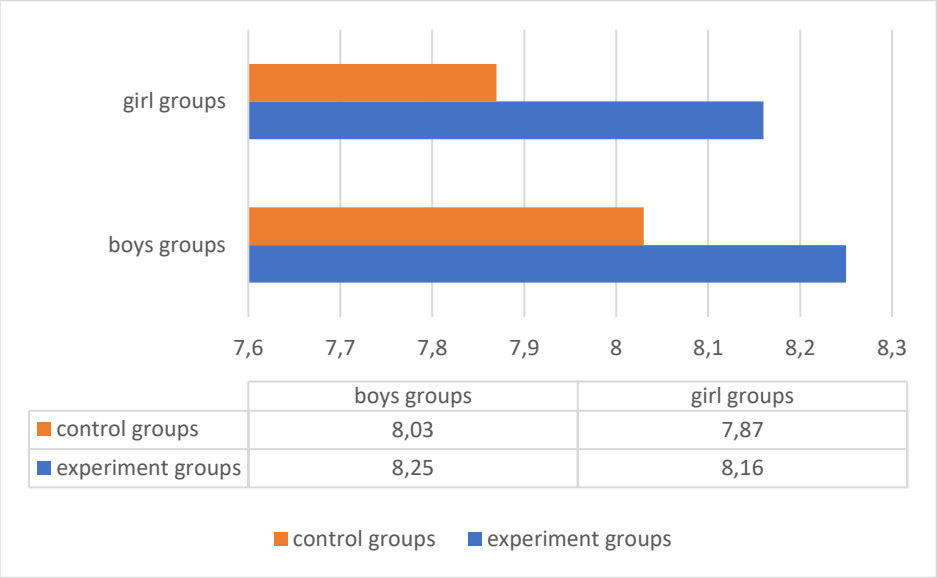

Figure nr 11. Comparative graphical representation of mean values recorded between the groups in the experiment and the control groups

Conclusions

The results show that the use of a video resource with a customer record together with a proof of craftsmanship exemplified by a specialist teacher, results in the improvement of motor learning in relation to a simple model based solely on explanations and theoretical presentations, demonstrates that direct non-involvement is a failure, which shows success and performance in physical education and sports. Feedback may be defined as the return of performance information occurring within a behavioral regulation loop, where error detection and correction are essential to motor learning (Mulder & Hulstijn, 1985; Schmidt & Lee, 2005). However, the different video models used do not influence differently the way the clients perceived or obtained performance, these video recordings showed their own activity, we refer to their own execution filmed in this experiment or execution made in videos produced for teaching purposes, in which one can see execution of great craftsmanship. According to the theory of cognitive task (Sweller, Ayres & Kalyuga, 2011), which refers to how instructional design affects working memory and learning, this processing requires a workload that can interfere with learning (Ayres & Paas, 2007). The hypothesis from which we started that we believe that by using video-feedback we will be able to achieve a better transfer to the client, they managed to understand what to do and then manage to perform the two tasks was confirmed. The results confirm that the use of video feed-back is a video advantage for learning a customer processes and elements specific to the game of rugby. The accumulated motor skills are in accordance with the basic requirements of a physical education teacher, exceeding the level previously achieved. The results of the research show that the superiority of the technical level obtained was possible by using the videos and their use after the explanation and demonstration made by the teacher in practical activities, compared to the static presentation in learning motor skills in the game of rugby. We were able to identify through this study what are the training features that help to direct attention to the relevant information in dynamic connections between the teacher's demonstration and video feedback. Participants with a shortage in the luggage of driving experiences need additional guidance to act on

progress-generating resorts. Most of the subjects sought relevant information about the technique of tackling and pushing in scrum, theoretical information or information in video models. It is true that the easiest way for a teacher of physical education is to offer explanations or guidance action that is done through verbal explanation, but we consider that through this paper, all participants in the study, future teachers of physical education, understood the importance of the demonstration made by the teacher and its correlation with video feed-back.

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