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Acute Effect Between Verbal Instruction and Video Modelling on Underhand Volleyball Serve Among Novice Volleyball Players

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Abstract

The purpose of this study was to examine the acute effect between verbal instructions and video modelling on underhand volleyball serve among novice volleyball players. Thirty novice volleyball players (*N*=30) aged between 16 to 17 years old were recruited and randomly assigned into two groups; verbal instructions and video modelling. The results from the acute effects between verbal instructions and video modelling on underhand volleyball serve among novice volleyball players was found significant in pre-test, post-test 1 and post-test 2 for both verbal instructions and video modelling. Significant improvements (p<0.05) were recorded after being exposed to different types of learning aids in the post-test. The results also showed that there was no significant difference reported between both groups of verbal instructions and video modelling. In conclusion, verbal instructions and video modelling are both effective in order to improve the underhand volleyball serve among novice volleyball players.

Keywords: Verbal Instructions, Video Modelling, Volleyball, Novice, Underhand Serve.

Introduction

Volleyball is a team game between two teams of six players, based on holding the ball in the air and trying to bring the ball over the net of the opposing team. A player is only allowed a maximum of three touches of the ball before returning to the opposite (Reeser, Fleisig, Bolt & Ruan, 2010). There are some different types of volleyball performance skills

that are overhand, underhand, topspin and floater. It is understandable that serve in volleyball is vital to create and start the game (Wagner, Pfusterschmied, Tilp, Landlinger, Von Duvillard & Muller, 2014). Silva, Marcelino, Lacerda and Joao (2016) reviewed the serve theory and serve-reception theory referred to as "reception" from this point on the recital were identified as predictors of team victory in volleyball. Coaches regularly seek ever more effective systems for improving instruction and facilitating learning. Many coaches are mainly concerned about the response format that was provided. According to Sadowski, Mastalerz, Niźnikowski, Wisniowski, Biegajło and Kulik (2011) evaluated the effectiveness of learning complicated motor actions using different types of verbal information. Research in motor learning and sport training examined the effects of verbal signals in addressing critical task stimuli and data, recalling series of motor activities and initiating sequences of movement. Sadeghi, Shariat, Asadmanesh and Mosavat (2013) found that it was proven to be more effective in learning with the help of verbal instruction. Various activities can be made with the coach's verbal guide as a straightforward guideline from the expert model for the beginner, increasing the consideration of the skill definition to be learned. This helps the cognitive conception in easier interpretation of the movements (Sadeghi et al., 2013).

According to Franzone and Collet-Klingenberg (2008), video modelling is an instructional mode which uses video recording and display equipment to provide a visual model of targeted behaviour or expertise. According to Hodges (2010), it means of frequently learned human behaviors through expert person or model reflection. Furthermore, McCullagh and Weiss (2001) have highlighted the importance of the similarities between the model and the learner as regards performance and psychological responses. The instructor provided the video-modelling from expert volleyball player to the participant for the feedback. The participants were observing the video modelling for three days and post-test for the next days.

The present investigation contributed to literature on feedback by associating verbal and video feedback in volleyball serve. In motor learning and regulation, both visual and verbal feedbacks play a very important role (Kirazci, 2013). Participants took part in an experimental design where they learned through one type of instruction and then switched to learning with another type of instruction. In one type of instruction, participants received traditional coaching via verbal feedback. In the other instructional model, participants received video-modelling feedback. The results of different types of feedback will be observed after the post-test.

The effect of verbal instructions and video modelling to perform the technique or skill also support by Travlos (2011) found that the learning aids can advance the athlete performance. Mulligan and Hodges (2014) stated that due to the contribution of verbal and modelling feedback, different athlete levels also showed an improvement for the performance product. Kirazci (2013) also mentioned that volleyball serve towards verbal instructions and video modelling assist the athlete to improve performance. The effect from both verbal instructions and video modelling can increase the performance because of the athlete can understand well how to perform the technique by watching the video modelling and memorize the verbal instructions of the cues and sequence help to produce better outcome (Parsons & Alexander, 2012). Therefore, the research objectives of this study were;

- To measure the acute effect of verbal instruction and video modelling on underhand volleyball serve among novice volleyball players.
- To compare the differences of verbal instruction and video modelling on underhand volleyball serve among novice volleyball players.

Method

Sampling and Procedure

The population for the present study was female students from SMK Che Tom Sungai Petani Kedah, aged 16 years old to 17 years old. A total of thirty (30) female novice volleyball players were recruited for this study. The subjects (N=30) were divided into two groups of which, the first group (n=15) started with verbal instructions and the second group (n=15) started with video modelling. Prior to start the intervention, a pre-test that consisted of the volleyball serves (Bartlett, Smith, Davis & Peel, 1991) and the AAHPERD's volleyball test for the serve (2001) were conducted. The reliability of the tests was r=0.80. In pre-test, each subject was given 10 trials to serve and the test scores were recorded.

Following pre-test, the subjects performed training in the pre-assigned group and intervention; group 1 undergone verbal instructions, while group 2 with video modeling. The intervention held for 3 sessions per week for 40 minutes per session in both groups. Post test 1 was conducted after the completion of the 3 training sessions in intervention 1. After 2 days recovery, the group were switch as group 1 was then exposed to video modeling while group 2 with verbal instructions. As both groups completed the 3 sessions of the second intervention, post test 2 were then conducted. In short, every subject was taught for 6 (6 x 40 min) practice sessions in this two interventions.

The data obtained from pre-test, post test 1 and post test 2 were then analyzed by using Statistical Package of Social Science (SPSS) version 22.0 Descriptive data was presented in mean and standard deviation. Two-way repeated measure design analysis of variance (ANOVA) was utilized to measure the acute effect of verbal instructions and video modeling in volleyball underhand serve among novice volleyball players. The significant value was set at 0.05 ($p < 0.05$).

Testing Measurement

The purpose was to measure the participant's skill in volleyball serve. Equipment included volleyball net and poles and a marked court. The server stood opposite the marked court in the proper serving position. Underhand serve in hitting the ball over the net into the opposite court. The server was given 10 trials. When the ball hit the net and did or did not go over, it counted as a trial, but no points were given. The total number of points made was determined by where the ball landed in the opposite court. For all balls that struck on a line, the higher score of the areas concerned was awarded the maximum of 40 points.

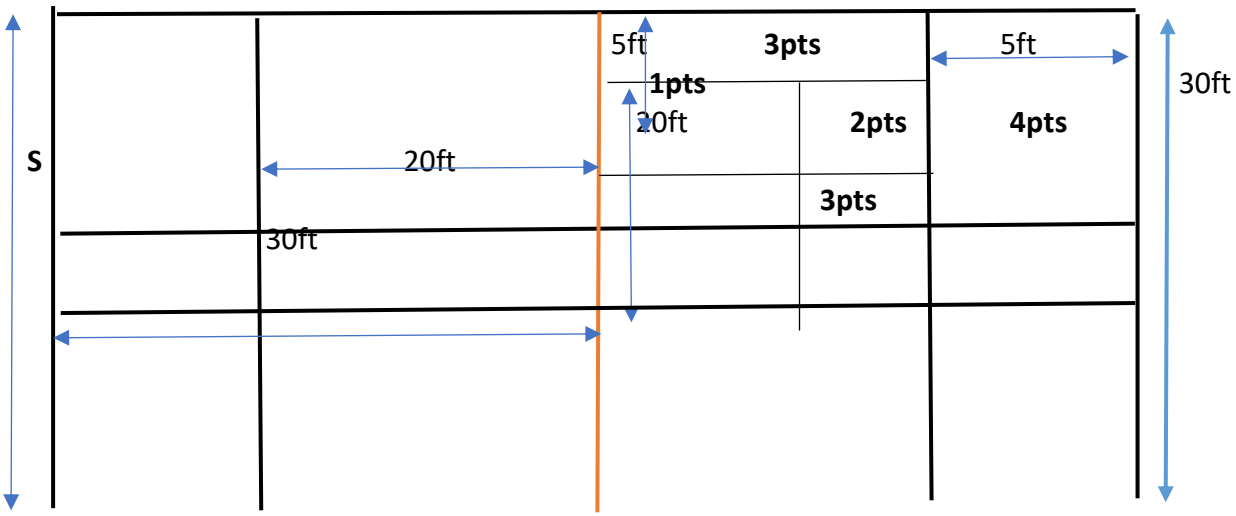

Figure 1: *The Test of Serve Skill*

Results

The purpose of the study was to investigate the acute effect of verbal instructions and video modelling on underhand volleyball serve among novice volleyball players. The video instructions and video modelling represented the independent variable, while the underhand volleyball serve represented the dependent variable. Two-way repeated measure ANOVA was used to analyze the data.

Descriptive Statistics

Table 1 represents the descriptive statistics for pre-test and post-test for the volleyball serve score. During the pre-test, the subjects' mean score was 2.53 and for the standard deviation is 2.583. At the end of the first intervention session, the means score of post-test 1 increase to 8.00 while the standard deviation also increase to 3.705. At the end of the second intervention, the means score of post-test 2 also increase which is 8.43 and for the standard deviation is 2.897.

Table 1**:** *Descriptive statistic for pre-test and post-test*

Test	*N*	*M*	*SD*
Pre-test	30	2.53	2.583
Post-test 1	30	8.00	3.705
Post-test 2	30	8.43	2.897

Acute Effect of Verbal Instructions and Video Modelling on Underhand Volleyball Serve Among Novice Volleyball Players

A within-subject design test was conducted to test the hypotheses. Table 2 showed that there were significant differences in within the subject's volleyball serve score in pre-test and post-test for both verbal instructions and video modelling group. The value of Wilks' Lambda for serve score is 0.188 with a significant value of 0.0001 (which really means $p<0.05$). Because of p value is less than 0.05, it can conclude that there is a statistically significant effect for serve score. This suggest that there was a change in serve scores across three different periods. The main effect for serve score was significant.

Table 2: *Multivariate test of volleyball serve score*

Effect	Wilks' Lambda	*F*	*Df*	*Sig*
Serve score	0.188	58.309	2.000	0.0001

Note. *significant level is at 0.05 (p<0.05).

Difference Between Verbal Instruction and Video Modelling on Underhand Volleyball Serve Among Novice Volleyball Players

Table 3 showed that there was no significant difference in volleyball serve scores for the two groups. Since the p-value is 0.694 (p>0.05), so it can be concluded that the main effect for group is not significant.

Table 3**:** *Test of between group effects (verbal instructions and video modelling)*

Source	Type III sum of squares	*Df*	Mean square	*F*	*Sig.*
Intercept	3597.344	1	3597.344	177.612	0.0001
Grouping	3.211	1	3.211	0.159	0.694
Error	567.111	28	20.254		

Figure 2 illustrates the differences in pre, and post-test of a volleyball serve score between verbal instructions and video modelling. It showed that there are differences between groups. Both verbal and video group showed improvement in post-test of the volleyball serve.

The blue line which is group 1 that start with verbal instructions first showed a better improvement for the post-test 2 after using video modelling while for the green line which is group 2 that start with video modelling first showed a slightly decrease of performance for the post-test 2 after using the verbal instructions. This result shows that both learning aids improve the performance, but video modelling improves better than verbal instructions.

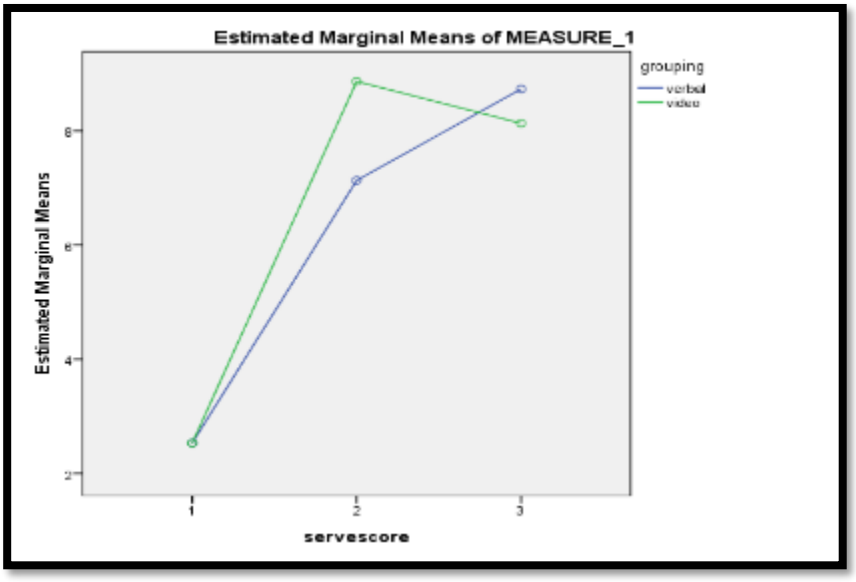

Figure 2**:** *Plot of Data of Volleyball Serve Score*

Summary of Result

A two-way between groups analysis of variance was conducted to examine the effect of two different interventions which is verbal instructions and video modelling on volleyball serve score across three time periods in pre-test, post-test 1 and post-test 2. There were significant differences within the subject's volleyball serve score in pre-test and post-test for both verbal and video group as the Wilks' Lambda for serve score is 0.188 as the p value is 0.0001 (p<0.05). Both groups showed a significant improved in volleyball serve score during pre-test, post-test 1 and post-test 2. However, in comparing the two types of intervention was not significant (p>0.05). Since the p-value is 0.694 which is not less than 0.05 (p>0.05), the main effect for group is not significant.

Discussion

The outcome of volleyball serve score showed that there was a difference score on two different interventions which is verbal instructions and video modeling on underhand volleyball serve among novice volleyball players.

Thus, it was theorized that practice for three days of verbal instructions and video modeling enhanced performance in volleyball serve score. Present study findings support the results of previous studies by Kirazci (2013) who found that both verbal guidance and video modeling have been successful in improving engine learning and control efficiency. Other than that, they reported that video modeling groups exhibited better improvement than verbal instructions group. Based on Vrbik, Kristicevic, Sporis & Madic (2015), video modeling was more successful when enquiring into completely new motor skills associated with verbal instructions.

Magill and Schoenfelder (2006) suggested that observing a model and acquiring knowledge of the results provided novices with valuable information to produce and modify experiments. In technical terms, the skills or technique with the correct sequence are very useful and effective to increase the performance by observing expert or any model. All groups planned to increase significantly during the post-test, but the visual modeling was better than verbal instructions. Pollock and Lee (2002) explained that modeling is an effective teaching tool, since acts that are difficult to verbally explain can often be taught visually. This also was reinforced in a study by Bouazizi, Azaiez and Boudhiba (2014) it was detected modeling effectiveness in improving skill performance.

It was confirmed that through modeling one acquires the cognitive components of the task, but skilled execution requires practice and feedback (Zetou, Tzetzis, Vernadakis & Kioumourtzoglou 2002). During the training session, learning assist feedback allows the participant to gain a better understanding of how to execute the skills as the subjects learned the skill technique of underhand volleyball. The findings confirmed with previous study (Paulo, Zaal, Fonseca & Araújo, 2016). Knowledge consciously remembered in procedural learning in declarative memory, memories are demonstrated by task success and feedback has been successful in improving performance (Sharma, Alavi, Jermann & Dillenbourg, 2016). Therefore, the subjects serve score increase and showed an improvement from pre-test to post-test 1 and post-test 2.

Research into the use of verbal signals to guide learning shows that this is an effective form of learning (Kountouris & Laios, 2007). Verbal instructions give more specific understanding to the athlete in terms of which area of the body part need to focus, what muscle involve and the angle of movement to perform specific skills (Reeser et al., 2010). This also support the result why using verbal instructions also can have enhancement on their

performance. As the subject for both groups receive one of the learning aids, it helps the subject to comprehend well and obtain new information and knowledge on how to perform the skill. Nevertheless, Reo and Mercer (2004) showed the verbal instruction had a significant influence on learning and exercise presentation.

The research outcomes showed that both verbal instructions and video modeling lead to improve learning and performance in volleyball underhand serve but there is no difference between both types of learning aids. Different individual has different understanding and learning skills (Travlos, 2010). Memory system in long term memory helps the athlete to observe the technique and describe as the procedural knowledge for the athlete which allows the athlete to perform a skill and know how to do a skill (Emmen, Wesseling, Bootsma, Whiting & Van Wieringen, 2005). Verbal instructions focus on ques sequence that describe as declarative knowledge which allows the athlete to understand how to do a skill (Emmen et.al, 2005). As the subjects were giving 3 days for intervention to training the serve skill, the outcome of the performance increase for both group during post-test 1 session. Parsons & Alexander (2012) found that there was no difference either start with verbal instructions or video modeling because the subject translate the movement information into a symbolic memory code that forms the basis of a stored memory representation and is used when the subjects wish to perform the skills.

Both of this learning aids can give long term memory, impact and influence for the learners to be proficient in it and learn the correct technique (Milner, Fairbrother, Srivatsan, & Zhang, 2012). Therefore, neither use verbal instructions nor video modeling both are no difference in terms of helping the understanding and improving athlete performance.

Conclusions

In conclusion, both verbal instructions and video modeling showed improvement and increase the underhand volleyball serve performance among novice volleyball players which video modeling is more effective compare to verbal instructions as the novice need to observe and understand well. Thus, performance of the volleyball serve score was the factor that critical need to be considered in identifying the effectiveness of different types of learning which is verbal instructions and video modeling. Future study should aim for longitudinal study to measure chronic effect of these two interventions. Furthermore, further transversal studies with a larger number of subjects should also be considered.

This study brings significance benefits to the coach, athletes and for future study. The present study helps the coaches and sport persons to guide and monitor their athlete by giving verbal instructions and video modelling to improve their performance. It also highlights role of sport coaching, pedagogy and coaches to improve the performance by using learning methods which is verbal instructions and video modelling. The present study finding was an instrumental to improve sport performance and to improve motor learning abilities. The study of feedback also helps in the development of performance of volleyball players. Verbal instructions and video modelling can be useful learning aids to improve athlete's performance.

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