

Video Instruction Improve The Technical Skills Of 10-12 Year-old Volleyball Players

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ABSTRACT

The purpose of the study was to determine the effect of 6-weeks learning skills, using video instructions, on children volleyball players. Eighteen male Algerian volleyball players (age: 12.6 ± 1.5 years; weight: 36.3 ± 2.4 kg; height: 140.26 ± 8.38 cm; BMI: 21.52 ± 2.48 kg.cm⁻¹) were randomly assigned into two groups: experimental group (video instructions and usual training program) and a control group (usual training program). Pre- and post-testing included measures of technical-tactical skills performance (time-motion analysis of volleyball match). Result showed a significant increase of technical-tactical skills and score performance for experimental group compared to control group. Also, a significant decrease of technical and tactical error for experimental group compared to control group. Video training including observation, correction and instruction seems to be a viable option for improving the technical and tactical skills of child volleyball players.

Keywords: Video training, technical-tactical skills, children, volleyball

INTRODUCTION

Volleyball is a game requiring a specific physical and physiological attributes, as well as technical and tactical on-court demands like high aerobic capacity, power output, speed, vertical jump and agility, in different multiset games where a high level of performance over time is required (Lidor & Ziv, 2010). A volleyball team comprises 12 players with positions often defined as setters, hitters (outside and opposite), middle blockers, and liberos (Gabbett et al. 2006). Each positions player has a specific role in a volleyball match and requires

different physical qualities to perform the demands of match-play (Marques et al. 2009).

The theory and methodology of sports training present two primary processes in physical, technical and tactical development in sports activity (McCullagh & Ross, 1989). In volleyball, the traditional training methodology is mainly based on learning physical, technical and tactical movements during the training session only, without having theoretical sessions as part of improving the child's learning skills. Observing or observational learning is considered to be one of the methods by which people acquire skills or behaviors (McCullagh & Ross, 1989; Bandura, 1986). This theory claims that the players, while watching the technical learning or video sequences of each training session in order to assess their faults and to also use it as a guide to develop technical competence. There is a debate about the effectiveness of audiovisual feedback by using audiovisual material, compared to traditional teaching.

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For example, Emmen et al. (1985) and Van Wieringen, et al. (1989) who supported the notion that providing feedback by using visual material was very effective on athletes more than traditional teaching (Emmen et al., 1985; Van Wieringen et al., 1989).

Studies showed a positive effect in the observation using video instructions (Clark & Ste-Marie, 2007; Onate et al., 2005; Antoniou et al., 2003). Indeed, previous studies showed that self-monitoring observation of young female athletes of beach volleyball had better results than the expert-modeling and control groups on the improvement of the technique of beach volleyball skills (Zetou & Michalopoulou, 2008).

Also, observation, by using video, is more effective than other model types, in notable skills, such as landing from a jump in basketball (Onate et al., 2005), serving in volleyball (Zetou et al., 2012), and volleyball in school (Vernadakis, et al., 2006). However, Vernadakis et al. (2010) found a positive results of learning the Setting Skill in Volleyball, comparing to multimedia computer assisted instruction.

Modern scientists have paid attention to learning problems in sport and in physical and technical movement training in volleyball, where the lack of

research using viewing and learning theory with video as a factor in the development of cognitive skills among child in volleyball. The aim of this study was to compare the improvement in technical performance of cadet volleyball athletes after 6 weeks of training, employing a video instruction program.

Consequently, the main aim of the current study was to examine the effects of 6 weeks of learning technical skill in volleyball, using video, along with the usual performance training on children volleyball players

METHODS

Subject

18 male Algerian volleyball players (age: 12.6 ± 1.5 years; weight: 36.3 ± 2.4 kg; height: 140.26 ± 8.38 cm; BMI: 21.52 ± 2.48 kg.cm⁻¹) from the same club were involved in this study. Only players who participated in at least 90% of all training sessions were included in the statistical analyses. They trained 3 days per week in the afternoon for ~1.5 h per session. The participants (see consort diagram, Figure 1) were randomly allocated by computer to two groups. There was no significant inter-group difference for age and anthropometric data (i.e., body height, Body mass, body mass index). None of the

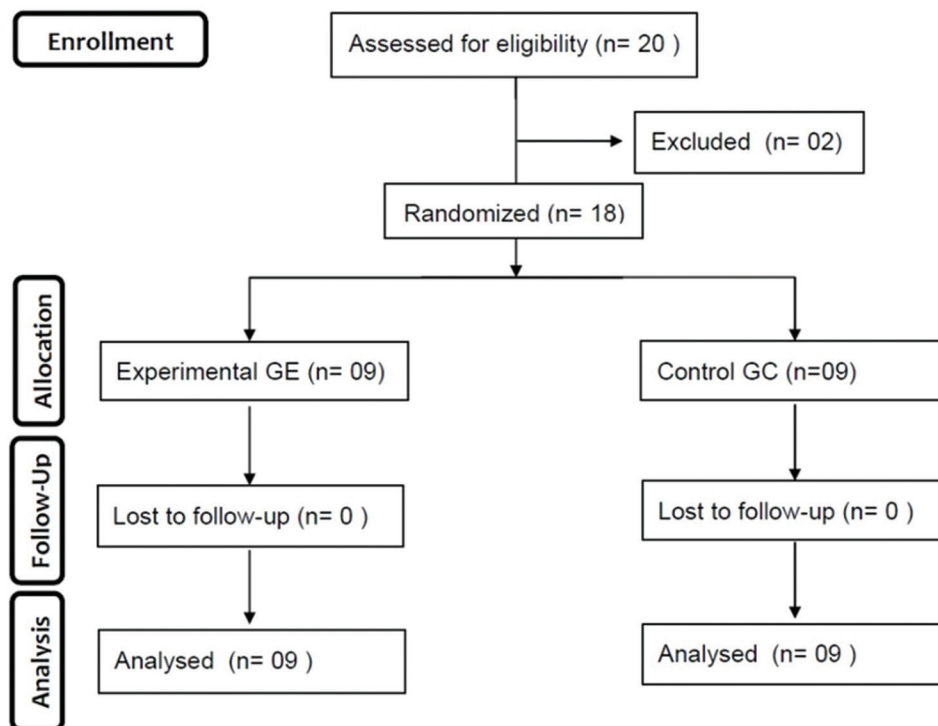


Figure 1: Consort diagram

participants reported any recent history of hip, knee or ankle injury. Coach was informed about the procedures of study. The study was conducted according to the Declaration of Helsinki and was approved by the research ethics committee of Mannouba University-Tunisia.

Video training sessions

During 6 weeks of training with video training, the players of the experimental group participated in this training twice a week: a viewing session of the usual training sessions, and a training session of technical and tactical framework. During these sessions, the players watched custom videos showing, the faults made during the training sessions and a standard sample videos to correct their faults.

Assessment procedure

To assess the effect of video training on player performance, two measurements were made. The first measurement (pre-testing) was carried out before the start of the intervention procedure; the second measurement (post-testing) was carried out after the end of the intervention. A quantitative evaluation of the groups' performance was analyzed during volleyball match between the experimental group and the control group. Match (pre-; post-testing) were recorded with a video camera (Go pro session 5). This camera was located opposite a volley ball court (transverse plane) to record the movements of the two groups during match.

The movement patterns made by the players during the match and the duration of each point exchange were recorded by video cameras.

Statistical analyses

Data were expressed as mean values and standard deviations (SD). All statistical tests were processed using SPSS 20 software (Systat, Inc, USA). Normal data distribution was tested using the Kolmogorov-Smirnov test and confirmed. Paired t-tests for dependent samples were used to compare all parameters measured before and after the training program. Δ was also calculated to establish the change between success and error scores for each group.

RESULTS

Table 1 presents the scores matches (pre-; post-testing) by set for the two groups. The means and the standard deviations of game-related statistics are presented in table 2. The statistical analysis yielded statistically significant differences ratio between groups during post-testing periods. As seen in table 1 and affirmed in table 2, the difference ratio (Δ) that significantly contributed the most significant difference between defeat and victory (between CG vs EG) was composed of the serve point (GE: $\Delta = 3.9$; GC: $\Delta = 1.8$; $p < 0.01$), reception (GE: $\Delta = 2.2$; GC: $\Delta = -4.5$; $p < 0.01$) and attack (GE: $\Delta = 2.5$; GC: $\Delta = 0.3$; $p < 0.01$).

Table 1: Match Score

	Set	Pre-testing		Post-testing	
		GC	GE	GC	GE
score	Set1	17	15	08	15
	Set2	15	13	13	15
	Set3	15	11	15	17

GC: control group; GE: experimental group

DISCUSSION

The main finding of this study was to investigate the effect of 6-weeks learning skills, using video instructions, on children volleyball players. A significant improvement of all technical-tactical skills was revealed between GE and GC during post-testing.

Table 2: Success (+) and error (-) mean \pm SD in different skills

	Pré-training						Post-training					
	GC			GE			GC			GE		
	(+)	(-)	Δ	(+)	(-)	Δ	(+)	(-)	Δ	(+)	(-)	Δ
Serve	2 \pm 0.3	2.2 \pm 0.5	-0.2	2 \pm 0.5	2.7 \pm 0.3	-0.7	3 \pm 0.5	1.2 \pm 0.3	1.8**	5 \pm 0.9	0.9 \pm 0.2	3.9**
Dig	0.5 \pm 0.1	2.2 \pm 1.4	-1.7	0.3 \pm 0.2	2.5 \pm 0.4	-2.2	1 \pm 0.6	2 \pm 1.1	-1	1.5 \pm 0.8	2 \pm 0.7	-0.5**
Reception	1 \pm 0.2	7 \pm 1.7	-6	1 \pm 0.1	0.8 \pm 0.6	0.2	1.5 \pm 0.4	6 \pm 1.1	-4.5*	2.7 \pm 0.8	0.5 \pm 0.2	2.2**
Attack	1 \pm 0.1	0.9 \pm 0.1	0.1	1 \pm 0.5	0.5 \pm 0.2	0.5	1.2 \pm 0.3	0.8 \pm 0.2	0.3	2.8 \pm 0.2	0.3 \pm 0.1	2.5**
Counter-attack	0.5 \pm 0.3	1.1 \pm 0.5	-0.6	0.5 \pm 0.3	1.5 \pm 0.2	-1	0.5 \pm 0.2	1.2 \pm 0.7	0.7*	1.8 \pm 0.2	0.3 \pm 0.1	1.5**

GC: control group; GE: experimental group; **: $p < 0.01$; *: $p < 0.05$

According to the results of the present study, during the final recording (post-testing), the players of GE which obtained a video training were significantly improved, concerning the technical execution and also the reception, attack and counter attack skills compared to pré training and to GC. That means that the athletes who received a video training, had the best degree of improvement and the least score of default.

Emmen *et al.* (1985) and Van Wieringen, *et al.* (1989) supported the notion that providing feedback by using visual material was very effective on athletes more than traditional teaching.

In a relevant study, Mohnsen and Tomson (1997), showed that, the use of audiovisual media and how they can help improve learning, it is advised to videotape the technique of each athlete and then to reflect and analyze, in order to correct any mistakes (Mc Cullagh, Stiehl & Weiss, 1990).

The results showed that there were differences between the two groups during post training and between each evaluation for the GE and GC, which mean that all groups improved their score with physical practice, and there were more significant improvement for GE with video training.

In this particular case, we can claim improvement in technique and as a result, improvement of the outcome scores for GE. The method of video training and the audiovisual feedback method are greatly accepted in the field of coaching and training. The means that technology can offer us today are numerous, easy to use and easily accessible.

To our knowledge, no study has studied the effect of training with video instructions for the youngest (10-12 years) because in this age group children begin to practice sports and acquire base sports skills. Therefore video training will be necessary to improve the cognitive and technical skills of the child in volleyball. It seems that this particular method of feedback (using video observations and instructions) helps participants perform and learn the technical and tactical skills in a volleyball game.

When examining our results of different skills performance during pré- and post-tessing volleyball matchs (serving, attacking, reception, and counter-attck), it seems reasonable that the team that makes

the fewest errors should be the one that is most likely to succeed. Indeed, our results showed that the number of technical-tactique error reducing after vedio training (experimental group) compared to control group. These results were also observed by Castro *et al.* (2011) and Drikos *et al.* (2009) who revealed a significant influence of serve and attack efficacy (those that result in direct point) on the match outcome. Moreover, attacks, blocks, and serves, due to the possibility of scoring a direct point, are considered efficacies scoring skills (Marcelino *et al.*, 2010). So, instruction with video training during 6 weeks favors a significant reduction in the number of technical errors during the match for the GE with the improvement of the number of successes on serve, dig, reception, attack, counter attack, favorise a favorable condition for the victory of a volleyball match as already observed between GE vs GC (post-testing: 3 set- 0 set respectively) in the present study.

CONCLUSION

Video training including observation, correction and instruction with usual training program seems to be a viable option for improving the technical and tactical skills of child volleyball players.

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Conflicts of interest

The authors declare no conflict of interest.

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