



EFFECT OF TECHNIQUE TRAINING WITH AND WITHOUT VISUAL FEEDBACK ON HIGH JUMP PERFORMANCE

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Abstract: The purpose of the study was to find out the effect of technique training with and without visual feedback on High Jump Performance and Technique. To achieve this purpose, twenty four Physical Education Students studying Master degree in Physical Education were selected from the Dept. of Physical Education and Sports, Manonmaniam Sundaranar University, Tirunelveli and their age ranged between from 22-26 years. The selected subjects were divided in to two groups of 12 each. Group I underwent technique training with Visual Feedback and Group II underwent technique training without Visual Feedback of their event for six weeks with three alternative days per week. High Jump Performance and Technique were selected as dependent variables and it was measured through competition and expert rating method respectively. The pre and post test data on High Jump Performance and Technique were conducted prior to and immediately after the experimental period from the selected subjects. The collected data on High Jump Performance and Technique was analysed by using dependent 't' test and analysis of covariance and the results were discussed at .05 level of confidence. The result of study indicates that there was a significant improvement on High Jump Performance and Technique due to the effect of skill training with and without visual feedback. Technique training with visual feedback outperformed than the technique training without visual feedback on High Jump Performance and Technique.

Key words: Visual Feedback, Video Practice, Motor learning, Athletics, High Jump.

I. INTRODUCTION

The use of computers is growing at an exponential rate as new technologies are being developed. Because of the increased availability and affordability of computers, their use is expanding to new educational arenas. The use of technology in teaching physical education may be relatively new, so in an effort to explore this approach a high jump model for physical education teacher-trainees was conducted using this video computer technology as a teaching or learning tool. With the advancement of digital video and computer technology over the past ten years there has been a considerable increase noted in the use of video analysis as a coaching tool in ice hockey. This has been especially noted in the greater Montreal area of Canada, where coaches are often under pressure to develop emerging talented players who aspire to a pro hockey career (Martin Lee, 2011).

Traditional coaching often involves subjective observations and conclusions based on the coach's perceptions, biases and own previous experiences. The coaching process can be thought of as an ongoing cycle of performance and practice. The role of the coach is to observe and analyse the performance and provide feedback, which can be incorporated into planned practice that should theoretically lead to enhanced performance. Successful coaching depends, among other things, on the accuracy of the observation and how well it is analyzed. It is therefore extremely important that the information collected during athletic performance is objective, unbiased, accurate and as comprehensive as possible (Hughes & Franks 2008).

Providing videotape feedback as a form of knowledge of performance to learners is a common instructional tool in teaching and coaching. Videotape feedback is intended to provide learners with information concerning errors in skill execution and has been described as "a fundamental component in the process of coaching and instruction" (Franks & Maile, 1991). Consequently, there have been many recommendations concerning the proper implementation of videotape feedback as an instructional strategy (Darden & Shimon, 2000; Dorwick, 1983; Hastie, 1990; Jambor & Weeks, 1995; Trinity & Annesi, 1996).

Providing videotape feedback to learners is intuitively appealing, as one would expect learners who view their performances would detect their errors and thus improve. Visual and verbal feedbacks are methods of coaching in which the athlete is presented with visual and verbal cues. The aim of this study was to evaluate research on the effectiveness of visual feedback in improving skills in high jump. Keeping the above concept in view, the research attempted to find out the effect of technique training with and without visual feedback on High Jump Performance and Technique.

II. Methodology

A. Participants

To achieve this purpose, twenty four Physical Education Students studying Master degree in Physical Education were selected from the Dept. of Physical Education and Sports, Manonmaniam Sundaranar University, Tirunelveli and their age ranged between from 22-26 years. The selected subjects were divided in to two groups of 12 each.

B. Variables and Tests

High Jump Performance and Technique were selected as dependent variables and it was measured through competition and expert rating method respectively.

C. Training Procedure

Group I underwent technique training with Visual Feedback and Group II underwent technique training without Visual Feedback of their event for six weeks with three alternative days per week. Both the experimental groups underwent the technique training (skill and drills were given) which were related to the high jump event at the morning session and the techniques practiced by the subjects were videotaped for group I and it was shown to them during the evening session along with elite athletes video also (video modelling). This study was conducted during July-October, 2013 while the team practiced for the intercollegiate competitions.

III. Statistical Analysis

The pre and post test data on High Jump Performance and Technique were conducted prior to and immediately after the experimental period from the selected subjects. The collected data on High Jump Performance and Technique was analysed by using dependent 't' test and analysis of covariance (ANCOVA) and the results were discussed at .05 level of confidence.

A. High Jump Performance (Competition method)

The analysis of dependent 't' test on the data obtained for High Jump Performance of the pre-test and post-test means of technique training with and without video feedback groups have been analyzed and presented in Table I.

Table I: Mean and Dependent 'T'-Test for Pre and Post Tests on High Jump Performance of Technique Training With and Without Video Feedback Groups

Variables	Mean	Technique training with Video Feedback	Technique training without Video Feedback
High Jump Performance (centimetres)	Pre test Mean	132.75	133.00
	Post test Mean	145.00	141.17
	't' test	17.56*	32.85

*Significant at 0.05 level of confidence. (Table value required for significance at 0.05 level for 't' test with df 11 is 2.201).

From the table I, the dependent 't'-test values between the pre and post tests means of technique training with and without video feedback on high jump performance are 17.56 and 32.85 respectively, which are greater than the table value of 2.201 with df 11 at 0.05 level of confidence, it is concluded that technique training with and without video feedback had significant improvement in high jump performance. The analysis of covariance (ANCOVA) on High Jump Performance of technique training with and without video feedback groups have been analyzed and presented in table II.

Table II: Analysis of Covariance on High Jump Performance of Technique Training With and Without Video Feedback Groups

Adjusted Post Test Means		Source of Variance	Sum of Squares	df	Mean Squares	'F'- Ratio
Technique training with Video Feedback	Technique training without Video Feedback					
145.08	141.09	Between	95.06	1	95.06	14.86*
		Within	134.32	21	6.40	

*Significant at .05 level of confidence. (The table value required for significance at 0.05 level with df 1 and 21 is 4.32).

Table II shows that the obtained F-ratio value for adjusted post test means of technique training with and without visual feedback groups on high jump performance is 14.86, which is greater than the table value 4.32 with df 1 and 21 required for significance at 0.05 level. Since the value of F-ratio is greater than the table value, it indicates that there was a significant difference between the adjusted post-test means of technique training with and without visual feedback groups on improving the High jump performance. Technique training with video feedback group (Adj.post test mean = 145.08) outperformed then the technique training without video feedback group (Adj.post test mean = 141.09) on high jump performance.

The mean values of technique training with and without visual feedback groups on High jump performance were graphically represented in the figure I.

B. High Jump Technique (Expert Rating Method)

The analysis of dependent 't' test on the data obtained for High Jump Technique of the pre-test and post-test means of experimental groups have been analyzed and presented in Table III.

Table III: Mean and Dependent 'T'-Test for Pre and Post Tests on High Jump Technique of Technique Training with and Without Video Feedback Groups

Variables	Mean	Technique training with Video Feedback	Technique training without Video Feedback
Technique (Marks)	Pre test Mean	3.60	3.54
	Post test Mean	7.79	5.83
	't' test	7.16*	13.83

*Significant at 0.05 level of confidence. (Table value required for significance at 0.05 level for 't' test with df 11 is 2.201).

From the table III, the dependent 't'-test values between the pre and post tests means of technique training with and without video feedback on high jump technique are 7.16 and 13.83 respectively, which are greater than the table value of 2.201 with df 11 at 0.05 level of confidence, it is concluded that technique training with and without video feedback had significant improvement in high jump technique. The analysis of covariance (ANCOVA) on High Jump technique of technique training with and without video feedback groups have been analyzed and presented in table IV.

Table IV: Analysis of Covariance on Agility and Speed of Experimental and Control Groups

Adjusted Post Test Means		Source of Variance	Sum of Squares	df	Mean Squares	'F'- Ratio
Technique training with Video Feedback	Technique training without Video Feedback					
7.77	5.85	Between	22.01	1	22.01	82.72*
		Within	5.59	21	0.27	

*Significant at .05 level of confidence. (The table value required for significance at 0.05 level with df 1 and 21 is 4.32).

Table II shows that the obtained F-ratio value for adjusted post test means of technique training with and without visual feedback groups on high jump technique is 82.72, which is greater than the table value 4.32 with df 1 and 21 required for significance at 0.05 level. Since the value of F-ratio is greater than the table value, it indicates that there was a significant difference between the adjusted post-test means of technique training with and without visual feedback groups on improving the High jump technique. Technique training with video feedback group (Adj.post test mean = 7.77) outperformed then the technique training without video feedback group (Adj.post test mean = 5.85) on high jump Technique.

The mean values of technique training with and without visual feedback groups on High jump technique were graphically represented in the figure II.

IV. Results

From the analysis of the data, the following results were drawn.

There was significant improvement on High jump performance and technique due to the effect of technique training with visual feedback and technique training without visual feedback among Physical Education students.

There was significant difference between technique training with and without visual feedback groups towards improving the High jump performance and technique among Physical Education students. It was found that technique training with visual feedback group outperformed than technique training without visual feedback group on High jump performance and technique among Physical Education students.

V. Discussion

The result of study indicates that there was a significant improvement on High jump performance and technique due to the effect of Technique Training with and without Visual Feedback among college level students.

There is evidence that verbal and visual feedback can improve performance. According to Tzetzis et al. (1999) motor technique improvement was largest in skiers as a result of both visual modelling and verbal feedback. Sanders et al. (1995) studied whether nine competitive swimmers could change their technique with video feedback given on two different sessions. Skilled performers made major technique changes in a modest period using both coaching and visual feedback.

Jambor (1995) saw an improvement in swimming skills for two 'college age' beginners who used the Interpersonal Process Recall method, which uses both visual and verbal cues, twice a week for 14 weeks. Video-computerized feedback combined with a video of an expert model has increased baseball hitting performance Leslie (1998). Swinnen et al. (1996) reported that real time visual feedback on five different training days was a good alternative to overcoming existing and thus preferred coordination modes for a cyclical elbow flexion-extension movement. It was assumed that the rowers used the feedback information to maintain a more constant pattern of power output to increase propulsive output (Smith & Spinks 1995; Spinks 1994).

A few margins are worthy of note. The images of the athletes were sometimes slightly distorted due to technical restrictions of the cameras. Future research that integrates more advanced technology with different directions might capture noticeable body images and provide better opportunities for the athletes to distinguish various elements of his body positions as correct or incorrect. Finally, some minor injuries often occur in athletic performance, they may influence the results in unforeseen ways. It thus appears that immediate video modelling can help to correct complex sports movements. However, its effectiveness seemed to be dependent on the complexity of the phase.

We believe that video feedback for athletes has the most potential to be effective for increasing the execution of a skill that has already been learned at a basic performance level, as was found by Rikli and Smith (1980). Future research needs to replicate this study with skills the athlete has nearly mastered or performed in competition. In this way the athletes could focus more on fine discriminations in body positions and movements, without the additional task of learning the basic body movements of the skill. Video modeling is a form of observational learning in which individuals observe themselves performing a skill successfully on video and then imitate the targeted behavior.

VI. Practical Applications

- a) The present research may pave pathway for the future researcher to undertake similar studies in other sports and games.
- b) It might give little knowledge to the coaches, trainers and physical education professionals while preparing for their athlete in to the competition.
- c) It is an good method that video feedback can be used to learn our mistakes.
- d) An athlete may have their own image while seeing this video and motivate themselves to learn further in perfect way.

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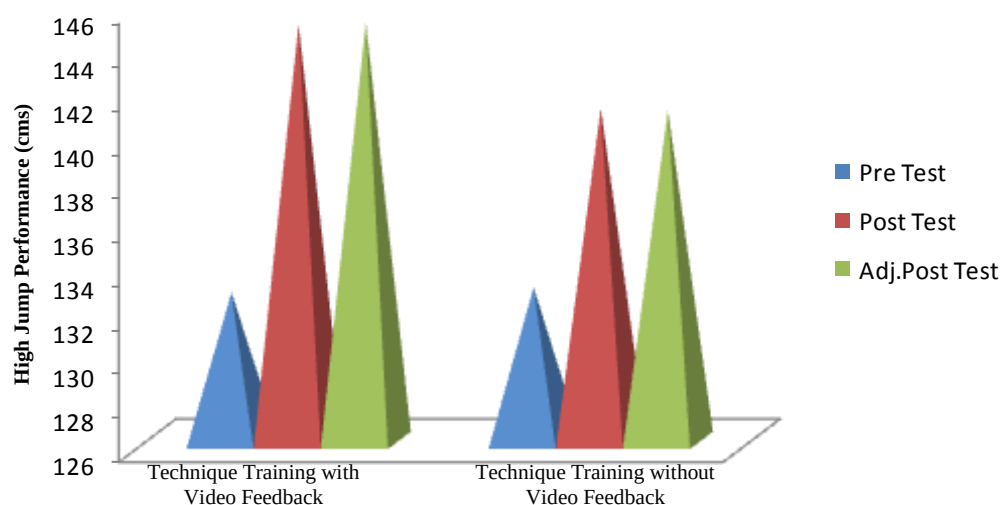


Figure I: Mean Values of Technique Training With and Without Visual Feedback Groups on High Jump Performance

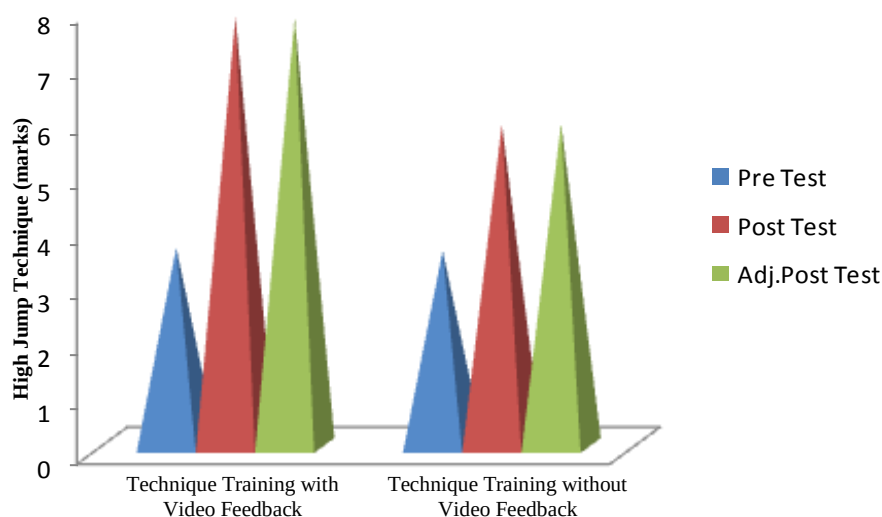


Figure II: Mean Values of Technique Training With and Without Visual Feedback Groups on High Jump Technique