



## EFFECTIVENESS OF AUDIO-VIDEO CLIPS ON PRACTICAL SKILL PERFORMANCE IN PHYSIOTHERAPY STUDENTS

Dr. PREETI GAZBARE (PT)<sup>1</sup> AND Dr.MANISHA RATHI(PT)<sup>2</sup>

<sup>1</sup>Assistant Professor Dr. D. Y. Patil College of Physiotherapy, Dr. D. Y. Patil Vidyapeeth, Pune

<sup>2</sup>Professor Dr. D. Y. Patil College of Physiotherapy, Dr. D. Y. Patil Vidyapeeth, Pune

### ABSTRACT

The acquisition & mastery of practical skills is important in physiotherapy for effective assessment & treatment which requires practice. We know that video clip helps in improving performance and gaining confidence in skills. However, evidence for the effectiveness of such video is limited to the disciplines of nursing, midwifery & dentistry. Therefore, the study objective is to quantify the effect of the audio-video (AV) clips on practical Skills in Physiotherapy. Pre Post Experimental study was conducted on 52 students. Two topics namely tightness and crutch walking were taught in traditional way with theory and practical demonstration. Students were then evaluated for their practical skill using Objective Structured Practical Examination (OSPE). Later they were provided with audio-video clips of same practical. After one week, OSPE was conducted again and score was noted. Student's feedback on audio-video clips was taken using Likert scale. Pre post OSPE score for station 1 & 2 showed statistically significant improvement with  $p < 0.001$  and mean difference of 14.77 & 12.1 respectively. Inter-tester reliability between the 2 assessor in each station was found high to moderate ( $r = 0.93$  to  $0.42$ ). 70% student gave very good feedback on AV clip. Audio-video clip is an effective method of learning practical skills in Physiotherapy.

**KEY WORDS:** Audio visual clips, OSPE, Physiotherapy practical skill, tightness, crutch walking, Likert scale Feedback



**\*Dr. PREETI GAZBARE (PT)**

Assistant Professor Dr. D. Y. Patil College of Physiotherapy, Dr. D. Y. Patil Vidyapeeth, Pune

\*Corresponding author

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## INTRODUCTION

Theory and practice provides an overview of educational theories, explains how these have impacted on teaching practice and offers ideas for putting theory into practice in the clinical context with a view to create good situations for learning.<sup>1</sup> A teaching method comprises the principles and methods used for instruction. The choice of teaching methods to be used depends largely on the information or skill that is being taught, and it may also be influenced by the aptitude and enthusiasm of the student.<sup>2</sup> Effective performance of practical skills is important across a range of health professions. The acquisition and mastery of practical manual skills is important for physiotherapy students to ensure effective assessment and treatment of patients. Practical skills required in physiotherapy incorporate a wide range of manual techniques and exercise strategies. Learning practical skills requires practice and this can be enhanced in several ways.<sup>3</sup> Interactive multimedia is one tool shown to increase success in meeting the needs of diverse learners.<sup>4</sup> According to a summary of current research and educator surveys, educational television and video: Reinforces reading and lecture aids in the development of a common base of knowledge among students, enhances student comprehension and discussion, Provides greater accommodation of diverse learning styles, Increases student motivation and enthusiasm, Promotes teacher effectiveness.<sup>5</sup> Observation of the skill, combined with physical practice, is effective to promote skill learning, because it allows the learner to attend to subtleties of the skill and also the learner has some control over the practice conditions, such as the length and/or the order of practice. Traditional practical skills in physiotherapy curricula have been taught based on live demonstration, followed by practice and feedback with time constraints. This leaves students to revise the skill outside class time based on memory or on hand-written, potentially inaccurate, notes. Thus current teaching of practical skills may not be optimal.<sup>3</sup> Effective education of practical skills can alter clinician behavior, positively influence patient outcomes, and reduce the risk of patient harm.<sup>6</sup> From a motor learning perspective, repeated rehearsal of manual therapy skills, feedback is needed for competent and safe performance of these techniques. Besides the use of textbooks, many other resources can be utilized as adjuncts to teach physiotherapy skills like multimedia such as DVDs and videos.<sup>7</sup>

### Context of The Study

From qualitative studies in health education, we know that video clip or download videos helps in improving performance and gaining confidence in skills. Elisabeth Preston et al in 2012 concluded improvement in performance of practical skills in students who had access to the e-Skills training in addition to usual teaching allows the learner to attend to subtleties of the skill. Furthermore, the learner has some control over the practice conditions, such as the length and/or the order

of practice.<sup>3</sup> Mayer (2001) explains that viewing videos, while it may appear to be passive, can involve the high cognitive activity necessary for active learning: well-designed multimedia instructional messages can promote active cognitive processing in students, even when learners seem to be behaviorally inactive.<sup>5</sup> However, evidence for the effectiveness of this video clips in improving the actual performance of practical skills is limited to the disciplines of nursing, midwifery, and dentistry. Therefore, this study aimed to quantify the effectiveness of the Audio visual (AV) clips in Physiotherapy practical skills.

## METHODS

Pre post experimental study was conducted on 52 students of 2<sup>nd</sup> year BPT in Dr. D. Y. Patil College of Physiotherapy, Pune after getting ethical clearance from the College. Verbal consent was taken from each student and an detail explanation of study was given. Two topics namely tightness and crutch walking, both theory and practical demonstration was taught to these students. After completion of topics, the students were assessed for their practical skill by Objective structured practical examination. Two stations with 2 staff as assessor in each station were included. Task assigned in Station 1 was to assess tightness of Right Gastro soleus muscle and in station 2 was to train three-point crutch gait. Students were asked to perform an assigned task in each stations and the 2 assessor in each station assessed student's performance separately. OPSE Score was noted. Then students were provided with audio-video clips of practical on those two topics. Students were asked to practice those practical's skills at home or in college by visualizing those video. After a week, again OSPE was conducted. Student's feedback on audio-video clips was taken using Likert scale. Statically analysis was done by paired t test for effect of audio video and spearman correlation for intra-inter rater reliability of the assessors.

## RESULTS

A total of 52 students of BPT-II were evaluated by 4 Teachers at 2 different stations. Average of pre score of assessor 1&2 of both stations similarly Average of post score was calculated. Pre post OSPE score for station1 & station2 showed statistically significant improvement with  $p < 0.001$  and mean difference of 14.77 & 12.1 as shown in table 1 & 2. Thus indicates audio video clip have helped students improve their practical skills. Table 3 showing the correlation between the assessor at station 1 which was found high to moderate ( $r=0.93$  to  $0.42$ ) .and the Inter-reliability at station 2 was found moderate ( $r=0.58$  to  $0.63$ ) between two teachers. Table 4 shows students' feedback regarding AV clip. Almost 70 % student felt this technique of audiovisual learning to be very good in improving practical performances and none of the student felt that this technique is poor or very poor.

**TABLE 1**  
**PRE-POST OPSE SCORE VALUES OF STATION 1**

STATION 1	N	Mean	SD	SEM
PRE-Average	52	17.58	5.487	0.761
POST-Average	52	32.35	2.392	0.3317
DIFFERENCES		14.77	5.953	0.8255

95% confidence interval for difference: 16.43 to 13.11  
t = -17.891 with 51 degrees of freedom; p < 0.001

**TABLE 2**  
**PRE-POST SCORE VALUES OF STATION 2**

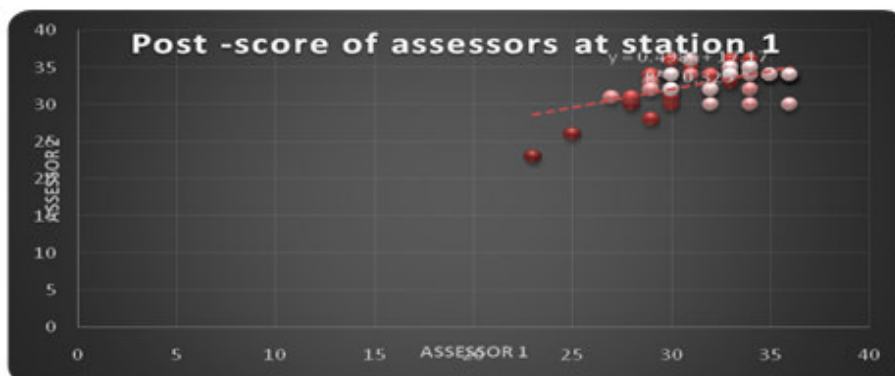
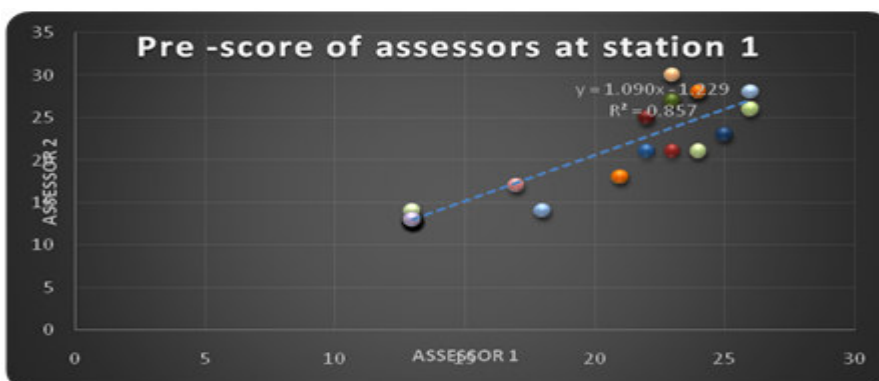
STATION 2	N	Mean	Std Dev	SEM
PRE	52	23.38	1.934	0.2682
POST	52	35.48	2.245	0.3113
DIFFERENCES		12.1	2.728	0.3783

95% confidence interval for difference: 12.86 to 11.34  
t = -31.976 with 51 degrees of freedom; p < 0.001

**TABLE 3a**  
**CORRELATION BETWEEN THE ASSESSORS AT STATION 1**  
**PRE and POST AV CLIPS**

Spearman correlation coefficient	Station 1 Assessors	
	PRE	POST
N=52		
R	0.936	0.428

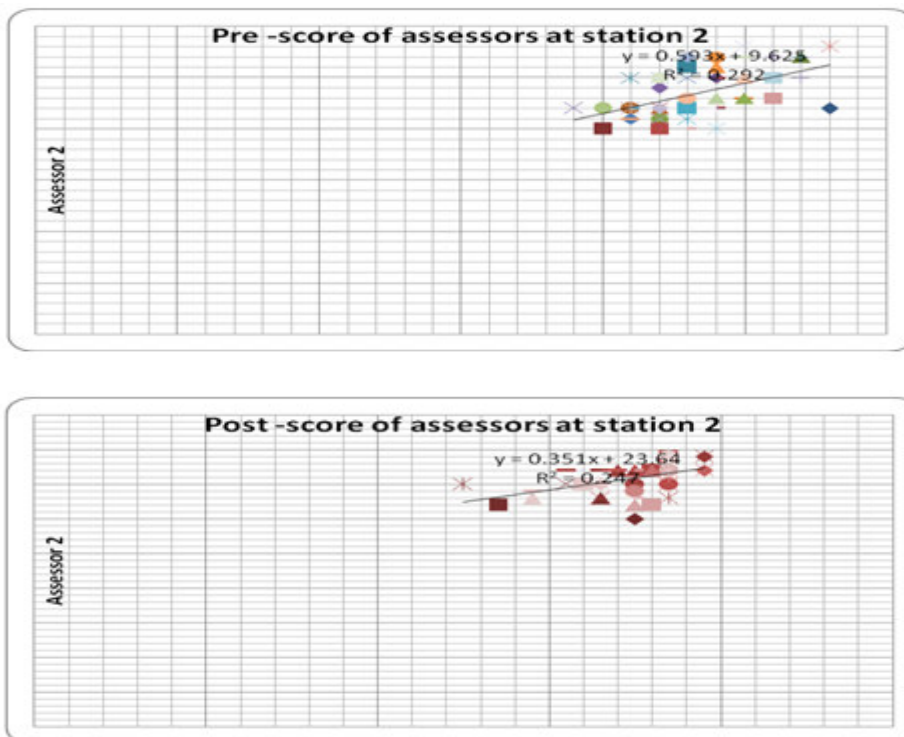
**GRAPH 1**  
**CORRELATION BETWEEN THE ASSESSORS AT**  
**STATION 1 PRE and POST AV CLIPS**



**TABLE 3b**  
**CORRELATION BETWEEN THE ASSESSORS AT**  
**STATION 2 PRE and POST AV CLIPS**

Spearman correlation coefficient	Station 2 Assessors	
	PRE	POST
N=52		
r	0.581	0.632
P<0.001		

**GRAPH 2**  
**CORRELATION BETWEEN THE ASSESSORS AT**  
**STATION 2 PRE and POST AV CLIPS**



**TABLE 4**  
**STUDENT FEEDBACK ON AUDIOVIDEO CLIP**

Sr.no	Questions	Very poor	Poor	Neutral n (%)	Good n (%)	Very good n (%)
1	How well structured have you found the material on the video clip?	-	-	6(12%)	8(15%)	38(78%)
2	How well are the techniques demonstrated on this video clip?	-	-	2(3.9%)	14(27%)	36(69%)
3	How clearly are the techniques described verbally on this video clip?	-	-	7(13%)	6(12%)	39(75%)
4	How effective have you found this video clip in helping you to prepare/revise for your sessions?	-	-	4(7.7%)	5(10%)	43(83%)
5	Overall how well produced is the video clip?	-	-	-	10(19%)	42(81%)

**DISCUSSION**

The aim of this study was to find the effectiveness of an Audio video (AV) clip on practical skill performances in 2<sup>nd</sup> BPT physiotherapy students. Several studies have proved the AV clips or e-learning or use of multimedia to be effective tool in learning practical skill. Till date, limited study has examined the effectiveness of an AV clips on practical skill performances in physiotherapy students. In present study when the Pre average score of station 1& station 2 was compared to the post averages of both, it showed highly significant improvement suggesting that AV clips improved practical performances of student. This can be because of watching those clip anytime, anywhere and how much ever time the student wants. Apart from physically practicing those skills with help of these video clips, students can also mentally rehearse it by just watching it Physiotherapy practical which are totally a hands-on need regular practice to acquire those skills. As well said, practice makes a man perfect so Repetition of the skill makes it more perfect or we can say permanently skillful. Video is visually and auditory stimulating, and watching video can be an engaging experience for

people of all ages. Choi and Johnson (2005) found that learners had higher attention spans for video-based instruction than text-based instruction. In addition, learners classified video-based instruction as more memorable than text-based instruction.<sup>8</sup> Choi and Johnson (2007) said video contributes to learner satisfaction in an instructional program. He also reported that "the simultaneous processing of both auditory and visual information increases learner comprehension and retention" Therefore, the use of video can help students learn by expanding the capacity of working memory.<sup>9</sup> The limited capacity of working memory, however, may be expanded by video because of video's dual modality presentation.<sup>10</sup> OSPE being consider as an effective tool in discriminating between good and poor performers in practical examinations of medical subjects, so we have used OPSE as an assessment tool. Inter-rater reliability between the assessors at each station was found to be from high to moderate (r=0.93 to 0.42). Inter rater reliability of pre score at station 1 was found to be very high as 46% student did not perform the assigned task at all. Feedback of student on AV clip suggested student has well accepted this technique of learning practical skills. 83% student agreed that these AV clips was of

great help to revise or prepare for the practical. Furthermore, no student thought this technique to be poor or very poor mode of learning. Almost 70% student acknowledged it to be a very good and effective method of learning. Winkler & Faller (2006) said both visual and auditory quality contributes to the overall perceived quality of the video.<sup>12</sup> Hands (2004) found that for video content that displays a person talking, both visual and auditory modalities contribute significantly to the overall quality of the video, although audio quality is weighted slightly higher. Hands also found that for high-motion content, visual quality is a more significant factor than auditory quality in terms of overall video quality.<sup>13</sup> However, the limitation of our studies was only 2 AV clips of practical were filmed and very limit procedural station was assigned for evaluation. In future, studies

are needed with larger sample with more number of stations.

## CONCLUSION

Thus the study concludes that the audio-video clip was effective method in improving practical skill performance in physiotherapy students. So Audio-video clips can be used as an adjunct for improving student's practical skills.

## CONFLICT OF INTEREST

Conflict of interest declared none.

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