

# The Effect of Teaching Practical Physical Modalities on the Ordering Skills of Residents in Physical Medicine and Rehabilitation

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## ABSTRACT

**Introduction:** Physical modalities are performed by physiotherapists based on physiatrists' orders, so the residents pay less attention to the need and importance of learning the practical modalities. The aim of this study was to determine the effect of teaching the practical aspects of modalities to residents of Physical Medicine and Rehabilitation in order to improve their skills and attitudes toward ordering and doing physical modalities. **Methods:** In an interventional, before after study, all residents of physical medicine and rehabilitation, took the medical history of the patients willingly participated and performed physical examination and ordered physical modalities. They were also assessed by performing the modalities on the patient. Following the primary assessment, an experienced physiotherapist taught the residents how to do physical modalities. After the practical education, residents were assessed by ordering the modalities and performing them on simulated patients. Their satisfaction of the educational program was evaluated after the intervention. **Results:** The mean scores of using modalities before and after the education were  $23.08 \pm 5.50$  and  $52 \pm 10.18$  respectively ( $p=0.0001$ ). The mean scores of ordering the modalities before and after the education were 1 and 1.66 ( $p=0.038$ ). The mean score of satisfaction was  $91.66 \pm 8.74$  out of 100. **Conclusion:** Since physical medicine and rehabilitation residents and specialists who order physical modalities for patients do not perform it on their own patients, teaching the practical physical modalities can improve their skills. The satisfaction rate of residents with the course was very high.

## Introduction

One of the main goals of ministry of health and medical Education in Iran is to develop medical universities and improve medical education in undergraduate, postgraduate and continuous medical education. Planning and implementing educational programs need deep and broad studies to assess the educational needs and determining the effect of educational interventions.<sup>1,2</sup>

Considering the final approved curriculum of physical medicine and rehabilitation, one of the essential courses in this field is applying physical modalities.<sup>3</sup>

The course of physical modalities for physical medicine residents are composed of physical principles of therapeutic modalities, safety precautions of the instruments, indications and contraindications. Resident are getting familiar with different modalities such as:

Heat and cold, Hydrotherapy, ultraviolet radiation, laser, Electrotherapy.<sup>3,4</sup>

As most of the physical modalities are performed by physiotherapists, based on the physical medicine specialist order, the need and importance of learning the practical modalities is less considered. Applying the modalities by the physician and facing with difficulties help improve the knowledge and skills of residents in ordering and also performing the modalities.

The aim of this study was to determine the effect of teaching practical physical modalities to residents of physical medicine and rehabilitation in order to introduce a practical course in this field to improve the skills of ordering and doing physical modalities by residents.

## Methods

In an interventional, before after study, all residents (N=12)

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of physical medicine and rehabilitation, took the medical history of the patients participating willingly and ordered physical modalities and performed physical examination. The physical modalities were as follow: Heat and cold, Hydrotherapy, ultraviolet radiation, laser, Electrotherapy, Interferential current therapy.

Ordering the modalities and doing them were assessed by an academic member of physical medicine and rehabilitation and an experienced physiotherapist based on a 16 -item checklist. The checklist which was designed for assessing the skill of ordering and performing the modalities was approved in the educational council of physical medicine and rehabilitation department. The proposal of this research was approved in medical education research center and research ethics council of Tabriz University of medical sciences.

Following the primary assessment, the experienced physiotherapists taught the residents how to do physiotherapy modalities. After the practical teaching course, residents visited the same patients and ordered the modalities again and performed the modalities on the patients. The orders and performing modalities were assessed again by the same checklist after the education and the pre and post education scores were compared. Finally a questionnaire composed of 6 questions in likert scale was completed by the residents asking their views about the course and its effect on their knowledge and skills. The score for each item was on the scale from 1 to 5 showing the least and most satisfaction respectively.

Data were analyzed by computing the percent, mean and standard deviation. We used independent t-test to compare the mean score of ordering modalities before and after the intervention. SPSS 15 was used for analysis.

## Results

The scores of physical medicine and rehabilitation residents in using modalities of physiotherapy before and after the education were  $23.08 \pm 5.50$  and  $52 \pm 10.18$  respectively. ( $p=0.0001$ )

The mean rank of practical assessment scores before and after the education were 1 and 1.66 respectively ( $p=0.038$ ). The mean score of questions asking the residents' views about the course was 4.69 out of 5. All 12 residents mentioned that integrating the practical education of physical modalities in the residency program was necessary.

## Discussion

Ordering and performing physical modalities are one of the essential skills for physical medicine and rehabilitation residents. Teaching how to order and perform the modalities is effective in increasing the knowledge and skills of residents. All the residents agreed to have a practical course in their residency program on ordering and doing physical modalities.

There are few studies about the effects of teaching physical modalities to the physical medicine and rehabilitation residents. Finnoff *et al.* reported their experience on

introducing the musculoskeletal Ultrasound (MSUS) as an imaging modality for Physical Medicine and Rehabilitation (PMR) residents.<sup>5</sup>

Finnoff<sup>5</sup> suggested that MSUS course had a positive effect on knowledge and skills of residents. The findings of our study were in agreement with Finnoff's. Although the sample size of Finnoff's<sup>5</sup> study was twice as large as ours, the differences between pre and post intervention results in our study was statistically significant. Finnoff<sup>5</sup> pointed out that their results could be used by other PMR residency programs to create their own courses.

The low number of participants was the limitation of this study. Conducting a multi-center study will help to get more valid results.

We suggest that integrating physical modalities to the PMR residency course would be effective for increasing knowledge and skills of resident on ordering and performing these modalities.

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## Competing interests

None to be declared.

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