Skill Acquisition and Competency Testing for Physical Agent Modality Use

Camille Cornish-Painter, Cindee Q. Peterson, Debra K. Lindstrom-Hazel

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Objective. The use of physical agent modalities is not considered an entry-level skill and requires postprofessional education, according to the American Occupational Therapy Association. The purpose of this survey was to determine how occupational therapy practitioners who use physical agent modalities are trained.

Method. Two hundred fifty occupational therapists were randomly selected from the American Occupational Therapy Association’s Physical Disabilities Special Interest Section. The practitioners were surveyed about their use of, education in, competency testing for, and opinions on eight physical agent modalities.

Results. Results were based on 100 responses (40% response rate). Of the eight modalities, the most commonly used were hot and cold packs, and the least were transcutaneous electrical nerve stimulators. The most common means of education was on-the-job training, and the least common was higher level accredited education. A majority (71) of respondents reported that no competency testing was being performed at their facilities. In the remaining facilities (29), the majority performed competency tests with no routine frequency, using no particular guidelines for testing and no formal methods for maintaining standards for physical agent modality use. Eighty-five respondents indicated they would be interested in attending continuing education programs on the use of physical agent modalities, and 88 believed that functional activities should follow the use of physical agent modalities within the same treatment session.

Conclusion. The occupational therapy profession may need specific educational and competency guidelines to assure the qualifications of therapists using physical agent modalities.

Occupational therapists have been using physical agent modalities in physical disability and hand rehabilitation settings for more than 10 years. According to the American Occupational Therapy Association (AOTA, 1992a), physical agent modalities use the properties of light, water, temperature, sound, and electricity during treatment to produce a response in soft tissue. They include, but are not limited to, paraffin baths, hot and cold packs, fluidotherapy, contrast baths, ultrasound, whirlpools, and electrical stimulation.

The use of physical agent modalities in occupational therapy has been controversial. Leadership opposed to their use believe that physical agent modalities are a form of treatment inconsistent with the profession’s philosophy that occupation is involved in both theory and practice.
mode of practice (Huss, 1981). Those in favor of their use have argued that with adequate education and training, application of physical agent modality knowledge and skills could contribute to improvements in a patient's occupational performance and could facilitate treatment in purposeful activity (AOTA, 1992b; Pedretti, 1982). For example, one could use functional electrical stimulation as an "electronic splint" to prepare a person for engaging in functional activity, such as self-feeding. Others supported the use of physical agent modalities because they wanted to ensure the retention of therapists specializing in physical disabilities who use these restorative methods (English, Kasch, Silverman, & Walker, 1982).

In a survey of occupational therapists' use of physical agent modalities, Taylor and Humphry (1991) found that 80% of the 650 respondents in physical disability practice believed that the use of physical agent modalities reflected the natural evolution of occupational therapy toward new technologies, and 58% believed that the use of physical agent modalities was consistent with the philosophical base of occupational therapy. Respondents cited the following reasons for restricting the use of physical agent modalities: (a) patient injury, (b) lack of liability insurance coverage, (c) lack of third-party reimbursement for treatment, (d) legal issues regarding licensing, (e) inconsistency with the profession's basic philosophy, and (f) infringement on the domain of physical therapy and other professions.

The blurring of roles or overlap between modes of treatment like physical agent modalities among the different professions may cause further confusion among health care team members (Eliaison & Gohl-Giese, 1979). West and Wiemer (1991) indicated that the use of physical agent modalities could cause a confrontation with physical therapists, who have a long-standing tradition of using these modalities in their practice. They also stated that establishing a policy supporting the use of physical agent modalities was unjust because only a minority of occupational therapists are in private practice or specialize in hand therapy (e.g., in 1991, 37% of AOTA's 38,432 active members were employed in private practice and hand therapy). In West and Wiemer's opinion, such a policy would not represent the "clear majority of AOTA members who consider the use of physical modalities as 'not an occupational therapy skill' (p. 1145).

However, in its 1990 member data survey (AOTA, 1991a), AOTA found that the majority (83.4%) of its members work in physical disabilities settings. This majority represents the group most likely to use physical agent modalities during treatment as opposed to those specializing in mental health. The survey also revealed a continuing decline of practitioners specializing in mental health and an increase in the number who became self-employed or entered private practice. This trend suggests that the majority, not the minority, of occupational therapy practitioners may be exposed to the use of physical agent modalities.

An official AOTA policy statement stated that physical agent modalities may be used as an adjunct to purposeful activity to enhance occupational performance (AOTA, 1991c). The policy also indicated that a practitioner must have documented evidence of possessing the theoretical background and technical skills for safe and competent occupational therapy intervention. Registered occupational therapists, certified occupational therapy assistants, and occupational therapy students must obtain training through "accredited educational programs (including fieldwork education), specific certification programs, continuing education, in-service education, or higher education" (AOTA, 1991b, p. 1113). AOTA expanded this policy in a position paper indicating that the use of physical agent modalities was not an entry-level skill and required postprofessional education, such as continuing education, in-service training, or graduate education (AOTA, 1992a). In 1994, AOTA published A Guide for the Preparation of Occupational Therapy Practitioners for the Use of Physical Agents Modalities (AOTA, 1994), which further clarifies the profession's opinion on level of competency.

A disparity exists among the position paper, occupational therapists' educational preparation, and their use of physical agent modalities. Eliaison and Gohl-Giese's (1979) observation that physical dysfunction therapists have increased their use of nonactivity physical modalities, possibly without formal academic preparation was confirmed by Taylor and Humphry (1991), who discovered that "the most common educational experience for physical agent modality use was on-the-job training" (p. 924).

To use modalities competently, AOTA requires that occupational therapy practitioners have documented or demonstrated specific qualifications and competencies related to modalities on request (AOTA, 1991c). However, the standards for implementing competency testing has been vague. Therefore, competency tests at some facilities may be absent or inadequate.

The purpose of this study was to supplement the information gathered by Taylor and Humphry (1991) on the use of physical agent modalities by occupational therapists who specialize in physical disabilities. This survey provides additional information on skill acquisition and competency testing for physical agent modality use.

**Method**

An eight-item survey was constructed on the basis of an unpublished questionnaire developed as part of a quality assurance and competency training program at Mary Free
Bed Hospital in Grand Rapids, Michigan (Konosky & Daviou, 1992). Six items listed types of modalities used; type of education received related to the modalities; the existence of competency testing, its frequency of use, and guidelines followed; and methods used to maintain standards of physical agent modality use. The last two items asked respondents for opinions on (a) attending continuing education for physical agent modality use and (b) whether functional activities should follow the use of physical agent modalities within the same treatment session.

A random sample of 250 occupational therapists was selected from the 1993 AOTA Physical Disabilities Special Interest Section (PDSIS) membership list. The survey and a cover letter were sent to the entire sample. Surveys were numbered to ensure anonymity and confidentiality. Raw data were compiled for each item individually, and tallies were made for each choice.

Results

Results are based on 100 completed surveys (response rate = 40%). The types of facilities where the respondents worked included home health, outpatient services, private practice, school systems, and large medical facilities.

Type of Modalities Used

Eighty-three respondents indicated that they used at least one of the eight modalities listed on the questionnaire (see Table 1). Those not currently using modalities worked in private practice, home health, or school settings. Table 2 compares the types of education or training respondents received for each modality used.

Competency Testing

Twenty-one respondents reported that their facilities performed competency testing. Competencies in functional electrical stimulation and neuromuscular electrical stimulation were tested in all 21 facilities. Ultrasound competency was tested in 18 facilities, transcutaneous electrical nerve stimulator competency in 15, paraffin competency in 14, hot and cold packs and contrast baths competencies in 13, fluidotherapy in 10, and whirlpool competency in 10. One respondent indicated that a testing program was in the process of being developed; another reported that her facility was “looking into it”; and another reported that the testing at her facility was informal.

With regard to the frequency of competency testing, 17 respondents reported staff orientation and “as needed” testing, 5 reported annual testing, and 1 reported biannual testing. Although only 21 respondents reported that their facilities used competency testing, 23 answered the question about the frequency of testing with a specific time frame.

<table>
<thead>
<tr>
<th>Physical Agent Modality</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hot and cold packs</td>
<td>71</td>
</tr>
<tr>
<td>Paraffin</td>
<td>66</td>
</tr>
<tr>
<td>Contrast bath</td>
<td>60</td>
</tr>
<tr>
<td>FES/NMES</td>
<td>40</td>
</tr>
<tr>
<td>Fluidotherapy</td>
<td>37</td>
</tr>
<tr>
<td>Ultrasound</td>
<td>23</td>
</tr>
<tr>
<td>Whirlpool</td>
<td>20</td>
</tr>
<tr>
<td>TENS</td>
<td>17</td>
</tr>
</tbody>
</table>

Note. n = 100. FES = functional electrical stimulation; NMES = neuromuscular electrical stimulation; TENS = transcutaneous electrical nerve stimulator.

Type of General Competency Testing

When asked to indicate any type of competency testing used at their facilities that was not necessarily related to physical agent modalities, 64 respondents reported that no guidelines for competency testing were used. When guidelines were used, 16 respondents reported using staff consensus, 14 reported relying on standard instruction, 14 had test protocols, 13 used a literature review, and 10 reported using AOTA standards. The “other” category included responses referring to tentative plans for implementing standards and use of individual facility protocols.

Standards for Physical Agent Modality Use

When asked how standards were maintained in their facilities, 40 respondents indicated no method, 28 indicated supervisor observation, 24 indicated self-report, 14 indicated written and verbal performance evaluation, and 13 indicated demonstration performance evaluations. Written and verbal evaluation and demonstration evaluation were reported by 9 respondents each.

Continuing Education Attendance

When asked whether the respondent would attend continuing education programs on the use of physical agent modalities, 85 said yes, 12 said no, and 3 only commented on the specifics of their practice site or state association positions. Three major themes emerged from the yes responses: (a) having the desire to attend physical agent modality training classes but being prohibited by state laws, (b) attending courses if appropriate to their specialty, and (c) already having a history of continuing education. Those who responded no commented that the state laws or state occupational therapy associations prohibited physical agent modality use or workshops or that physical agent modalities were not applicable to their school-based or other special type of practice.

Need for Functional Activities

When asked whether functional activities should follow...
the use of physical agent modalities within the same treatment session. 88 respondents said yes, 6 said no, and 6 commented that it depended on the specific situation. Those who responded yes commented:

- "If independent functional activity is the primary goal for that treatment session."
- "Otherwise, we are not performing [occupational therapy]."
- "If appropriate to treatment plan and patient status."
- "Definitely."
- "With some modalities, not all."

Those who responded no commented:

- "Depends on the diagnosis and treatment goal, it's not always appropriate."
- "It's not usually relevant to treatment goals in that session."
- "The modalities take time."
- "Varies with the modality—paraffin, yes; fluidotherapy, yes; NMES, not in all cases. May be working on a functional outcome but focus on modality for improved motor function for a particular session."

Discussion

This survey identified a similar order of modality use as found in other surveys (AOTA, 1991a; Funk, 1994; Taylor & Humphry, 1991), which supports the validity of our study. The AOTA's (1994) A Guide for the Preparation of Occupational Therapy Practitioners for the Use of Physical Agent Modalities describes the knowledge base needed for the use of physical agent modalities, skill and experience acquisition, and preparation across the career continuum. Appropriate avenues to attain this knowledge are through either formal academic course work or continuing education. AOTA's recommendations do not include the most commonly used methods of education that respondents reported (i.e., informal on-the-job training, self-taught, observation of a physical therapist).

However, respondents were allowed to choose more than one method of instruction.

After the basic information and knowledge base are established, AOTA recommends that the therapist acquire skill and experience through fieldwork experience, on-the-job training, in-service training, and continuing education. Our results indicate that the majority of the respondents are following those guidelines, except for those respondents who report relying on self-taught methods of learning. The AOTA's position on practitioners' preparation throughout their careers states that

Practitioners interested in pursuing further education in this area need to be sure that their foundation skills are adequate for specialty area postprofessional training.

The AOTA's (1992a) position paper on physical agent modalities states that practitioners must have documented evidence of possessing the theoretical background and technical skills for safe and competent use of physical agent modalities before using them in practice. Results of our study show that the majority of the facilities in which the respondents worked did not yet conform to that standard; when competency testing (to document appropriate education and safe technical skills) was performed, there was often no routine frequency and usually no standard guidelines. The lack of a standard method to monitor occupational therapists' education and competency in the use of physical agent modalities creates a discrepancy between occupational therapy and physical therapy education: Physical therapists' competency for physical agent modality use is ensured through courses obtained in accredited educational programs. Many occupational therapy practitioners have not received this preparation, yet they work side by side with physical therapists who have had more formal training in this area.

### Table 2
Table of Training for Each Physical Agent Modality

<table>
<thead>
<tr>
<th>Training</th>
<th>Paraffin</th>
<th>Hot and Cold Packs</th>
<th>Fluidotherapy</th>
<th>Whirlpool</th>
<th>Contraction Bath</th>
<th>Ultrasound</th>
<th>FES/NMES</th>
<th>TENS</th>
<th>% of Total Using Each Type of Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Self-taught</td>
<td>11</td>
<td>18</td>
<td>13</td>
<td>11</td>
<td>23</td>
<td>11</td>
<td>14</td>
<td>12</td>
<td>15</td>
</tr>
<tr>
<td>Informal on-the-job</td>
<td>42</td>
<td>35</td>
<td>36</td>
<td>31</td>
<td>32</td>
<td>19</td>
<td>17</td>
<td>23</td>
<td>31</td>
</tr>
<tr>
<td>In-service</td>
<td>17</td>
<td>14</td>
<td>29</td>
<td>18</td>
<td>15</td>
<td>22</td>
<td>22</td>
<td>21</td>
<td>19</td>
</tr>
<tr>
<td>Observation of physical therapist</td>
<td>8</td>
<td>11</td>
<td>6</td>
<td>20</td>
<td>6</td>
<td>16</td>
<td>13</td>
<td>18</td>
<td>11</td>
</tr>
<tr>
<td>Accredited education</td>
<td>12</td>
<td>10</td>
<td>7</td>
<td>4</td>
<td>13</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>8</td>
</tr>
<tr>
<td>Continuing education</td>
<td>9</td>
<td>10</td>
<td>8</td>
<td>13</td>
<td>11</td>
<td>19</td>
<td>20</td>
<td>18</td>
<td>15</td>
</tr>
<tr>
<td>Certification program</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>9</td>
<td>9</td>
<td>5</td>
<td>3</td>
</tr>
<tr>
<td>Higher education</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

Note: n = 83. FES = functional electrical stimulation; NMES = neuromuscular electrical stimulation; TENS = transcutaneous electrical nerve stimulator.

*Respondents were asked to mark every type of training they received.
Limitations

Generalization of this study's results to the population of occupational therapy practitioners in physical disabilities practice is limited because of the return rate and the specific sampling of only PDSIS members. The response rate for this study was 40%, which is not atypical of postal surveys (Kerlinger, 1986). Although the representativeness of a sample population from studies with less than a 50% postal return is questionable, the more pertinent question is whether the sample is biased (Babbie, 1992). According to Dijkstra and van der Zouwen (1982), “the degree of salience of the topic positively affects the response validity” (p. 218). Following this logic, we could assume that the respondents to whom this topic was more salient returned the questionnaires; therefore, the sample is biased toward occupational therapy practitioners using or interested in the use of physical agent modalities. Furthermore, the focus of this study was not to determine how prevalent the use of physical agent modalities is with occupational therapy practitioners, but how those who do use physical agent modalities are trained.

Another limitation of the study is the tool construction. Because the question on educational training allowed respondents to choose more than one method, the results may not accurately reflect the percentage of formal training that was received in addition to the informal training. The results indicated that a larger study is needed to determine the actual percentage of occupational therapy practitioners who are using physical agent modalities and what training and competency testing they have.

Conclusion

This study indicates that of 100 occupational therapists who specialize in physical disabilities, most were using physical agent modalities in their practice; however, their overall education for the use of physical agent modalities did not meet the AOTA's (1994) recommendations. The AOTA recommends that:

At any point in a career when the informed choice is first made to use physical agent modalities, the practitioner should acknowledge his or her skill level as entry level and should develop a plan for acquiring the necessary knowledge and the appropriate instruction and clinical supervision for developing skills in physical agent modality use. (AOTA, 1994, p. 4)

Implementation of this recommendation poses a complex problem for the experienced practitioner who may not have the prerequisite knowledge in physics and chemistry but believes that it is in the best interest of some of his or her clients to use physical agent modalities as part of their occupational therapy treatment. The AOTA might be able to address this problem by providing specific educational opportunities that will give practitioners the foundation skills to understand the physical properties that are involved in the use of physical agent modalities. Competency guidelines will probably be included in facilities’ policies and procedures in order to gain or maintain accreditation. However, the training in the use of physical agent modalities needs to be more regulated than it appeared from this sample in order to maintain the credibility of occupational therapy practitioners using these modalities.

References


Pedretti, L. W. (1982). The compatibility of current treatment methods in physical disabilities with the philosophical base of occupational therapy. Unpublished manuscript, San Jose State University, San Jose, California.


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