Survey of Physical Agent Modality Use

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Key Words: modalities, occupational therapy • physical disabilities, occupational therapy • professional practice

Occupational therapists interested in physical disabilities practice (N = 629) responded to a questionnaire regarding their use of, training in, and opinions on physical agent modalities. Therapists in hand rehabilitation were the most frequent users of these modalities. Of the listed modalities, the most frequently used was hot and cold packs; the least used was ultrasound. The modalities used most frequently were typically performed without assistance, whereas those used less frequently were more likely to be performed with the assistance of a physical therapist. The most common educational experience for physical agent modality use was on-the-job training. Therapists who provided direct care were more positive about the use of these modalities in occupational therapy practice than were those who acted primarily as administrators, fieldwork educators, or supervisors. Respondents who specialized in hand therapy viewed modalities in a more positive light than did therapists in other areas of physical disabilities practice.

Occupational therapists have expressed a variety of opinions regarding the use of physical agent modalities in the field. Physical agent modalities include those treatments that use the properties of light, water, temperature, sound, and electricity to produce a response in soft tissue, for example, paraffin, hot and cold packs, fluidotherapy, and ultrasound (American Occupational Therapy Association [AOTA], 1991). Proponents of purposeful activities and occupation as the core of occupational therapy state that physical agent modality use is not consistent with the Philosophical Base of Occupational Therapy (Eliason & Gohl-Giese, 1979; Huss, 1981; West, 1984). Conversely, proponents of physical agent modality use state that the use of these modalities results in better patient care than does the use of purposeful activities alone (Clopton, 1981; Dutton, 1989; English, Kasch, Silverman, & Walker, 1982; Llorens, 1984; Pedretti & Pasquinelli, 1990; Stevens, 1981).

Many factors influence the selection or rejection of treatment media, methods, and modalities, including theoretical, economic, and technological issues (Reed, 1986). The concerns regarding the use of physical agent modalities in occupational therapy practice has led AOTA to establish a task force to address the issue (AOTA, 1991). To expand on our understanding of the current practice and opinions regarding the use of physical agent modalities, we asked the therapists who are most likely to use them in practice to respond.

The purpose of this study was to survey occupational therapists who have indicated special interest in physical disabilities practice regarding physical agent modalities. Occupational therapists were asked about their use of, training in, and views on the use of physical agent modalities.

Literature Review

The Philosophical Base of Occupational Therapy states that treatment must include purposeful activities to be considered occupational therapy (AOTA, 1979b; Hinojosa, Sabari, & Rosenfeld, 1983). The use of facilitating procedures, including physical agent modalities, is only acceptable within occupational therapy when used to prepare the client for better performance through self-participation in occupation (AOTA, 1979a).

On the basis of statements regarding purposeful activity, several authors (Eliason & Gohl-Giese, 1979; Gohl-Giese & Eliason, 1986; Huss, 1981; West, 1984) have concluded that physical agent modalities should not be used by occupational therapists; their stand against the use of physical agent modalities is especially adamant when treatment is not followed by participation in purposeful activities. They argued that to be considered occupational therapy, the interrelation of mind, body, and environment must be activated through the use of occupation.
(West, 1984) and thus requires an active and collaborative effort between the therapist and the patient (Fidler, 1981). Due to the passive role of the patient in the application of physical agent modalities, such activation of the patient does not occur. Physical agent modalities are therefore considered non-activity-directed modalities that are done to the patient (Huss, 1981).

Several authors (AOTA, 1991; Eliason & Gohl-Giese, 1979; Huss, 1981) have elaborated on the potentially negative consequences of occupational therapists using physical agent modalities. These authors stated that without proper educational preparation in the use of physical agent modalities, (a) harm could come to patients; (b) liability insurance would not cover the use of these modalities; (c) third-party payers may not pay for such services rendered by occupational therapists; (d) this aspect of practice may be a violation of the law; and (e) reductionist practice may result, thereby neglecting the true occupational role needs of patients. In addition, an ethical concern regarding the infringement on other professions may occur as has been expressed (AOTA, 1991).

Although numerous arguments have been levied as to why occupational therapists should not use physical agent modalities in treatment, numerous arguments also have been voiced against restricting occupational therapy to the use of purposeful activities (Bissell & Mailoux, 1981; Clopton, 1981; Courtsunis et al., 1982; English et al., 1982; Leffler, 1978; Pedretti & Pasquinelli, 1990; Stevens, 1981; Trombly, 1982; Walker et al., 1982). First, facilitation of function of patients with acute physical disabilities often starts at a functional level below that required for participation in activities (Clopton, 1981; English et al., 1982; Trombly, 1982). Second, the limiting of therapists to purposeful activities results in not allowing the use of all available tools at the appropriate times during recovery (English et al., 1982). Third, if we are restricted to active patient participation, referrals to occupational therapy may not be issued until after the most effective intervention stages have occurred (English et al., 1982). Fourth, increased pressure has been felt from consumers, physicians, administrators, creditors, and third-party payers for cost-effective and objectively measured treatment (Leffler, 1978; Walker et al., 1982). Fifth, some activities may become frustrating and painful reminders of lost skills used in previous roles (Clopton, 1981). Sixth, in many acute care settings, a patient’s stay is not long enough to show progress through activities (Clopton, 1981). Several persons have acknowledged that training and expertise are required for the effective use of physical agent modalities beyond that of entry-level preparation. English et al. (1982) stated that the appropriate use of these modalities requires a minimum of 1 to 3 years of full-time experience in physical disabilities practice.

Although English et al. (1982) and others (Clopton, 1981; Courtsunis et al., 1982; Leffler, 1978; Stevens, 1981; Walker et al., 1982) do not address the integration of purposeful activities and physical agent modalities in occupational therapy treatment, several other authors have considered this issue. Llorens (1984) stated that purposeful activity facilitates the adaptive process when administered at the appropriate juncture in habilitation, treatment, or rehabilitation. She argued, however, that purposeful activity need not be the totality of the intervention offered by occupational therapy, stating that other modalities (e.g., inhibition and facilitation techniques, whirlpool, paraffin, exercise) have been identified as effective and routine parts of therapy.

Expanding on Llorens’s (1984) work, Dutton (1989) used the modality of exercise as an example of the integration of purposeful activities with the use of physical agent modalities. She suggested that within a treatment plan, occupational therapists view exercise as preparation and purposeful activity as application. She noted that preparation and application are not philosophically opposing concepts, but instead are the two ends of a continuum. She further argued that exercises and handling techniques are also advantageous because they have no clear end product and therefore can be terminated without the patient frustration associated with failure to complete a project. In addition, she advocated that these modalities were especially beneficial during the brief period of early immobilization.

However, Dutton (1989) also stated that she did not believe that the use of exercise and handling techniques alone was valid. She advocated the use of both exercise and activity within a single treatment plan, arguing that the patient’s stay is not long enough to show progress through activities (Clopton, 1981). She stated that patients cannot or will not make the transition from simple to complex movements independent of activity. Therefore, many patients cannot or will not make the transition from simple to complex movements independent of activity. Therefore, patients need to practice complex movements in a purposeful activity before they go home or return to work. In conclusion, Dutton stated that it is no longer a question of who should perform the preparation or application phases of treatment. Occupational therapists must be prepared to do both.

Similarly, Pedretti and Pasquinelli (1990) discussed the continuum between the use of modalities and purposeful activities in treatment, adding more detail. Four stages were discussed: adjunctive methods, enabling activities and methods, purposeful activities, and occupational performance and community reintegration.

At the first stage, adjunctive methods, which usually occurs during the acute stage of illness or injury, procedures that prepare the patient for occupational performance should be used. These procedures are essential for the patient to gain maximal therapeutic use of purposeful activity (Ayers, 1958). Examples of these adjunctive methods are exercise, facilitation and inhibition techniques, positioning, splinting, sensory stimulation, and selective physical modalities (Trombly, 1982). The debate over the inclusion of physical agent modalities is, there-
fore, in part a debate over the incorporation of adjunctive methods into the philosophy of occupational therapy (AOTA, 1991).

During the second stage, enabling activities and methods are recommended. These methods have been created by occupational therapists to simulate purposeful activities. Examples of such activities are sanding boards, stacking cones, practice boards for mastery of clothing fasteners, driving and work simulators, and pegboards for training in perceptual-motor skills. These activities are used to help the patient make the transition from adjunctive methods to purposeful activities.

The third stage involves the use of purposeful activities. These activities have an autonomous goal beyond the perceptual-motor function required to perform the task. They are used to enhance performance skills and, ultimately, to resume occupational roles. Examples include feeding, hygiene, dressing, mobility, communication, arts, crafts, games, sports, and work activities.

The fourth stage is occupational performance and community reintegration. In this final stage of the treatment continuum, the patient resumes and assumes occupational roles in his or her living environment and in the community. Appropriate tasks of self-care, work, education, and play and leisure are then performed to the patient’s maximum level of independence.

Although varied views have been stated as to whether occupational therapists should use physical agent modalities, therapists closest to this issue have not been surveyed as to their current practice and views on the issue. The purpose of this study was to survey occupational therapists with a special interest in physical disabilities practice to gather information on physical agent modality use regarding (a) frequency of use, (b) assistance received with use, (c) training obtained for use, and (d) opinions regarding use. Finally, the study examined if the type of practice or therapist’s characteristics influenced the opinions expressed.

Method
Subjects

Therapists’ names were randomly selected from the Physical Disabilities Special Interest Section of the AOTA database. Of the 997 questionnaires mailed, 655 (66%) were returned. Respondents were from all states in the country. Of the returned questionnaires, 26 were deleted from analysis due to irregularities in their completion, leaving 629 (63%), which were analyzed.

The median number of years the respondents had worked as occupational therapists was 6 years (range = 0 to 36). Seventy-six percent indicated that their primary employment function was direct patient service, whereas 11% responded that their primary function was administration or supervision. The remaining 13% selected different activities such as fieldwork teaching, consultation, or a combination of functions as their primary function.

Twenty-nine percent of the therapists indicated that they worked in short-term rehabilitation, 18% in long-term rehabilitation, 13% in acute care, 12% in hand rehabilitation, and 28% in other areas.

Instrument

We generated and pilot-tested a three-page questionnaire containing 32 items. Seven items requested information on the therapist’s education, years of experience, primary employment function, region of the country where he or she lived, and type of practice. Three items asked the therapist to indicate frequency of use of physical agent modalities, assistance when using each, and training received in use. Specific modalities were those identified by AOTA’s Task Force on Physical Agent Modalities as the primary modalities they addressed in their survey of academic programs (AOTA, 1991). These modalities were paraffin, hot and cold packs, fluidotherapy, contrast bath, ultrasound, whirlpool, functional electrical stimulation/neuromuscular electrical stimulation (FES/NMES) devices, and transcutaneous electrical nerve stimulation (TENS). The remaining 22 items on the questionnaire asked respondents to indicate their opinions using a 5-point Likert scale from strongly disagree (1) to strongly agree (5) regarding statements on the use of physical agent modalities by occupational therapists (see the Appendix). Opinion items were based on a review of the literature and covered the relationships between the use of physical agent modalities and such issues as the Philosophical Base of Occupational Therapy, the use of purposeful activities, education and training policies, treatment effectiveness, referrals, reimbursement, and cost-effectiveness. The questionnaire was pilot-tested by 16 occupational therapists from three different physical disabilities settings. The results were then reviewed by five occupational therapy curriculum faculty members. The questionnaire was revised based on the feedback received.

The 22 opinion items that reflected the respondents’ general attitudes and beliefs about the use of physical agent modalities were examined with the use of a factor analysis. Only one factor emerged. Therefore, the total of the 22 items was believed to reflect a unitary measure of opinion regarding use of physical agent modalities. The internal reliability for the total 22 items, with the use of Cronbach’s alpha, was determined to be .85. The potential range of the opinion score was from 22 to 110.

Procedure

After receiving clearance from the University of North Carolina’s Committee for the Protection of Human Subjects in Research, we mailed letters, questionnaires, and return envelopes to the subjects. The directions asked
the subjects to check, circle, or write in their responses to the 32 items and to return the questionnaire within 2 weeks.

Results

The frequency with which the subjects indicated that they never used a physical agent modality listed on the questionnaire ranged from 35% to 81%, depending on the modality. The modalities and their reported use are shown in Table 1. Twenty-three percent of the therapists never used a physical agent modality listed on the questionnaire.

To further understand the pattern of physical agent modality use, a total score for use was created. Values were assigned to the type of frequency of use therapists reported for each of the eight modalities, from do not use (1) to use several times a day (5). This resulted in scores ranging from 8 to 40, depending on how frequently the subjects used the modalities. The actual range for our subjects was from 8 to 38, with a median of 11.5. An analysis of variance revealed a significant effect for type of practice, $F(4, 561) = 68.30, p < .0001$. Post hoc comparisons with Duncan’s Multiple Range Test (Cody & Smith, 1987) revealed that therapists in hand rehabilitation had an average use score of 23.23 ($SD = 6.31$), which was significantly higher than therapists in any other type of practice ($p < .05$). In addition, therapists in long-term rehabilitation had an average use score of 11.31 ($SD = 3.67$), which indicated significantly lower use of physical agent modalities than therapists in any of the other practice areas ($p < .05$). No significant differences in physical agent modality use were found among subjects in acute care, short-term rehabilitation, and other, who had average total use scores of 13.60 ($SD = 5.65$), 12.60 ($SD = 4.52$), and 12.71 ($SD = 5.80$), respectively. The type of assistance that the subjects received while using each of the physical agent modalities is shown in Table 2. The type of training that the occupational therapists received in each physical agent modality is summarized in Table 3.

The final set of analyses was performed to determine if there were identifiable groups of subjects who held more positive or negative views about the use of physical agent modalities. A series of one-way analyses of variance were performed, with the total score of the 22 opinion items used as the dependent variable and the respondents’ demographic characteristics used as the independent variable. When the respondents’ opinions were compared, a significant effect was found for type of practice [$F(4, 575) = 8.40, p < .0001$]. The Duncan post hoc comparison revealed that the average opinion score of 79.13 ($SD = 8.63$) for therapists in hand rehabilitation was significantly more positive regarding physical agent modality use than were the scores of therapists in other types of practice ($p < .05$). No significant differences in the opinions expressed by subjects in other practice areas were found. The averages for the opinion scores were 72.03 ($SD = 11.43$), 70.22 ($SD = 10.37$), 72.77 ($SD = 10.48$), and 70.94 ($SD = 11.50$) for respondents in short-term rehabilitation, long-term rehabilitation, acute care, and other, respectively.

The opinion scores of the respondents who indicated that their primary employment function was direct client services were compared with the scores of the respondents involved in non-direct-care (i.e., administration, fieldwork education, supervision). This analysis revealed that direct-care respondents, with an average score of 73.09 ($SD = 10.55$), hold more positive opinions regarding the use of physical agent modalities than do non-direct-care respondents, whose average score was 69.71 ($SD = 12.64$), $F(1, 577) = 9. 63, p = .002$. A comparison of the subjects’ responses for the items on level of entry into the profession, years of experience, 

Table 1
Therapists’ Frequency of Use of Physical Agent Modalities

<table>
<thead>
<tr>
<th>Frequency of Use (%)</th>
<th>Modality</th>
<th>Not at All</th>
<th>Once a Month or Less</th>
<th>Once a Week</th>
<th>Once a Day</th>
<th>Several Times a Day</th>
</tr>
</thead>
<tbody>
<tr>
<td>Paraffin (n = 607)</td>
<td>47</td>
<td>27</td>
<td>10</td>
<td>7</td>
<td>9</td>
<td></td>
</tr>
<tr>
<td>Hot and cold packs</td>
<td>35</td>
<td>27</td>
<td>12</td>
<td>9</td>
<td>17</td>
<td></td>
</tr>
<tr>
<td>Fluidotherapy (n = 592)</td>
<td>72</td>
<td>9</td>
<td>4</td>
<td>4</td>
<td>11</td>
<td></td>
</tr>
<tr>
<td>Contrast bath (n = 599)</td>
<td>53</td>
<td>31</td>
<td>8</td>
<td>5</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Ultrasound (n = 593)</td>
<td>81</td>
<td>6</td>
<td>5</td>
<td>2</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>Whirlpool (n = 596)</td>
<td>73</td>
<td>13</td>
<td>5</td>
<td>5</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>FES/NMES (n = 598)</td>
<td>64</td>
<td>17</td>
<td>8</td>
<td>5</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>TENS (n = 594)</td>
<td>75</td>
<td>16</td>
<td>4</td>
<td>2</td>
<td>3</td>
<td></td>
</tr>
</tbody>
</table>

Note. n indicates total number of subjects who responded to that specific item. FES/NMES = functional electrical stimulation/neuromuscular electrical stimulation. TENS = transcutaneous electrical nerve stimulation.

Table 2
Type of Assistance That Therapists Received in Using Each Physical Agent Modality

<table>
<thead>
<tr>
<th>Type of Assistance (%)</th>
<th>Modality</th>
<th>None</th>
<th>Occupational Therapist</th>
<th>Physical Therapist</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>Paraffin (n = 339)</td>
<td>87</td>
<td>4</td>
<td>5</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Hot and cold packs</td>
<td>83</td>
<td>4</td>
<td>8</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Fluidotherapy (n = 86)</td>
<td>83</td>
<td>3</td>
<td>2</td>
<td>8</td>
<td></td>
</tr>
<tr>
<td>Contrast bath (n = 500)</td>
<td>89</td>
<td>5</td>
<td>2</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Ultrasound (n = 142)</td>
<td>49</td>
<td>5</td>
<td>31</td>
<td>15</td>
<td></td>
</tr>
<tr>
<td>Whirlpool (n = 191)</td>
<td>59</td>
<td>5</td>
<td>26</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>FES/NMES (n = 243)</td>
<td>55</td>
<td>7</td>
<td>30</td>
<td>8</td>
<td></td>
</tr>
<tr>
<td>TENS (n = 187)</td>
<td>45</td>
<td>7</td>
<td>39</td>
<td>9</td>
<td></td>
</tr>
</tbody>
</table>

Note. n indicates total number of subjects who responded to that specific item. FES/NMES = functional electrical stimulation/neuromuscular electrical stimulation. TENS = transcutaneous electrical nerve stimulation.
Table 3
Type of Training Therapists Received in Physical Agent Modalities

<table>
<thead>
<tr>
<th>Modality</th>
<th>Training (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Academic Programs</td>
</tr>
<tr>
<td>Paraffin (n = 596)</td>
<td>14</td>
</tr>
<tr>
<td>Hot and cold packs</td>
<td></td>
</tr>
<tr>
<td>(n = 594)</td>
<td>11</td>
</tr>
<tr>
<td>Fluidotherapy</td>
<td></td>
</tr>
<tr>
<td>(n = 560)</td>
<td>7</td>
</tr>
<tr>
<td>Contrast bath</td>
<td></td>
</tr>
<tr>
<td>(n = 585)</td>
<td>12</td>
</tr>
<tr>
<td>Ultrasound</td>
<td></td>
</tr>
<tr>
<td>(n = 553)</td>
<td>3</td>
</tr>
<tr>
<td>Whirlpool</td>
<td></td>
</tr>
<tr>
<td>(n = 568)</td>
<td>4</td>
</tr>
<tr>
<td>FES/NMES</td>
<td></td>
</tr>
<tr>
<td>(n = 570)</td>
<td>6</td>
</tr>
<tr>
<td>TENS (n = 561)</td>
<td>6</td>
</tr>
</tbody>
</table>

Note. n indicates total number of subjects who responded to that specific item. FES/NMES = functional electrical stimulation/neuromuscular electrical stimulation. TENS = transcutaneous electrical nerve stimulation.

The preliminary findings of AOTA's (1991) data survey concerning members' frequency of use of physical agent modalities revealed the same order of use as did our study. This consistency between findings increases the concurrent validity of our study.

Related to our findings regarding use, Gohl-Giese and Eliason (1986) reported that hot and cold packs were used fairly often by occupational therapists. They reported an increase in subjects' use from 16% in 1978 to 50% in 1985. Further, in the present study, concerning the various types of physical disabilities practice, the respondents in hand rehabilitation used physical agent modalities the most, whereas the respondents in long-term rehabilitation used them the least. The bias for use of physical agent modalities by therapists in hand rehabilitation is also exemplified by the fact that 12% of the items in the May 1991 hand certification examination related to the use of physical agent modalities (AOTA, 1991).

Having training in a physical agent modality did not automatically mean that therapists used that modality in practice. Many more respondents reported training in each modality than use. Factors such as needs of the client being served should logically influence actual use. On-the-job training and continuing education were the most common means of training reported. Like Gohl-Giese and Eliason's (1986) study, our study revealed that few therapists reported that their academic programs had provided training in any of the physical agent modalities. These findings emphasize the fact that occupational therapists' training in physical agent modalities varies among therapists and between different modalities. Therefore, we cannot consider all physical agent modality use and training to be equivalent across all modalities.

Many faculty members responsible for teaching physical disability content think that information on selected physical agent modalities should not be presented due to insufficient time or because, in their opinion, such information is inappropriate for entry-level occupational therapists or for occupational therapy as a whole (AOTA, 1991; Nelson, Cash, & Bauer, 1990). However, the majority of our subjects think that the use of physical agent modalities should be included in entry-level educational programs (see the Appendix). Therefore, clinicians and educators will likely disagree on covering physical agent modalities in entry-level programs. Additionally, it may be unrealistic to expect that entry-level therapists will be prepared to incorporate physical agent modalities into their practice without some additional training. However, because many physical agent modality users depend on on-the-job training or continuing education programs to provide them with the information needed to use modalities, academic programs would be wise to prepare students to carefully evaluate continuing professional education options.

The ultimate responsibility lies with therapists to obtain adequate training in the modality that they wish to incorporate into practice. However, the depth of training and

Discussion

The purpose of this study was to describe the use of physical agent modalities. The results revealed that hot and cold packs were the most commonly used agents. Most therapists who used this modality (83%) did so without assistance. Paraffin was used next most frequently, followed by contrast bath, FES/NMES, fluidotherapy, whirlpool, and TENS. The least used modality was ultrasound. When ultrasound was used in treatment, 31% of the respondents indicated that a physical therapist assisted.

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the skill achieved is difficult to assess when on-the-job training is the only source of information. The task force on physical agent modality emphasizes that any occupational therapist who chooses to use physical agent modalities must have documentation of the theoretical and technical training necessary for their safe and effective application (AOTA, 1991).

Although varied opinions can be obtained through a review of the literature, other surveys have primarily tapped the opinions of academic faculty and clinical educators (AOTA, 1991, Nelson et al., 1990). Our study adds to an understanding of which groups of therapists hold identifiable differences of opinion. Therapists whose primary function was direct client care held more positive opinions about the use of physical agent modalities, particularly in the case of therapists in hand rehabilitation. Less positive opinions of supervisors and educators may be a source of conflict when the use of these modalities is discussed with therapists who are primarily direct service providers. Similar findings were reported by Vogel (1991), who found that educators strongly disagreed that occupational therapists should use modalities such as massage, ultrasound, paraffin, and hot packs in the treatment of physical dysfunction. Students and practitioners were found to be neutral about the use of these modalities.

The fact that a therapist does not currently use physical agent modalities does not mean that the therapist holds a negative opinion about their use. Instead, this therapist may hold a neutral or positive view, as reflected by the moderate correlation between the use score and the total score of the opinion items.

One argument against physical agent modality use in occupational therapy practice has emphasized the conceptual conflict between purposeful activity and physical agent modality use (Eliason & Gohl-Giese, 1979; Huss, 1981; West, 1984). Our subjects may not feel the conflict between occupational therapy philosophy and the use of physical agent modalities (see the Appendix). Many of the subjects may agree with the approach proposed by Llorens (1984), Dutton (1989), and Pedretti and Pasquinelli (1990), in which the use of both purposeful activity and occupation and physical agent modalities together in treatment is discussed.

During their June 1991 meeting in Cincinnati, the AOTA Representative Assembly approved a statement addressing the use of physical agent modalities by occupational therapists. This statement read, "Physical agent modalities may be used by occupational therapy practitioners when used as an adjunct to/or in preparation for purposeful activity to enhance occupational performance and when applied by a practitioner who has documented evidence of possessing the theoretical background and technical skills for safe and competent integration of the modality into an occupational therapy intervention plan" (AOTA, Representative Assembly, 1991). On the basis of our subjects' responses on the opinion items (see the Appendix), we concluded that most of our respondents would support this statement.

Our study has several limitations. Generalization of results to the population of occupational therapists in physical disabilities practice is limited, because (a) only therapists who were members of AOTA were sampled, (b) the return rate of 66% suggests a self-selection bias, and (c) only internal consistency and face and concurrent validity were established for our measure. Other forms of reliability and validity were not established. This weakness was addressed but not eliminated during instrument construction. For example, frequency of use was anchored with descriptive terms that related to periods of time rather than such alternatives as never, rarely, frequently, and always. Yet it is possible that not all subjects accurately recall actual frequency. Interpretation by respondents of individual opinion items can also be a source of trouble for validity and reliability, and one should not overinterpret single items presented in the Appendix.

Our study did not collect information regarding the level of sophistication obtained by therapists who reported some use of and training in a modality. This is an important issue to be addressed in future research. For example, what is the level of competence for therapists who use physical agent modalities infrequently, that is, once a month or less? Twenty-seven percent of our respondents stated that they used hot and cold packs and paraffin once a month or less. How often must a therapist use a modality to stay proficient in its use? Additionally, future research on preparation in and use of physical agent modalities should continue to address each modality separately due to the variation among modalities. Future replication of this study could serve as documentation of the evolution of practice in this area.

Appendix
Opinion Items and Responses (%) *

Directions: Circle the number that indicates your position on each statement. SD = strongly disagree, D = disagree, N = neutral, A = agree, SA = strongly agree.

<table>
<thead>
<tr>
<th>Item</th>
<th>SD</th>
<th>D</th>
<th>N</th>
<th>A</th>
<th>SA</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Occupational therapists are as well prepared as physical therapists in the use of physical agent modalities.</td>
<td>32</td>
<td>48</td>
<td>10</td>
<td>7</td>
<td>3</td>
</tr>
<tr>
<td>2. Treatment must include the use of functional activities to be considered OT.</td>
<td>12</td>
<td>25</td>
<td>11</td>
<td>32</td>
<td>20</td>
</tr>
<tr>
<td>3. Functional activities alone are not as effective as physical agent modalities alone in achieving physical restoration.</td>
<td>16</td>
<td>36</td>
<td>17</td>
<td>20</td>
<td>11</td>
</tr>
<tr>
<td>4. Referrals for OT would decrease if occupational therapists could not use physical agent modalities.</td>
<td>7</td>
<td>31</td>
<td>20</td>
<td>30</td>
<td>12</td>
</tr>
</tbody>
</table>
5. Referrals for OT would decrease if occupational therapists used only functional activities in treatment and no physical agent modalities. 6 30 16 37 11
6. The use of crafts in treatment reduces the respectability of OT. 10 32 23 26 9
7. The use of physical agent modalities is consistent with the philosophical base of OT. 2 19 21 46 12
8. Physical agent modalities are cost-effective means to accomplish OT treatment goals. 2 11 27 45 15
9. As occupational therapists use physical agent modalities more, the identity of OT as a unique service is threatened.b 16 50 13 18 3
10. The use of physical agent modalities by occupational therapists is based on the foundation knowledge acquired in entry-level OT programs. 19 45 13 20 3
11. Promoting more rapid return of function justifies the use of physical agent modalities by occupational therapists. 1 8 10 52 29
12. Insurance companies are more likely to reimburse for services when physical agent modalities are used. 2 19 40 30 9
13. Use of physical agent modalities reflects the natural evolution of OT to use new technologies. 2 8 10 56 24
14. The use of physical agent modalities increases the respectability of OT. 3 18 24 43 12
15. All OT educational programs should require a background in physics and chemistry necessary for using physical agent modalities. 2 13 13 46 26
16. Therapy using physical agent modalities must be followed by functional activities to be considered OT. 2 14 12 43 29
17. The use of physical agent modalities is an advanced skill that should be obtained only after completion of an entry-level program. 10 37 17 29 7
18. Only physical therapists should use physical agent modalities.a 55 36 7 3 1
19. Functional activities should follow the use of physical agent modalities within the same treatment session. 1 12 14 44 29
20. Entry-level OT programs should prepare students in the use of physical agent modalities. 2 8 10 45 35
21. I would attend continuing education programs on the use of physical agent modalities, if offered. 1 5 9 42 43
22. Physical agent modalities should be followed by functional activities sometime during the course of treatment. 1 7 6 49 37

Note: OT = occupational therapy.

a% ranged from 611 to 628 for each item. bScoring on items to obtain a total were reversed before summing the responses.

References


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