Effectiveness of occupational therapy with frail community living older adults

ANNE G. FISHER1, KAREN ATLER2 & ANDREW POTTS3

1Division of Occupational Therapy, Department of Community Medicine and Rehabilitation, Umeå University, Umeå, Sweden, 2Department of Occupational Therapy, Colorado State University, Fort Collins, CO, and 3Private Practitioner, Fort Collins, CO, USA

Abstract
This study examined the effectiveness of short-term, home-based occupational therapy guided by the Occupational Therapy Intervention Process Model for improving activities of daily living [ADL] with eight frail, older adults living in assistive living. A multi-method research approach was utilized to collect both quantitative and descriptive, qualitative data in the form of a retrospective examination of the participants' clinical records. The quantitative component was a within-subjects, repeated-measures analysis of participants’ Assessment of Motor and Process Skills [AMPS] ADL motor and ADL process ability measures that revealed statistically significant improvement in ADL motor, but not ADL process abilities. The qualitative component was a content analysis of the clinical records. ADL baselines, goals, interventions and outcomes documented were analyzed. Improvement was noted in 77% of the written ADL goals. Results are discussed and recommendations were given for future research and documentation to improve the profession’s ability to support evidence-based practice.

Key words: Activities of daily living, assessment, human activities, outcome assessment, rehabilitation, treatment outcome

Introduction
Healthcare providers have entered a new era of accountability (1) where consumers, policymakers and third-party payers are requiring evidence of effectiveness in order to maximize their healthcare funds (2–4). Factors that have led to this new era include decreased healthcare monies, managed care, shortened periods of rehabilitation and increased cost of healthcare (5). Therefore, evidence of effectiveness has become essential for the occupational therapy profession (6–8).

The intention of this study was to contribute to the documented evidence on the effectiveness of occupational therapy services. More specifically, the effectiveness of a short-term occupational therapy intervention programme for improving activities of daily living (ADL) of community-living, frail, older adults was examined. The occupational therapy intervention programme was guided by the Occupational Therapy Intervention Process Model (OTIPM) (9,10), which embodies the key aspects of service delivery recommended by the recently published Occupational Therapy Practice Framework (Framework) (11). The OTIPM is a practice model that guides occupational therapy practitioners in thinking through the occupational therapy process in a manner intended to ensure true top-down, client-centred and occupation-based practice. A schematic representation of the occupational therapy process outlined in the OTIPM is shown in Figure 1.

The elderly population is growing, and individuals who are 65 years and older often experience illness or injury that prevents them from participating in their daily activities. Because of “occupational therapy’s unique focus on occupation and daily life activities and the application of an intervention process that facilitates engagement in occupation to support participation in life” (11), the provision of
occupational therapy services is quite relevant to the frail, elderly population who may be having difficulties with occupation. Occupation is everything people do to occupy themselves, including looking after themselves, enjoying life and contributing to the communities in which they live. Occupational performance areas include personal activities of daily living (PADL), instrumental activities of daily living (IADL), education, work, play, leisure, and social participation (11). The primary focus of this study was PADL and IADL (ADL).

Several meta-analytical studies have supported the overall effectiveness of occupational therapy with older adults (2,12–14). These studies, however, are difficult to compare due to having mixed diagnostic groups, varying interventions from numerous theoretical models, and differently defined outcomes. Also, most of the outcomes have focused on body functions as opposed to ADL or other occupational performance areas.

Only a few studies (14–20) have clearly examined the effectiveness of occupational therapy to improve ADL with the elderly. Two systematic reviews (18,19) provide some evidence that occupational therapy is effective in improving “functional ability” of older adults. Among the others (14–17,20), all but Clark studied people who had experienced a recent CVA. There is a need, therefore, for more evidence that clearly supports the use of occupation-based, client-centred occupational therapy for frail, community-living older adults. The use of a model that can guide practice so as to ensure that it is occupation-based and client-centred would also assist with designing and implementing clinical research, facilitate the comparison of studies, and, most importantly, guide the clinician to provide the best possible occupational therapy services for the benefit of clients.

The OTIPM is a process model that provides a professional reasoning tool to support a client-centred, occupation-based, and top-down approach to evaluation and intervention. The OTIPM is also intended to guide the clinician in selecting relevant evaluation methods and intervention models of practice as appropriate for each individual client (9,10) (see Figure 1). Because OTIPM was used as the theoretical professional reasoning model for this study, our specific research question was: “a short-term occupational therapy intervention guided by the OTIPM result in improved ADL performance of frail, community-living older adults?” The quantitative question was: “Is there a significant difference in ADL motor and ADL process ability measures following short-term occupational therapy intervention?” Qualitatively, the central phenomenon explored was effectiveness of intervention. The specific

![Figure 1. Schematic representation of the Occupational Therapy Intervention Process Model.](image-url)
questions were: Can clinical records reflect effectiveness of intervention, and if so, how do they illustrate effectiveness?

Material and methods

Participants

This study was based on the review of the clinical records of eight older adults who volunteered to participate in a client-centred occupational therapy intervention programme that focused on improved ADL performance. All participants met the following criteria for inclusion in this study, in that they: (a) were at least 65 years of age; (b) were living in the community at an assisted living residence; (c) demonstrated evidence of frailty as indicated by self-report of need for assistance with at least one of the following: bathing, meal preparation, heavy housework, grocery shopping, transportation and money management; and (d) were not currently eligible for or receiving occupational or physical therapy services. Eligibility was defined as not qualifying for coverage of therapy services by their healthcare provider(s).

Exclusionary criteria included: (a) evidence of dementia or severe memory loss; (b) history of acute or recent cardiac condition that would contraindicate increased activity; (c) medical instability; (d) more than one hospitalization in the past year; or (e) hospitalization in the past 3 months. Significant history for stroke, hip fracture, arthritis, or other musculoskeletal or neurological disorder was not considered as a reason for exclusion.

The age and major diagnoses of the participants are given in Table I. The eight participants (six of whom were female) ranged in age from 74 to 90 years, $M = 80.1$, $SD = 7.1$.

Instrumentation

Assessment of Motor and Process Skills (AMPS). The Assessment of Motor and Process Skills (AMPS) (9,10) was used as an objective measure of change in ADL task performance. The AMPS evaluations were administered according to standardized procedures described in the AMPS manual by occupational therapists who were trained and calibrated as reliable raters.

The AMPS is a standardized observational tool that is used to evaluate the quality of 16 ADL motor and 20 ADL process skills observed when a person performs ADL tasks. ADL motor skills are the smallest observable units of occupation that are observed when a person moves him/herself and task objects. For example, whether a person makes a bowl of soup or gets dressed, he or she must reach for, grip and lift the task objects. ADL process skills are the smallest units of occupation that are observed when the person enacts logically the ADL task, selects and uses appropriate tools and materials, and modifies his or her performance when problems are encountered. As a person makes a bowl of soup or gets dressed, he or she must search for and locate the needed objects, gather them to the workplace, and perform the steps of the task performance in a logical order (sequence) (11,21). The ADL motor and ADL process skills are equivalent to actions defined under the Activity and Participation domains of the World Health Organization’s (21,22) International Classification of Functioning, Disability and Health. During administration of the AMPS, a person performs two culturally relevant, familiar, and chosen ADL tasks. An observer rates the person’s performance on each ADL motor and ADL process skill using a four-point ordinal scale, ranging from 1 (deficient) to 4 (competent).

Numerous studies support the reliability of the AMPS ability measures (23,24), as well as validity across age groups and genders (25,26). The AMPS has also been shown to be a sensitive outcome measure (27,28).

Clinical records. In addition to the AMPS, the occupational therapists completed a baseline evaluation form and maintained daily progress notes for
each participant. More specifically, the clinical records included: (a) a summary of the information gathered during the first visit, including a summary of the client-centred performance context (CCPC), and the participant’s baseline strengths and problems of occupational performance; (b) the participant’s goals; (c) the therapist’s intervention plan; (d) a summary of what interventions were actually implemented during each visit; and (e) documentation as to whether or not the participant met his or her goals. The therapists were given the baseline evaluation form to enter information about the CCPC, and the participant baseline strengths and problems of occupational performance, but otherwise they were not given specific instructions as to how they should record or document the information specified as part of the study. The intention was for each therapist to document according to routine occupational therapy practice expectations.

Procedures

This study was approved by the Office of Regulatory Compliance at the affiliating university. The study was implemented using a within-subjects, repeated-measures design where the participants served as their own controls (29). More specifically, each of the eight participant had an initial pre-test, a period of no treatment (control phase), a second pre-test, a period of intervention (intervention phase), and a final post-test. All participants were eligible for up to US$150 funding for recommended adaptive equipment and were paid US$20 for each of the three assessment sessions in order to reimburse the participants for any inconvenience or expenses incurred.

The participants were recruited through advertising in their communities and through occupational therapists involved with the study. After the potential participants indicated an interest in taking part in the study, an occupational therapist made telephone contact with the individual to ensure that he or she met the inclusion criteria. All potential participants met the inclusion criteria and became a participant in this study. Arrangements were then made to visit each participant in his or her home.

Initial visit. During the first visit, the study was explained to the participant, informed consent was obtained and the occupational therapy evaluation initiated. Following the OTIPM, the client-centred performance context (CCPC) (9,10) was established through interview and casual observation (see Figure 1). The CCPC is similar to the occupational profile in the Framework (11), where information related to internal and external factors that provide the context for the client’s occupational performance is gathered. The interview also provided the foundation for establishing therapeutic rapport and understanding the participant’s reported baseline strengths and problems of occupational performance (see Figure 1). Through collaborative consultation (11), the participant and the occupational therapist then established the participants’ primary intervention goals based on the ADL that were most important to the participant.

Pretest 1. Subsequent AMPS evaluations served as standardized performance evaluations (performance analyses) that led to defining the actions of ADL performance enacted effectively or ineffectively (see Figure 1). The first AMPS pre-test (for the control phase, pre-test 1) was carried out during the second visit. The AMPS observation was administered and scored by the primary therapist, and to help control for the possible effects of rater bias, a second therapist, naive to the phase of the study, co-scored each AMPS observation. As required for an AMPS observation, the participants performed two AMPS tasks. Because they were to serve as performance analyses (9,10), the ADL tasks used for the AMPS observations were as close as possible to, or the same as, the tasks the participant identified as meaningful, but problematic during the first visit. This enabled the therapist to gather more detailed information about the quality of the participant’s occupational performance needed for planning meaningful intervention.

Control phase and pre-test 2. Following the pre-test, there was a period of time (2 to 4 weeks) in which participants received no occupational therapy or other rehabilitation services. The second AMPS evaluation (post-test for the control phase and pre-test for the intervention phase, pre-test 2) was administered after the control phase using the same procedures as used for the first AMPS evaluation. As with the first AMPS evaluation, a second (but different) therapist, naive to the phase of the study, co-scored each AMPS observation. The same two ADL tasks used in the first AMPS evaluation were performed unless they had become too easy, in which case similar but more difficult tasks were used. Changing tasks is a reliable procedure as established by the alternate forms reliability of the AMPS measures (24,30).

Intervention phase. Immediately following the second AMPS evaluation, occupational therapy intervention
was initiated. This phase of the study (2 to 4 weeks) consisted of four, 45-minute sessions (or an equivalent thereof). During the intervention phase, the occupational therapist continued to use the OTIPM as a clinical framework to plan and implement client-centred and occupation-based intervention. As guided by the OTIPM and in consultation with the participant, the occupational therapist was free to choose a restorative approach, an acquisitional approach, a compensatory approach, or a combination of approaches (see Figure 1). The focus of restorative occupation is to change client factors or diminished capacity in order to restore underlying body functions needed for occupational performance. Acquisitional approaches focus on occupational skills training, without explicit intention to remediate underlying impairments. The focus of adaptive occupation is compensatory (i.e. to provide adaptive equipment or technology, modify physical or social environments, or teach alternative ways of doing in order to compensate for a client’s ineffective actions, and support the client’s performance) (9–11). Occupation-based education programmes were not indicated in this study as the aim was to provide individual direct service. In the OTIPM, teaching–learning strategies (as well as consultation) are important components of all four approaches, but education/teaching models are used as primary models only when the plan is to provide occupation-based education programmes for large groups (9,10).

Post-test. Following the intervention phase, the final AMPS evaluation (post-test for the intervention phase) was administered in the same manner as was the earlier AMPS evaluations. Again, the same two ADL tasks were used unless these tasks had become too easy, in which case similar but more difficult tasks were used. Again, a second (but different) therapist, naive to the phase of the study, co-scored each AMPS observation. The AMPS post-test marked the end of data collection for this study and was one component of the re-evaluation for enhanced occupational performance (see Figure 1).

Data analysis

**Quantitative analysis.** Due to the small number of participants, all eight clinical records were used. As information from the clinical records was extracted, randomly assigned number codes were used to maintain confidentiality. Data from the clinical records were coded and analysed using content analysis. Text segments were assigned one of the following deductive categories: participant goals, baselines, intervention, and outcomes. These deductive categories were derived from a review of the recent literature on clinical documentation (31–34), as well as guided by the theoretical model of the study, OTIPM. After categories were assigned, the number of times the categories appeared was counted and reported using descriptive statistics. During the data coding and analysis, triangulation of investigators and peer debriefing provided verification. In the initial coding, two of the authors independently coded/categorized the initial data from clinical records. Once categories were agreed upon, categories were counted and re-checked; all three researchers then came together to discuss the analyses. To further control for bias, none of the researchers participated in the evaluations or interventions nor had any direct contact with any of the participants. None of the therapists (n = 3) who implemented the interventions with the eight participants was involved with the examination of the data or the evaluation of the clinical records.

**Results**

**Quantitative analysis**

The participants’ mean ADL motor and ADL process abilities for each phase of the study are given in Table II. Single-factor repeated-measures ANOVAs revealed a significant main time effect for ADL motor ability, $F(2, 14) = 11.25, p = 0.001$, but no significant main time effect for ADL process ability, $F(2, 14) = 3.01, p = 0.082$. Mauchly’s test of sphericity was not significant, indicating no violation and therefore sphericity was assumed. A

<table>
<thead>
<tr>
<th></th>
<th>$M$</th>
<th>$SE$</th>
<th>$SD$</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>ADL motor ability</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pre-test 1</td>
<td>0.56</td>
<td>0.25</td>
<td>0.71</td>
<td>0.02 to 1.69</td>
</tr>
<tr>
<td>Pre-test 2</td>
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<td>0.24</td>
<td>0.67</td>
<td>−0.06 to 1.69</td>
</tr>
<tr>
<td>Post-test</td>
<td>1.08</td>
<td>0.24</td>
<td>0.66</td>
<td>0.15 to 2.20</td>
</tr>
<tr>
<td><strong>ADL process ability</strong></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pre-test 1</td>
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<td>0.19</td>
<td>0.53</td>
<td>−0.61 to 1.09</td>
</tr>
<tr>
<td>Pre-test 2</td>
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<td>0.17</td>
<td>0.49</td>
<td>−0.26 to 1.12</td>
</tr>
<tr>
<td>Post-test</td>
<td>0.66</td>
<td>0.15</td>
<td>0.42</td>
<td>0.05 to 1.26</td>
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</tbody>
</table>
post hoc Tukey HSD test revealed that ADL motor ability for the post-test was significantly higher than for either of the pre-tests, which did not differ from each other. The non-significant F for ADL process ability suggested that there were no differences between the control and intervention phases. Hedges’s g (paired t/square root of N) (35) for ADL motor ability between pre-test 2 and the post-test was 1.02, indicating a large effect size. In contrast, Hedges’s g for ADL process ability was 0.39, indicating a small effect size.

To further understand our results, we computed the differences in ADL motor ability and ADL process ability between the control and intervention phases for each participant (Table III). Based on the results of alternate forms reliability studies (24,30), the AMPS manual (10) specifies that changes in ADL ability of at least 0.5 logits indicates that a change has occurred with 80% to 86% confidence. Based on these guidelines, it was found that none of the eight participants showed clinically meaningful changes in ADL motor ability during the control phase, but five (62.5%) showed clinically meaningful changes during the intervention phase. In contrast, only one participant showed clinically meaningful changes in ADL process ability during either the control or the intervention phase. Considered together, the results of our analyses converged to support the conclusion that the occupational therapy interventions resulted in overall improvements in ADL motor but not ADL process ability.

**Qualitative analysis**

**Baseline evaluations.** The descriptive data found in the participants’ occupational therapy records included each participant’s baseline strengths and weaknesses in relation to occupational performance. Documented baselines were analysed in relationship to the 34 goals recorded in the eight participant records. Four goals (12%) did not have reported baselines. Twenty-six of the 30 reported baselines (87%) were occupation-based (e.g. PADL, IADL, leisure). However, none of the occupation-based evaluation baselines that were later used to formulate clinical goals were measurable. Baselines were considered to be measurable if they included an observable qualifying behaviour or level of performance associated with the occupation identified in the goals. Examples of non-measurable baselines were “Difficulty with dressing” and “Problems with grooming”. Four of the 30 baselines documented the “reason” or “cause” of the participant’s problems rather than the participant’s occupational performance baseline (e.g. “Very high toilet seat”, “Fatigue”).

**Goals.** The number of goals recorded for each of the eight participants ranged from two to seven goals. Eighty-five percent (29/34) of the goals reported focused on what the client will do. The other five goals focused on intervention or assessment. In total, 82% (28/34) of the goals reported were considered to be occupation-based. Goals were considered to be occupation-based if the participant’s action or behaviour was explicitly linked to a daily life task. For example, “Safe and independent showering” and “Easier on and off toilet seat” are both occupation-based goals. However, “Learn about eye strain prevention” or “Safety cord in bathroom” were not considered to be occupation-based. Some of the occupation-based goals addressed performance of a daily life task (e.g. eating a meal, preparing light meals, dressing); whereas, others focused more on actions or steps of larger tasks (e.g. sorting clothes by colours, opening jars, handling spoons). Some 50% (14/28) of the occupation-based goals were related to PADL, 36% (10/28) were related to IADL, and 14% (4/28) of the goals were related to leisure tasks.

In sum, 43% (12/28) of the occupation-based goals were considered to be measurable. Examples of measurable goals included qualifying behaviour that could be observed and replicated by a third party,

**Table III. Differences in ADL motor ability and ADL process ability (logits) between phases for each participant.**

<table>
<thead>
<tr>
<th>Participant</th>
<th>Difference in ADL motor ability between pre-test 1 and pre-test 2</th>
<th>Difference in ADL motor ability between pre-test 2 and post-test</th>
<th>Difference in ADL process ability between pre-test 1 and pre-test 2</th>
<th>Difference in ADL process ability between pre-test 2 and post-test</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0.34</td>
<td>-0.22</td>
<td>0.59*</td>
<td>-0.20</td>
</tr>
<tr>
<td>2</td>
<td>0.21</td>
<td>0.68*</td>
<td>0.09</td>
<td>-0.15</td>
</tr>
<tr>
<td>3</td>
<td>0.15</td>
<td>0.90*</td>
<td>0.13</td>
<td>0.06</td>
</tr>
<tr>
<td>4</td>
<td>-0.08</td>
<td>0.66*</td>
<td>-0.21</td>
<td>0.10</td>
</tr>
<tr>
<td>5</td>
<td>-0.00</td>
<td>-0.05</td>
<td>0.03</td>
<td>0.14</td>
</tr>
<tr>
<td>6</td>
<td>-0.03</td>
<td>0.56*</td>
<td>0.39</td>
<td>-0.04</td>
</tr>
<tr>
<td>7</td>
<td>0.00</td>
<td>0.50*</td>
<td>-0.29</td>
<td>0.51*</td>
</tr>
<tr>
<td>8</td>
<td>0.40</td>
<td>0.15</td>
<td>0.35</td>
<td>0.31</td>
</tr>
</tbody>
</table>

*Clinically meaningful difference.
such as “Safe and independent showering” and “Independent use of washer and dryer”. Examples of goals that were not measurable included: “Read more easily”, “Turning on lights with greater ease”, and “Easier on and off toilet seat”.

**Intervention.** All eight of the participants received three to five OT intervention sessions. The average time span for intervention was 19 days with a range of 12 to 32 days.

Interventions recorded in the participants’ occupational therapy records were analysed according to the type of intervention. The potentially relevant intervention approaches identified in the OTIPM are restorative, acquisitional, compensatory, or a combination of approaches. All interventions documented in this study were compensatory in nature. As expected as part of adaptive occupation, collaborative consultation, education, and adaptive equipment and/or adaptive methods were the compensatory interventions employed with all eight participants. The existing physical environment was modified with five of the eight participants (e.g. rearranged furniture, eliminated clutter, reorganized closets). In two of the cases, collaborative consultation included staff and caregivers. Examples of compensatory interventions recorded were “Placing raised tabs on washing machine controls” (to improve independence with laundry), “Collaboration for placement of denture scrub brush and education in its use”, and “Caregiver consultation and training”.

The documentation revealed that with two participants, the occupational therapists identified underlying factors impacting performance such as “Limited shoulder range of motion” and “Possible neuromotor problems”. The therapist considered selecting the restorative model; however, only recommendations for further assessment were found in the records and no restorative interventions were recorded.

When analysing the relationship between interventions provided and established goals, 32% (11/34) of the participants’ goals did not have documented interventions or outcomes. Four interventions were documented in the records without having a documented goal.

**Outcomes.** Twenty-two documented outcomes related to established goals were recorded in the eight participant records. In addition, 12 stated goals were missing documented outcomes, and two documented outcomes were recorded that did not have established goals or evaluation baselines. In all, 77% (17/22) of the documented outcomes with goals were occupation-based, and 68% (15/22) of the documented outcomes addressed participant satisfaction. However, only 18% (4/22) of the documented outcomes with goals were considered to be measurable, based on the criteria noted above. Five of the 22 documented outcomes (23%) indicated that goals were met, and 12 of the documented outcomes (55%) indicated progress towards the goals. Therefore, 78% (17/22) of the goals with documented outcomes exhibited some type of improvement. “New raised toilet seat made P. able to do the transfer more safely and with less effort” is an example of an outcome that supported the goal “Easier on/off toilet” as being met. One participant stated, “It is much easier than it was before” (toothpaste applicator), and the therapist also documented “Able to use toothpaste applicator independently”. An example of an outcome that demonstrated progress towards the goal was “Groom with more efficiency and less physical difficulty”.

However, 23% (5/22) of the outcomes with goals were identified by the authors as “unclear” when the recorded outcomes did not support the above criteria for improvement. Examples of unclear outcomes were “Seemed pleased with weighted mug” and “Kitchen environment is much less cluttered, safer and has greater amount of counter workspace”. Only one of the goal-related outcomes was clearly unsuccessful with regard to the goal: “Help with household tasks (goal)—not accomplished”. Outcomes and interventions were also not recorded for eight of the documented goals; therefore, the progress towards the goals could not be critiqued.

**Discussion**

The results of this study provide preliminary evidence that short-term, occupation-based occupational therapy interventions guided by OTIPM did improve performance of frail, community-living older adults as evidenced in two ways: (a) a statistically significant improvement in ADL motor skills demonstrated through the AMPS, and (b) 78% (17/22) of the goals with documented outcomes exhibited some type of improvement. Although the majority of the documentation lacked clear objective and measurable goals, baselines and outcomes, all participants demonstrated at least minimal progress toward meeting most of their ADL goals following a typical short-term course of homebound occupational therapy. Even those participants who did not improve significantly in ADL motor ability showed improvement in some aspects of clinical ADL goals found in the clinical progress notes. Although preliminary, due to the small sample size, this type of evidence of occupational therapy effectiveness
supports the formulation of evidence-based clinical practice (1,36) and could potentially have provided even stronger evidence had the therapists implemented more effective documentation.

The significant improvement with ADL motor ability measures suggests that compensatory intervention resulted in the participant learning to do his or her chosen ADL differently but with less effort. This is in contrast to other studies where ADL process ability, reflecting an increase in efficiency and overall likelihood of living independently, is more likely to improve following compensatory intervention (27,37). Nevertheless, the results provide evidence that an intervention process guided by a true top-down, client-centred, and occupation-based intervention model (OTIPM) results in improved occupational performance. While the use of the OTIPM as a model to guide the professional reasoning process increases the probability of the occupational therapist implementing client-centred and occupation-based interventions, the results of this study do not provide evidence that such an approach is more effective than are occupational therapy interventions that are not client-centred or occupation-based. Further research is needed to compare the effectiveness of occupational therapy interventions guided by different conceptual models of practice.

Several studies have shown that clients who set their own goals made greater gains (38,39). In fact, the occupational therapy process was initiated during the first visit (prior to the control phase when the occupational therapists established the client-centred performance context and began to establish therapeutic rapport; see Figure 1) (9,10). Meaningful and client-centred goals were formulated through collaborative consultation between the therapist and the participant, and the first AMPS pre-test was implemented. All of these may have had a therapeutic effect, as suggested by non-significant gains of 0.13 logits in both ADL motor and ADL process abilities between the first two pre-tests (see Table II). Because such early effects may be present in all occupational therapy that is client-centred, occupation-based, and follows a true top-down assessment process, future research is needed to study the differential effects of the occupational therapy process versus the actual interventions provided.

While using an objective standardized ADL assessment that clearly illustrated functional gains in ADL performance, examination of the written documentation provided only minimal evidence of occupational therapy effectiveness. Several reasons will be discussed.

First, while all eight participant records clearly demonstrated client-centred and occupation-based assessment and intervention, evaluation baselines, goals and outcomes documented were generally not measurable. Forsyth and Kielhofner (34) stated that in order to evaluate occupational therapy outcomes, clear objective and measurable goals must be established and documented. In order to establish such goals, therapists need to establish and document clear baselines during the assessment process. Doing so makes it easier to set objective, measurable goals that are appropriate to the participant’s needs, desires and expected outcomes (31). More importantly, without a clearly documented baseline, it is not possible to determine whether a client has made progress toward a goal. The result is the potential loss of important evidence of the efficacy of the intervention provided. In fact, many of the baselines documented in the participants’ records were not measurable and often were only marginally related to the goals documented.

The results of this study were similar to other studies examining documentation of occupational therapy intervention where the word “difficulty” was frequently documented during the rehabilitation process (40). The problem with clinical baselines that are immeasurable or unclear is that these outcomes do not have an objective reference point to demonstrate improvement or lack of improvement in the participants’ goals.

Unlike Neistadt’s study examining documentation of goals in a physical rehabilitation setting (38), the documented goals in this study had a clear emphasis on occupational performance (87%). Similar to Neistadt’s results, however, the goals were often vague and missing the context and/or criteria of the performance. Equally as important as the documentation of goals is for therapists to document outcomes. Without documentation of outcomes, there is a lack of evidence to support the value of occupational therapy services (34). In this study, documented outcomes revealed the same pattern as in the baselines and goals, where a large percentage were occupation-based (77%), but only few were measurable (14%). In fact, the clinical outcomes were difficult to find in the documentation progress notes. This lack of documented outcomes has not been uncommon in previously reported studies examining the quality of occupational therapy services through review of documentation (41,42).

Although Foto (4) stated that use of participant records can be a good way to examine occupational therapy practice, there is a need to foster better quality documentation in order to illustrate effectiveness. More stringent documentation guidelines and an evaluation/re-evaluation form that is more
Another factor to be considered is that an initial AMPS assessment is often slightly lower than subsequent assessments (44). To compensate for this effect, future researchers might consider performing three pre-tests (instead of two) during the control phase in order to represent the control phase more accurately. Other recommendations that could enhance future studies are increasing the sample size, extending the time of the control and intervention phases, and adding a participant self-assessment to the pre- and post-tests (45), as well as 6- and 12-week follow-up assessments.

### Conclusions

Although preliminary, due to the small sample size, this study adds to the body of evidence that supports the effectiveness of short-term occupational therapy to improve ADL performance with frail, community-living older adults. A specific client-centred and occupation-based model of intervention (OTIPM) and a consistent intervention approach (compensatory) were utilized with a clearly defined, clinically and demographically significant population. Both quantitative and descriptive data were used to strengthen the evidence of effectiveness of occupational therapy (36). In addition to responding to the need for research to support evidence-based occupational therapy practice, several practical suggestions have been given for improving documentation and implementation of occupational therapy intervention strategies.

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