This pilot study describes and compares the time use for physical child care of two groups of mothers—those with physically handicapped preschoolers (N = 16) and those with normal preschoolers (N = 21). Each mother completed a questionnaire on the time she spent in three categories of physical child care activities. These activities included feeding, personal care, and transportation for physical care. Investigators collected data on both frequency and duration. They reported descriptive data for all categories separately and combined. The results of the study show that the mothers of the physically handicapped preschoolers spent significantly more time engaged in physical child care activities than did the mothers of normal preschoolers. Results also show a high correlation between frequency and duration data for physical child care. The results strongly suggest that the mothers of physically handicapped preschoolers spent significantly more time engaged in physical child care activities than did the mothers of normal preschoolers. They also suggest that frequency data alone could be collected in further studies in this area without appreciably reducing the accuracy of the results.

Occupational therapists who work with physically handicapped children frequently suggest that parents make changes in their children's feeding, grooming, and dressing routines. These changes are intended to increase the independence of the children, but they may also increase the time demands placed on the parents. Information on the energy and time required to manage ordinary, essential child care tasks is of importance to therapists working with physically handicapped children. However, little research seems to have been done on how much time is spent in the care of a physically handicapped child.

Walker and Woods (1) studied time use in 1,296 husband-wife households with or without children. One of the categories of time use recorded was physical care, which included bathing, feeding, dressing, giving bedside care or first aid, and making trips to the dentist, physician, or beauty shop. These investigators found that for all family workers, the amount of time spent in physical care of children averaged about three hours a day when there was a baby under 1 year of age, about two hours a day when there was a 1-year-old child, and about one hour a day when the youngest child was between 2 and 5 years old.

McAndrew (2) reported data on families' time use for child care in households where there was a physically handicapped child. The 116 children in this study were from 5 to 10 years old. McAndrew found that the time parents spent tending to the special needs of children with spina bifida or cerebral palsy averaged just over two hours a day. This tending included helping with dressing, feeding, toileting, applying splints, and keeping the severely handicapped child occupied.

Lucca and Settles (3) investigated parental time use in families with and without a physically disabled child. They studied 59 families, 41 of whom had a disabled child designated as the target child and 18 of whom had a normal child.
designated as the target child. The children were between 2 and 18 years old and were classified according to functional level by the use of the Vineland Scales of Social Maturity. Using this instrument, the investigators divided the children into three groups: normal, learning disabilities/behavioral, and multihandicapped. Lucca and Settles reported that the results of their study agreed with those of Walker and Woods (1) that they found that children less than 6 years old required more physical care time. However, they did not find that the amount of time spent on physical care was higher for families with disabled children than for those with normal children.

Joosten (4) compared time use for child care, household tasks, and sleep in 22 families with a spina bifida child and 22 (control) families with a normal child. Control families were selected to match the other families on the basis of the following criteria: age of the mother, age of the target child, social class, residence in the same housing area, and the presence of other children in the same age groups. Families were interviewed twice in their homes, and mothers were asked to keep a diary of all activities for two weeks. The results of this study indicate that the mothers of spina bifida children spent twice as much time in child care as did the mothers of normal children.

Numerous factors have been found to influence the amount of time spent in child care. These factors include the sex and employment status of the parents (1, 5) and the number of children in the family and their ages (1, 6, 7). Walker and Woods (1) and Stone (5) found that wives spent more time in child care than did their husbands, regardless of employment status. According to Hunt and Kiker (6) and Leuthold (7), the time wives spent in child care increased with the number of children in the family. Walker and Woods (1) found that the most influential factor on the amount of time spent in physical child care was the age of the youngest child.

In summary, the findings are not definitive as to whether there are differences between the amount of time spent on physical child care by parents of physically handicapped children versus parents of normal children. However, the occupational therapist needs to have a knowledge of these physical child care demands when he or she is planning treatment and home programs, providing emotional support to parents, and recognizing the need for respite care.

This study addresses this issue by describing the time spent in physical child care by mothers of physically handicapped children and by mothers of normal children. To determine whether there were differences in time use between the two groups, we tested the following hypothesis: the amount of time the mothers of physically handicapped children spend on the physical care of their children differs significantly from the amount of time the mothers of normal children spend on the physical care of their children.

Another area of interest in this study was comparing two types of data used for measuring time use: frequency data and duration data (8). It would be expected that the amount of time spent in an activity (duration data) would go up as the frequency of engaging in this activity goes up, if data were collected over several episodes of an activity. If these two methods of recording information were highly correlated, this might indicate that frequency data alone could be collected without appreciably reducing the accuracy of measurement. Because it is much less time-consuming to record frequency information alone, the exclusive use of this method of data collection would be an advantage. Taking into account the preceding information, the investigators tested the following hypothesis: the frequency of engaging in physical child care activities correlates significantly with the amount of time spent engaging in physical child care activities.

**Method**

**Subjects**

The subjects for this study were 37 mothers, each of whom had a preschool target child between the ages of 3 and 5 years. **Group 1** consisted of 16 mothers, each of whom had a physically handicapped target child; **group 2** consisted of 21 mothers, each of whom had a normal target child. All of the mothers lived in Seattle or the immediately surrounding areas. We located **group 1** mothers through Children's Orthopedic Hospital and Medical Center, Children's Clinic and Preschool, Children's Therapy Center, and the Seattle Public Schools. We located **group 2** mothers through the Well-Child Clinic at the Child Development and Mental Retardation Center and the Group Health Cooperative of Puget Sound.

To be considered for inclusion in this study, a household had to have two parents and the wife could not be employed outside the home for more than 20 hours per week. Only families having four or fewer children were selected. The number of families with children...
less than 3 years old was restricted. Foster families were excluded. Target children had to be 3, 4, or 5 years old, and they had to meet the following criteria, which were used to determine their functional level.

**Functional level of the physically handicapped target children.** A mother was considered for inclusion in the study if her physically handicapped child met at least two of the following criteria:

- uses a wheelchair, crawling, scooting, or rolling as the primary means of mobility or uses assistive devices (e.g., braces, crutches, canes, or a walker) to ambulate independently.
- is unable to eat independently, requiring some physical assistance to eat from a spoon or fork and/or to drink from a cup.
- needs assistance getting on and/or off the toilet, wears diapers most of the day, or has a catheter.
- is unable to talk, talks using only single words (does not use two-word phrases), uses a language board, or uses sign language.

**Functional level of the normal children.** A mother was considered for inclusion in the study if her normal child met all of the following criteria:

- walks independently,
- eats and drinks without physical assistance,
- is independent in toileting during the day, except for needing help fastening and unfastening clothes, and
- talks meaningfully, using at least two-word phrases.

A comparison of the two groups of mothers on selected demographic characteristics is shown in Table 1. The two groups were similar with respect to the ages of the target children and the ages of the mothers. On the average, families with physically handicapped children had a greater number of children, were lower in social class, and their target children spent more time in educational programs. The social class of each family was determined by means of the Two-Factor Index of Social Position (9). This index uses the occupation and educational level of the head of the household to classify a family into one of five categories. Level I indicates the highest social class, and level V indicates the lowest.

Table 2 shows the areas of difficulty of the physically handicapped target children. Most of these children were seriously disabled; eight had difficulty in four areas, seven had difficulty in three areas, and one had difficulty in two areas.

**Instruments**

The investigators collected the data using the Physical Child Care Record (PCCR), an instrument developed by the principal investigator as a self-report measure of observable activities (behaviors). The activities to be recorded were selected based on a literature review on time use and activity patterns.

The PCCR was designed to enable users to record the physical child care activities engaged in for seven consecutive days. Each day covers a 24-hour period, which is broken into half-hour time blocks. Three categories of behavior are recorded: feeding, personal care, and transportation for physical care.

A comparison of the two groups of mothers on selected demographic characteristics is shown in Table 1. The two groups were similar with respect to the ages of the target children and the ages of the mothers. On the average, families with physically handicapped children had a greater number of children, were lower in social class, and their target children spent more time in educational programs. The social class of each family was determined by means of the Two-Factor Index of Social Position (9). This index uses the occupation and educational level of the head of the household to classify a family into one of five categories. Level I indicates the highest social class, and level V indicates the lowest.

Table 2 shows the areas of difficulty of the physically handicapped target children. Most of these children were seriously disabled; eight had difficulty in four areas, seven had difficulty in three areas, and one had difficulty in two areas.

**Instruments**

The investigators collected the data using the Physical Child Care Record (PCCR), an instrument developed by the principal investigator as a self-report measure of observable activities (behaviors). The activities to be recorded were selected based on a literature review on time use and activity patterns.

The PCCR was designed to enable users to record the physical child care activities engaged in for seven consecutive days. Each day covers a 24-hour period, which is broken into half-hour time blocks. Three categories of behavior are recorded: feeding, personal care, and transportation for physical care. The personal care category includes activities such as grooming, dressing, bathing, and giving first aid. The transportation category includes getting a child to and from medical appointments, therapy sessions, and the beauty or barber shop.

Several forms of the PCCR were developed and pilot tested before the current form was selected for

<table>
<thead>
<tr>
<th>Variable</th>
<th>Number of Children With Difficulty in Each Marked Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ambulation</td>
<td>X X X</td>
</tr>
<tr>
<td>Feeding</td>
<td>X X</td>
</tr>
<tr>
<td>Toileting</td>
<td>X X</td>
</tr>
<tr>
<td>Communication</td>
<td>X</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Table 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Demographic Characteristics of Families With and Without Physically Handicapped Children</td>
</tr>
<tr>
<td>Variable</td>
</tr>
<tr>
<td>----------</td>
</tr>
<tr>
<td>Number of siblings of target child</td>
</tr>
<tr>
<td>Handicapped</td>
</tr>
<tr>
<td>Normal</td>
</tr>
<tr>
<td>Age of target child, mo</td>
</tr>
<tr>
<td>Handicapped</td>
</tr>
<tr>
<td>Normal</td>
</tr>
<tr>
<td>Age of mother, yr</td>
</tr>
<tr>
<td>Handicapped</td>
</tr>
<tr>
<td>Normal</td>
</tr>
<tr>
<td>Social class*</td>
</tr>
<tr>
<td>Handicapped</td>
</tr>
<tr>
<td>Normal</td>
</tr>
<tr>
<td>Hours in preschool/week</td>
</tr>
<tr>
<td>Handicapped</td>
</tr>
<tr>
<td>Normal</td>
</tr>
</tbody>
</table>

* Larger numbers indicate lower social class.
use in this study. Once the final form was developed, investigators determined interrater reliability by using the percentage of agreement between a mother and an observer, each of whom marked the PCCR for the same time block. Percentage of agreement for six mothers ranged from 80% to 100% (mean = 87%).

Using study data, split-half reliability was examined, whereby the correlation between two randomly selected days of the week was calculated. This was done for both groups (group 1, r = .91; group 2, r = .74).

Procedure

The principal investigator and/or clinic personnel selected and excluded subjects based on the criteria described above. The principal investigator contacted mothers by letter and/or phone to explain the study to them and to determine whether they were qualified for the study and willing to participate. Mothers who consented to participate were interviewed in their homes or at the developmental center or clinic through which they were located. Interviews took approximately one hour. Each subject was asked to sign a consent form and to provide demographic information.

All subjects were trained in the use of the PCCR. Training was continued until subjects reached agreement with the principal investigator. The PCCR was left with each subject. Subjects were asked to begin recording physical child care activities the day following the training session and to continue recording for seven days. The principal investigator phoned each mother once during the week she was recording to remind her to use the PCCR and to answer any questions she might have. Subjects were given a stamped, pre-addressed envelope and instructed to mail in the completed PCCR forms at the end of the seven days. All of the subjects returned their PCCR forms. All of the returned forms were filled in for each of the seven days. Each subject was given a small remuneration upon receipt of her completed PCCR form. To preserve confidentiality, the PCCR forms were marked with a code number only.

Results

The Statistical Package for the Social Sciences (10) was used to analyze the data. Means, standard deviations, medians, and minimum and maximum raw scores for the three categories of the PCCR and for the total time spent in physical child care (all categories combined) are shown in Table 3. Both frequency and duration data are reported. The transportation category of the PCCR refers only to time spent in transportation for physical care activities (e.g., for medical appointments, therapy sessions, or visits to the beauty or barber shop).

The first research hypothesis concerning the amount of time spent by mothers on physical child care was tested a) for the total time spent in physical child care and b) for each category of the PCCR separately. This was done for both frequency and duration data, and the alpha level was set at p < .05.

To determine whether to use parametric or nonparametric statistics, the investigators tested the distributions of time use scores for normality for each group of subjects using the Kolmogorov-Smir-
The second research hypothesis, which concerned the relationship between frequency and duration data, was tested by means of a Pearson's correlation coefficient (15). The investigators calculated the coefficient, for each group of mothers using the averages of the totals of the frequency and duration data from the PCCR. Frequency and duration of physical child care were significantly correlated for each group of mothers (group 1: \( r = .91, P = < .001 \); group 2: \( r = .97, P = < .001 \)).

**Discussion**

The mothers of the physically handicapped preschoolers spent more time feeding, giving personal care, and transporting their children to medical appointments and therapy than did the mothers of the normal preschoolers even though the handicapped children were away from home in school programs more hours per week and had more siblings than did the normal children. This finding contradicts that of Lucca and Settles (3) who did not find that parents of disabled children engaged in increased amounts of primary physical care, even when the severity of a child's disability was taken into account. However, Lucca and Settles' study accounts for the difference between results. This explanation is supported by Walker and Woods' (1) finding that more time is spent in the physical care of children less than 6 years old. Further research in this area might help to clarify the role that age plays in the amount of time spent in the physical care of disabled children.

This first finding is interesting in light of the research by Moore and others (16) and Breslau and others (17) on stress in the mothers of children with physical disabilities. These researchers found that the more severe a child's disability is, the greater is the number of problems reported by family members and the higher the stress rating. Moore and others believed that the increased stress was due to the physical demands placed on the mothers whose disabled children were dependent in daily living activities. Breslau and others suggested that decreasing the burden of daily care for the mothers of physically disabled children might enable these mothers to participate in more activities outside the home. This, in turn, might protect them from the risk of psychological distress. Future research could be directed at studying the relationship between time use and stress in mothers of physically handicapped children and mothers of normal children.

The finding that mothers of physically handicapped preschoolers spend more time in physical child care supports the need for occupational therapists to combine efforts with other members of the treatment team in securing respite care. This would provide these mothers with some relief from physical child care demands.

An area for future research might be the relationship between the amount of time mothers of handicapped children spend in physical child care and the amount of time they spend in other important activities (e.g., playing, teaching, or participating in family activities with these children). Also, the methods of care and parental attitudes toward care could be investigated. It is possible that the in-
creased time spent in physical care provides opportunities for social interactions and language development.

Another possibility is that the method of data collection we used in this study could be used in therapeutic situations. Documenting the time that mothers of physically handicapped children spend in physical child care could provide therapists with a tool for evaluating the effectiveness of their interventions. For example, if introducing a new feeding technique was intended to decrease the amount of time a mother spends feeding her child, the collected data could show whether the intended outcome had been achieved.

The second important finding of this study was that frequency and duration data collected on physical child care activities were highly correlated. Thus, it appears that either frequency data or duration data alone could be collected in a study of this type without appreciably reducing the amount of information gained.

Conclusions

The results of this pilot study strongly suggest that the mothers of physically handicapped preschoolers spend significantly more time in physical child care than do the mothers of normal preschoolers. This finding has implications for occupational therapists working with physically handicapped children and their families. Therapists often ask the mothers of physically handicapped children to make changes in their children's feeding, dressing, and grooming routines. However, these changes, although intended to increase the independence of the physically handicapped child, initially may take more of a mother's time. If a therapist is aware of the large amounts of time the mothers of physically handicapped children are already spending in the physical care of their children's continuing needs, he or she might be more sensitive to the mothers' needs when requesting changes in routines.

ACKNOWLEDGMENTS

The authors thank Rosemarian Berni MN, Wilbur Fordyce, PhD, and John McLaughlin, MD, for their encouragement and guidance in designing and carrying out this study. Thanks is also extended to all the mothers who participated in the study and to the clinics and developmental centers through which the mothers were located. This study was completed in partial fulfillment of the requirements for the master of science degree at the University of Washington. The funds to pay subjects were provided by the Paula Carmen Memorial Fellowship Fund.

REFERENCES