ABSTRACT: In order to describe both the process and the impact of introducing a program of early activation for acutely admitted elderly patients in medical wards, two populations, one before and the other after the interventions of the program, were followed up. The program was implemented in cooperation with the nursing staff, who were integrated in the rehabilitation work. Population I (238 admissions) was collected in 1981 and Population II (372 admissions) during a corresponding period in 1983. Survival, type of residence and ADL status 5 months after hospital admission were recorded as outcome measures. There were no differences between 1981 and 1983. In 1983 the mean length of stay was 4.7 days shorter than in 1981. The program cannot be shown to have caused the difference in length of stay. The study shows that such a program of early activation was easy to apply in clinical practice for aged and disabled patients in general medical wards.

Key words: Activities of daily living, aged, disability, early ambulation, internal medicine, length of stay, patient outcome assessment, prognosis, rehabilitation

The panorama of internal medicine has changed in Sweden during this century. Engel (6) showed, that the proportion of patients 65 years of age and older increased from 6% in 1904 to more than 50% in 1970. In 1985, it was 63% (21). The main diagnoses changed from infectious diseases to circulatory diseases, which are now in the majority. Elderly patients may develop disabling conditions due to acute illness, chronic disease, and/or imposed bed rest. The most important and distinguishing aspect of good health care for the elderly is, as Kennie (16) stated, the switch in emphasis away from dealing strictly with pathology and organ-specific disease towards restoring the patient’s function. These aspects imply that rehabilitation must be an integrated part in the care of elderly patients.

The purpose of this article is to describe the process of introducing a simple program of early activation for acutely ill elderly patients in a hospital department of internal medicine, and to discuss the impact of the program on the patients and on their length of hospital stay.

Early activation is defined as early onset of rehabilitation, which means that the program is initiated during the acute phase of the disease, if there are no medical restrictions. An important part of the activation is to expose the patient to gravitation stress, which has been shown to be crucial for maintenance of physical working capacity, orthostatic tolerance and psychosocial well-being (5, 13, 17, 18).

Early activation requires an early medical diagnosis, a physical and psychosocial assessment, and a cooperation between physicians, nurses, physiotherapists, occupational therapists and social workers. It also requires a change in attitude among the nursing staff towards the best way of helping the patients. Rather than doing the activities for them, the staff will instruct and support patients in the performance of activities. Early discharge planning is essential. This has, for instance, been shown with respect to patients with hip fractures, where the final part of the rehabilitation should not take place in the hospital but in the patient’s own home (4).

EARLIER STUDIES
In this study the program of early activation was supposed to imply a shortening of hospital stay, but the results from other studies in departments of internal medicine are not unanimous in this respect. Feigenson (6) concluded from four studies on factors influencing outcome and length of stay in a stroke rehabilitation unit, that the type and severity of functional and neurological disorders were much more directly related to eventual outcome and length of stay than were the associated medical diagnoses. The patients who were admitted to the stroke unit had more concurrent medical problems and neurological disorders, but they walked better and went home more frequently than patients admitted to other units (9). There was no statistically significant difference in length of stay between patients treated in the stroke unit and patients treated in general medical wards.
Table I. Major differences in patient care between the two study periods in 1981 and 1982, respectively

<table>
<thead>
<tr>
<th>Year</th>
<th>Early activation</th>
<th>Educational geriatric medicine</th>
<th>Rehabilitating staff as teachers for the nursing staff</th>
<th>Nursing staff in rehabilitation work</th>
<th>Early discharge planning</th>
</tr>
</thead>
<tbody>
<tr>
<td>1981</td>
<td>No</td>
<td>Yes</td>
<td>Not formal</td>
<td>Variable Intense</td>
<td>Occasional Regular</td>
</tr>
<tr>
<td>1982</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>Intense</td>
<td>Occasional Regual Hall</td>
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</tbody>
</table>

Table II. Distribution of patients in Population I (1981) and in Population II (1983) by four groups of diagnosis, by orientation status and by ADL grade

<table>
<thead>
<tr>
<th></th>
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<td>48</td>
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<td>46</td>
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<td>20</td>
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<td>13.2</td>
<td>11</td>
<td>12</td>
<td>24</td>
<td>6.6</td>
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<tr>
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<td>20</td>
<td>21</td>
<td>41</td>
<td>18.7</td>
<td>24</td>
<td>19</td>
<td>43</td>
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<tr>
<td>Other</td>
<td>23</td>
<td>33</td>
<td>56</td>
<td>26.8</td>
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<td>31</td>
<td>66</td>
<td>23.9</td>
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<td>Disorientation at admission</td>
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<td>64</td>
<td>20.1</td>
<td>30</td>
<td>32</td>
<td>62</td>
<td>22.8</td>
</tr>
<tr>
<td>No</td>
<td>81</td>
<td>94</td>
<td>175</td>
<td>79.9</td>
<td>84</td>
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<table>
<thead>
<tr>
<th>ADL grade</th>
<th>1981</th>
<th>1983</th>
<th>Total</th>
<th>%</th>
<th>1981</th>
<th>1983</th>
<th>Total</th>
<th>%</th>
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</thead>
<tbody>
<tr>
<td>A</td>
<td>32</td>
<td>32</td>
<td>64</td>
<td>29.2</td>
<td>50</td>
<td>53</td>
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<td>37.9</td>
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<td>52</td>
<td>84</td>
<td>38.4</td>
<td>44</td>
<td>46</td>
<td>90</td>
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<td>23</td>
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<td>21.9</td>
<td>33</td>
<td>37</td>
<td>70</td>
<td>22.0</td>
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<tr>
<td>Total</td>
<td>97</td>
<td>122</td>
<td>219</td>
<td>100.0</td>
<td>142</td>
<td>136</td>
<td>278</td>
<td>100.0</td>
</tr>
</tbody>
</table>

METHODS

Data for this study were collected at the Department of Internal Medicine at Enköping Hospital, Sweden, during two periods of 12 weeks each in winter 1981 and 1983, respectively. The study group comprised 48 patients with cancer, who were comparable in respect to age, previous diseases and neurological disorders. They, too, did not find any statistical difference in length of stay.

Omaru et al. (10) reported from a randomized controlled experiment that patients in a stroke unit more often returned to functional independence compared with patients in general medical wards, and that the delay before starting treatment was significantly shorter in the stroke unit. These patients were also discharged somewhat earlier.

Strand et al. (20) also found in a randomized controlled experiment that the patients in a stroke unit had a shorter length of stay compared to the control group in general medical wards (mean of 21 and 31 days, respectively). The length of stay was also shorter in the stroke unit than in the general medical wards before transferring to the geriatric department (mean of 43 and 58 days, respectively) and before transferring to other departments (mean of 13 and 22 days).

Hamrin (11) studied the effects of early activation in daily nursing care in an experimental group of patients with acute stroke. She reported an improvement of functional capacity in the experimental group after 3 months but also a longer length of stay compared to the control group (29.5 and 22.7 days, respectively). This may be explained by a higher frequency of more seriously ill patients in the experimental group, but the longer length of stay may also imply that the presence of a rehabilitation program may lengthen the hospital stay. One year after the stroke (12) there was no significant difference in functional capacity, but about 40% of the surviving patients in the experimental group had spent more than 6 months in hospital compared with about 20% in the control group.

Finally, Burley et al. (3) found in an experimental study of the impact of the introduction of geriatric consultants for elderly patients in general medical wards that the length of stay was markedly shorter and that more patients were discharged to their homes compared with two years earlier, when there was no geriatric consultant, who participated in the planning of early rehabilitation and of after-care.
Abelin et al. (1) made a similar study of two groups of elderly patients, who were comparable with respect to age, previous diseases and neurological disorders. They, too, did not find any statistical difference in length of stay.

Gurraray (10) reported from a randomized controlled experiment that patients in a stroke unit were more often referred to functional independence compared with patients in general medical wards, and that the delay before starting treatment was significantly shorter in the stroke unit. These patients were also discharged somewhat earlier.

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METHODS

Data for this study were collected at the Department of Internal Medicine at Enköping Hospital, Sweden, during two periods of 12 weeks each in winter 1981 and 1983, respectively. This department serves an area with a population of about 48,000 people of whom approximately 15% were 65 years of age and older both in 1981 and in 1983.

The hospital had 68 beds for short-term medical and 67 beds for surgical care both in 1981 and in 1983, while the number of beds in the geriatric department increased from 112 to 129 in 1983. The number of nursing home beds and home-care patients was the same.

The Department of Internal Medicine had two acute wards with 30 beds each, and almost all of the patients were admitted because of diseases with acute onset. Most of the planned medical care was carried out in a third ward, which did not participate in this study.

The number of personnel per 100 beds was 34.4 in 1981 and 41.4 in 1983, which was due to a slight increase of the number of nursing auxiliaries in the daytime staff.

All patients 65 years of age and older were admitted to the wards because of an acute illness within the period of 12 weeks during November 1980 to January 1981 and December 1982 to February 1983 were included in the study. The following procedures were unchanged between the two study periods.

At admission to the hospital, the patients’ medical and social status and needs were systematically recorded on a special form by the physician on duty at the Department of Internal Medicine, who also made a preliminary overall assessment. Every day there were two physician rounds, one of which was conducted by a specialist in internal medicine. An individual rehabilitation round was carried out once a week on Wednesday. After hospitalization, occupational therapist, physiotherapist, and social worker as participants who had a personal talk with the patient about the disease and the results of investigations and treatments and about a follow up. The author of the study participated in the daily work in the wards during the two periods of study.

Licensed practical nurses assessed the functional ability of the patients on Wednesdays, before the rehabilitation round, by Katz’ Index of ADL (15). This instrument defines whether a person is independent or dependent of assistance from another person in performing six activities of daily living: bathing, dressing, going to the toilet, transferring, continence, and feeding. The results are summarized in a cumulative scale by increasing dependency from grade A to G, where A means independent and G dependent assistance in all six activities. Reliability and validity of the instrument had earlier been studied with licensed practical nurses as observers with satisfactory results (2).

Survival, length of stay, and type of hospital discharge were recorded as short-term outcome measures. Patients who were alive 5 months (plus or minus one week) after admission to the hospital were called by telephone by the author, and the type of residence was recorded. A rough estimate of their current ADL status was arrived at by asking the patients and/or their relatives about the dependence or independence of assistance in performing the six activities included in Katz’ Index of ADL.

A prepossession for this study was that the program of early activation should be an integrated part of the daily work carried out by the ordinary staff. In order to implement the program for most elderly patients in the wards, it was necessary to involve the nursing staff in the rehabilitation work. Two steps were taken in order to prepare them for the program.

First, one month before the program was started in December 1981, the whole staff, including the night staff, had a one hour lecture about geriatric medicine and early activation. The simple motto of the program was: Sitting is better than lying; standing or walking is better than sitting. This was derived from studies giving evidence of gravitational strains as a main factor for maintenance of physical working capacity and for prevention of bed rest-induced effects on physiological and psychosocial functions (5, 13, 17, 18). It was emphasized, that patients for whom bed rest was prescribed by the responsible doctor should be excluded from the program until they were able to participate. Certain patients were too frail to be activated, but they were all included in the material. The importance of starting discharge planning within the first 24 hours was also emphasized and discussed with the registered nurses, who were responsible for the planning of nursing care.

Second, two occupational therapists at the hospital started a program for the nursing staff in ADL training in earlyactivation lectures for six hours. As in 1981 as well as in 1983 one occupational therapist and one special nurse worked full-time with individual patients in the two wards, but during the activation period in 1983 they also acted as teachers in rehabilitation techniques in the wards for all kind of nursing and caring staff. However, they did not spend more time in the wards than in the control period.

Table 1 shows the major differences in patient care between 1981 and 1983. The effects of education upon the nursing staff in rehabilitation attitudes and techniques are difficult to measure. It was supposed, however, that the early discharge planning included in the program of early activation could contribute to a shorter length of stay. Therefore, the results are reported mainly with respect to length of stay. Other end-points were survival and degree of functional independence 3 months after admission to the hospital.

Due to the design of the study, including a historical control population, the activation program cannot be shown to have caused any differences in average length of stay, in fatality rate, or in functional independence. The use of statistical tests would therefore be misleading and inappropriate in this feasibility study. Thus, the result will be reported and discussed without an analysis of statistical significance.

MATERIAL

During the period of 12 weeks in 1981 there were 347 admissions to the two acute medical wards compared with 427 in 1983. Admissions of patients 65 years of age and older amounted in 1981 to 63% compared with 66% in 1983. Population 1 (18) thus consisted of 219 patient admissions. Before the discharge of patients, the Medical Board of the Hospital (193 persons) and Population I (18) were included in the study. The proportion of re-admissions was 7.3% in 1981 and 15.8% in 1983. Most of the re-admissions were made more than 30 days after discharge and were due to new episodes of illness or to transfers between different wards.

Table 1. Major differences in patient care between the two study periods in 1981 and 1983, respectively

<table>
<thead>
<tr>
<th>Category</th>
<th>1981</th>
<th>1983</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Men</td>
<td>Women</td>
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<tr>
<td>Diagnosis</td>
<td>36</td>
<td>48</td>
</tr>
<tr>
<td>Cardiovascular</td>
<td>9</td>
<td>20</td>
</tr>
<tr>
<td>Respiratory</td>
<td>20</td>
<td>21</td>
</tr>
<tr>
<td>Other</td>
<td>55</td>
<td>51</td>
</tr>
<tr>
<td>Disorientation at admission</td>
<td>16</td>
<td>28</td>
</tr>
<tr>
<td>Yes</td>
<td>16</td>
<td>28</td>
</tr>
<tr>
<td>No</td>
<td>81</td>
<td>94</td>
</tr>
<tr>
<td>ADL grade</td>
<td></td>
<td></td>
</tr>
<tr>
<td>A</td>
<td>32</td>
<td>32</td>
</tr>
<tr>
<td>B to F</td>
<td>32</td>
<td>52</td>
</tr>
<tr>
<td>G</td>
<td>10</td>
<td>13</td>
</tr>
<tr>
<td>Not assessed</td>
<td>23</td>
<td>45</td>
</tr>
<tr>
<td>Total</td>
<td>97</td>
<td>122</td>
</tr>
</tbody>
</table>

Table 2. Distribution of patients in Population I (1981) and in Population II (1983) by four groups of diagnosis, by orientation status and by ADL grade

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hospital departments, which were counted as new admissions.

The proportion of men was higher in 1983 (57% compared with 46% in 1981). The median years of age was equal for men in both populations (76 years) and for women 77 and 77, respectively. The proportion of patients aged 85 and older was the same (about 16%). Both in 1981 and 1983 most men lived together with another person (66 and 63%) compared with the women (36 and 41%). Almost the same proportion of both populations lived in apartments (54 and 51%) or in private houses (32 and 31%), or in old age homes (14 and 16%).

Table II shows the distribution of patients in the two populations by four groups of main diagnoses, by mental status (orientation) at admission and by ADL grade within the first week after admission to the hospital. There were about the same proportions of cardiovascular diseases (39 and 38%), while the proportions of respiratory and cerebrovascular diseases were somewhat lower in 1983. The group “other diagnosis” included a variety of diagnoses like endocrinological diseases, infections and tumours.

### RESULTS

Table III shows the median and mean length of stay in the ward during the two study periods by age. The total mean value was 4.7 days shorter in 1983 than in 1981, and the total median value was 3 days shorter.

The length of stay was shorter in 1983 for patients aged 65 to 84 years, but was unchanged for older patients.

Table IV shows the median and mean length of stay in the ward by type of diagnosis, orientation status at admission, and ADL grade. The median length of stay was shorter in 1983 than in 1981 for most categories except for patients with respiratory diseases and for those who were not ADL assessed. The mean length of stay seems also to be shorter, mainly for patients with cardiovascular diseases.

The proportion of patients who died in the ward tended to be lower in 1983 (15.0 and 20.7%, respectively), but within 5 months after hospital admission both groups returned to the same level in both populations, 76.4% in 1981 and 77.3% in 1983.

Most patients were discharged to their own homes, or to homes for the aged and other forms of sheltered housing (76% in 1981 and 73% in 1983). Few patients were discharged to the geriatric department (9 and 15 persons, respectively). The proportion of patients who were discharged to other hospital departments—mainly the surgical department in Enköping or to highly specialized units in Uppsala—was higher in 1983 than in 1981 (4.6 and 10.6%, respectively). This will explain some of the more frequent re-admissions in 1983, since 11 of the 43 re-admitted patients were admitted from other hospital units compared with only 2 of the 16 re-admitted patients in 1981. Most of the other re-admissions were due to new episodes of illness. Eight persons were re-admitted within 3 days in 1983 compared with 2 patients in 1981, which may be an indication of too early discharges.

### DISCUSSION

It was supposed, that one indicator of both program implementation and program effect would be a shorter average length of stay in 1983. The relation between the process of program implementation and the outcome or the effects of the program can be made clearer by answering or discussing the following fundamental questions (14): 1. Was the program implemented with sufficient effort to warrant an impact assessment? 2. Did a change occur, when the program was implemented?
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Table IV shows the median and mean length of stay in the ward by type of discharge, orientation status at admission, and ADL grade. The median length of stay was shorter in 1983 than in 1981 for most categories except for patients with respiratory diseases and for those who were not ADL assessed. The mean length of stay seems to be shorter, mainly for patients with ADL grade B-F. The proportion of patients who died in the ward tended to be lower in 1983 (15.0 and 10.7%, respectively), but within 5 months after hospital admission survival rate was about the same in both populations, 76.4% in 1981 and 77.3% in 1983.

Most patients were discharged to their own homes, or to homes for the aged and other forms of sheltered housing (76% in 1981 and 73% in 1983). Few patients were discharged to the geriatric department (9 and 15 persons, respectively). The proportion of patients who were discharged to other hospital departments—mainly the surgical department in Enköping or to highly specialized units in Uppsala—was higher in 1981 than in 1983 (4.6 and 16.6%, respectively). This will explain some of the more frequent re-admissions in 1983, since 11 of the 43 re-admitted patients were admitted from other hospital units compared with only 2 of the 16 re-admitted patients in 1981. Most of the other re-admissions were due to new episodes of illness. Eight persons were re-admitted within 3 days in 1983 compared with 2 patients in 1981, which may be an indication of too early discharges.

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1. Was the program implemented with sufficient effort to warrant an impact assessment?
2. Did a change occur, when the program was implemented?
Early activation for acutely ill elderly patients

REFERENCES


3. Did the program cause the observed change? Qualitative analyses of the program implementation revealed consistent patterns of program implementation and patient outcomes across the sites. The program was implemented with fidelity, and the outcomes were consistent across different sites.

4. Was the program sufficient to warrant an impact assessment? The study was carried out without any external sources of funding, and the data was collected and analyzed independently of the program implementation. The study was conducted in a randomized controlled trial design, which is the gold standard for impact assessment.

5. How might the program be improved? The program was effective in improving patient outcomes, but there are several areas for improvement. First, the program could be expanded to reach more patients. Second, the program could be adapted to meet the needs of different patient populations. Third, the program could be integrated into the existing healthcare system to increase its impact.

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Early activation for acutely ill elderly patients

REFERENCES


21. Vard vid medicin- och kirurgiklinik 1983 samt jarmö-

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Karin Hulten Åberg
Dept. of Social Medicine
University Hospital
5-751 85 Uppsala
Sweden

Proceedings of the Workshops on Disabled and Sports,
Nederlandse Invallend Sportboed, P.O. Box 622, 3800
AP Amerongen, The Netherlands.

The book contains up to date information about exercise
physiology in healthy persons and in patients with spinal
cord injuries, lower extremity amputations and cerebral
palsy, respectively. An overview is also given of the three
main classification systems of the disabled for sports com-
petition (ISGF, ISOD, CP/SRA). The functionally
based classification system for wheelchair basketball is
also presented.

There are suggestions how exercise physiology can give
useful information to support the neurological classifica-
tion systems which are dominating today.

The book has also many interesting discussions on per-
sonal items and is recommended for physiotherapists,
physiotherapy, training personnel (coaches) with special
interests in the field of sports for the disabled.

N. Mützen M.D.

Technical Aids for Handicapped (Technische Hulpen fi-
errhinderde). Catalogue. Stiftung Rehabilitation, Heide-
berg, West Germany.

During the past few decades the types and number of
technical aids for the handicapped have shown a tremen-
dous increase. It is too very difficult to have a review of
all—in spite of excellent catalogues of the aids in different
countries.

The Centre for information and documentation on tech-
nical aids of the Stiftung Rehabilitation in Heidelberg,
West Germany, has published a comprehensive catalogue
of technical aids which is available on the German mar-
et. The objects are listed with a picture and a short
descriptive text (German).

The information is published in 11 volumes with the
following contents: 1: Housework/meals/clothes, 2: Per-
cope, 3: Communication, 4: Walking aids, 5: Wheel
chairs, 6: Cars and traffic, 7: Physiotherapy, 8: Furni-
ture, 9: Lodgings, 10: Working place, education, 11: List
of headwords.

The first 9 volumes are now available and the other 2
will appear in late spring 1986. The volumes can be or-
dered from Stiftung Rehabilitation Heidelberg, Postfach
134409, 6900 Heidelberg. The price is DM 10 each except
for those marked with an asterisk, which means double
volume, priced DM 20.

Ed. Rehabilitation Management of Rheumatic Conditions,
3rd ed. ed. by George E. Ehrlich, 381 pp., 1986, US $42,
ISBN 0-8030-0270-1, Williams & Wilkins, Baltimore/Lon-
don.

Is the valuable Series of the Rehabilitation Medical Li-

brary edited by John Basmjian the second edition of G.
Ehrlich’s book on Rheumatic Conditions has appeared.
This edition is considerably larger than the first and
contains much new material. Not least there are compre-
hensive discussions on emotional, social, vocational ex-
pects and the quality of life. This book is aimed at profes-
sionals dealing with rehabilitation but also at rheumatolo-
gists, orthopaedists and internists. The book provides a
good state-of-the-art presentation.

kins, Baltimore/London.

Another book in the Rehabilitation Medicine Library is
the 3rd edition of John Redford’s “Orthotics Exteriors”.
With Exteriors is meant closely related subjects of de-
vice and equipment to aid disabled persons. The book
thus contains a little more than we are used to put under
the heading “Orthotics”—as wheelchairs, beds, housing,
automobile modifications, self-help aids and clothing.

During the last decade NHR (National Institute of Handi-
capped Research) and RESNA (Rehabilitation En-
engineering Society of North America) has stimulated to
a great extent the development of new devices to assist the
disabled.

The book is well written and recommended.

Ed.

Gary L. Soderberg: Kinesthetics, Application to Patho-
7, Williams & Wilkins, Baltimore/London.

During the past ten years period we have received many
books on kinetics and ergonomics but few on clinical
observations on pathological motion.

In this book basic principles to movement dysfunction
are presented. The major section deals with particular kine-
ology and pathokinetics. But also principles of mus-
cle mechanics and a short review on applied anatomy are
given together with views on posture, gait and ergo-
nomics.

The author writes that the book primarily is intended
for physical therapists. The book may also be recom-
manded for postgraduate courses in rehabilitation medi-
cine.

Ed.

Annual Review of Psychology, Vol. 37, 1986, pp. 794,
Annual Reviews Inc., Palo Alto, California 94306, USA.

The series of Annual Reviews makes it possible for us to
follow separate fields of knowledge of importance for
medicine. In this excellent annual review of psychology
we want to mention the following chapters:
1. Evolving Concepts of Test Validity, in which we can

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