Patients with cancer that has metastasized to bone will frequently develop functional problems that may respond to rehabilitative treatment. Many rehabilitation professionals, however, are concerned about the possibility of producing pathologic fracture with their treatment. Several methods have been proposed for identifying which malignant lesions in bone are at risk of fracture. In this article, these methods are reviewed and statistical analyses of them are presented. The risk of rehabilitating patients with bony metastases is also reviewed, as are the reported outcomes of these rehabilitation efforts. Standard approaches to the rehabilitation of these patients have evolved, although most of them have not been rigorously validated, and these are discussed. None of the methods for identifying lesions at risk of pathologic fracture are useful in other than long bones, and they are limited even there. The risk of producing pathologic fractures in cancer patients by increasing mobility and function, however, is low. Satisfactory outcomes have been demonstrated in attempting to rehabilitate patients who have had recent surgical repair of pathologic or impending fractures. Rehabilitation of cancer patients with bony metastases can be safely and effectively accomplished using standard approaches to the treatment of these patients. Cancer 2001;92:1020–8. © 2001 American Cancer Society.

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Cancer metastases to bone are a common clinical problem because the cancers that cause them are prevalent and frequently metastasize to bone. It has been difficult, however, to quantitate this frequency precisely. Autopsy studies often underestimate the prevalence of bone metastases because these lesions may be difficult to find and pathologists do not often rigorously dissect the bones in order to locate them. Studies using the most sensitive clinical test to detect bone metastases have been limited by selection bias because the patients studied have been referred for the test by their physicians. The largest such series of bone scans reported a prevalence of metastases from 67% in breast cancer patients to 38% in lymphoma patients. It is not understood why some cancers metastasize to bone and others do not, although a number of adhesion molecules have been identified in tumor cell osteotropism.

Once established in bone, cancer can produce several reactions and subsequent complications. One reaction is a lysis, or destruction of bone, for which there are several established mechanisms, including the secretion of proteases that directly stimulate bone resorption or the release of osteoclast-stimulating factors. These lesions can also be osteoblastic or characterized by new bone growth and appear dense on routine X-ray studies. It is likely, however, that bone resorption occurs in blastic lesions as well as in lytic ones and that the bone...
produced is not of good quality. A combination of osteolytic and blastic lesions may be found in the same patient. Although it has been generally thought that osteoblastic lesions are less likely to fracture than lytic ones, this observation has not previously been proven statistically. It has also been suggested that some tumor pathologic types are more likely to fracture than others, but there are not enough data to prove this. In addition to pathologic fracture, skeletal metastases can cause other complications, including pain, hypercalcemia, and spinal cord compression. These complications are rarely fatal, although bony metastases can cause acute hypercalcemia, which can lead to death.

Despite these problems, patients with skeletal metastases may have a relatively long clinical course. Coleman and Rubens determined the median duration of survival for 498 patients with metastatic breast cancer with first relapse in bone; it was 20 months. In 253 of these cases where disease spread was confined to bone, the median duration of survival was even longer (24 months). These results illustrate how protracted a problem bone metastases can be for patients. Rehabilitative intervention to optimize the functional capacity of patients during these months is often needed. Such intervention is frequently aimed at keeping patients from becoming bed-bound and helping them to maintain as much independence as possible. Treatment sessions commonly focus on training the patient to use residual function or to develop compensatory techniques, training in the use of assistive equipment, and educating both patient and family to help them adjust to an altered way of life.

The risk of any medical intervention is always of concern to those who give the treatment. This is certainly the case for rehabilitation professionals who, on the one hand, are interested in increasing mobility and independence to its highest possible level, but on the other hand are concerned about the possibility of causing pathologic fracture in patients with skeletal metastases. They look at the often-fragile bones in these patients with apprehension (Fig. 1). The problem of predicting which bones involved with cancer are likely to break is one that has attracted substantial clinical attention. Orthopedic surgeons have been interested in this problem ever since Griessmann and Schuttemeyer first introduced the concept of impending fracture repair in 1947. These authors suggested that repairing bony lesions at risk of fracture before they fracture would be beneficial to patients.

Although the advantages of the approach of Griessmann and Schuttemeyer have never been formally documented, most orthopedic surgeons would likely agree that the repair of these lesions is technically easier if it is accomplished before they fracture. However, whether operating time, blood loss, or postoperative complications are reduced has not been established. The direct advantage of these procedures to patients remains unclear, and other questions, such as how many of these fractures are silent and what pain and inconvenience may be saved by their prophylactic repair, have not been addressed. Despite these questions, these procedures are frequently performed. It is obvious that if bony lesions are going to be repaired surgically before they fracture, a method of identifying which lesions are at risk of fracture would be desirable. However, the development of a method that reliably predicts fracture risk has been a difficult clinical problem.

Bone scanning is the most sensitive test for detecting metastases in bone and would therefore seem an attractive imaging modality for identifying impending fracture. Most bone scanning agents are diphosphonates coupled with the gamma-emitting technetium-99m.
ttium 99m. These compounds bind to hydroxyapatite or newly formed bone and therefore measure osteoblastic reaction to cancer in bone, and not the cancer itself. It is perhaps not surprising that they have not been useful in predicting pathologic fracture.

Most of the methods designed to predict risk of fracture have utilized simple bone X-rays. The first such method was proposed by Snell and Beals, who retrospectively evaluated 19 fractures of the femur in 15 patients with metastatic breast cancer. Osteolytic lesions larger than 1 inch in diameter were found in 11 patients; and when these lesions involved the cortex or were painful, a fracture had always occurred. These criteria were then used to identify patients as candidates for repair of impending fractures in a subsequent study. Of 34 femora in 20 patients, 24 did not meet the criteria for size, pain, or cortical involvement and did not fracture. Of the 10 patients who did meet these criteria, 5 were pinned prophylactically and 5 were not, 3 because the fracture had already occurred before the lesions were identified and 2 because the patients were already nonambulatory and would not have benefitted from the surgery. The authors did not perform a statistical analysis of these studies, but there was a significant reduction in the prevalence of pathologic fractures (P < 0.01), although this finding certainly does not validate the method. Because this study included only one disease and site of involvement, and because it seemed possible that the 1-inch criterion for the size of the lesion might not function the same way in evaluating a 5-foot female with lung cancer as in a 6-foot male with prostate cancer, another method for predicting pathologic fracture was developed by Fidler. This method uses not the absolute size of the lesion, but the percentage of the cortex involved by it. This measurement is made by first reproducing the lesion on a piece of paper that has been rolled up to simulate the size of the involved bone. The length of the lesion is then expressed as a percentage of the circumference of the bone. Nineteen pathologic fractures were initially reviewed retrospectively using this method; of these, 18 were in the femur and 1 was a lesion of the radius. Nine of these patients had breast cancer, seven had lung cancer, and one each had lymphosarcoma and myxosarcoma. Eighteen of these fractures occurred in patients who had more than 50% of the cortex involved, and only 1 was in a patient with less than 50% involvement, suggesting that this might be a suitable method for identifying impending fractures. A subsequent prospective study evaluated 100 lesions of long bones in 66 patients. Fifty-nine of these lesions were in patients with breast cancer, 21 with lung cancer, 11 with prostate cancer, and 9 with other cancers. The location of the lesion was not precisely stated in these cases, although 13 of the lesions were in the “arm” and 87 were in the “leg.” Only 1 fracture occurred in 43 lesions that had less than 50% of the cortex involved, and there were 39 fractures in 57 lesions that had 50% or more of the cortex involved. There were, more specifically, fractures in 60% of the lesions that had 50–75% cortical involvement and in 79% of the lesions with 75–100% cortical involvement. The period of time for which these patients were followed to determine whether or not a fracture occurred was not stated. Although it was not calculated, the difference in these fracture rates was highly significant (P < 0.005).

Both of these methods are based on the size of the lesion. Another method, developed by Mirels, considers not only this variable but three others as well. These variables are as follows: whether the lesion is located in the arms or the legs; whether or not pain is occurring in the lesion; and whether it is blastic, mixed, or purely lytic. Each of these variables is assigned a score from 1 to 3, depending on its severity, and a total score of 12 is therefore possible for a given lesion. Thirty-eight patients who had 78 lesions of long bones that had been treated with radiotherapy and who were followed for at least 6 months were retrospectively evaluated. Fifty of these lesions were in patients with breast cancer; 11 in myeloma patients; and the rest in patients with prostate, lung, cervical, and occult cancers. Twenty-seven fractures occurred in these lesions. It was of interest that the chance of pathologic fracture was as great in weight-bearing as in non-weight-bearing bones. Fidler had also reported this result concerning lesions of the arm and the leg; but despite these results, this variable has been retained in the scoring system. The criterion of pain was evaluated systematically. Only 6 of 57 lesions that were mildly or moderately painful fractured, but all of the lesions in which pain was aggravated by function went on to fracture, and these results were highly significant. This was the first statistical demonstration that pain is related to impending fracture. The last criterion was whether the lesions were blastic or lytic; a score of 1 was assigned to blastic lesions, 2 to mixed lesions, and 3 to pure lytic ones. Seventeen of 53 lesions in the mixed blastic/lytic group fractured, as did 10 of 21 of the pure lytic lesions; but none of the 4 pure blastic lesions fractured. Although reported as “significant,” this distribution of fractures did not demonstrate any statistical significance (P > 0.1). Even when combined with data from the only other study of pathologic fracture that reports these data, the results still only attained minimal significance (P
The scoring system appeared reasonable, however, as no fracture occurred in any lesions for which the total score was less than 7; but 33% of the lesions with a score of 9 fractured, as did all of the lesions with a score of 10 or higher, suggesting that these latter lesions should be treated with prophylactic fixation as well as radiotherapy. The treatment of impending fracture with radiotherapy has not been extensively reported, and there is only one study with which to compare these results of Mirels. Cheng treated 65 impending fractures of the humerus, acetabulum, and femur in breast cancer patients with radiotherapy, according to the Snell and Beals criteria. Only two of these patients had subsequent pathologic fractures and only one of these required surgery. Although Mirels did report that breast cancer lesions had the lowest incidence of pathologic fracture in his series (12 of 50 lesions), the differences in the results from these two studies are highly significant (P < 0.01) and unexplained. Further studies to validate the suggestion that lesions with scores of greater than 9 should be surgically stabilized are indicated.

There are many obvious problems with these methods for predicting pathologic fracture. The first is that they only consider a snapshot of lesions at a given time, whereas most of these lesions are not static and are likely to progress if untreated. It is not clear what it means to say that a given lesion will eventually fracture if the time course over which fracture may occur is not stated or the treatment offered is not specified, as is often the case with studies of pathologic fracture. Another problem is that, although measurement of the size or percentage of the cortex involved by the lesion may easily be made in many cases (as in Fig. 2), in many others the lesion may be ragged in shape or diffusely involving the bone and difficult, if not impossible, to measure (as in Fig. 3). Although consideration has been given in general to whether a lesion is in a weight-bearing or non-weight-bearing long bone, none of these methods consider the absolute amount of weight that is actually placed on the bone. It seems logical that identical lesions of the femur would be more likely to fracture in a patient weighing 300 pounds than in one weighing 100 pounds. It has been shown in vitro that increasing load will gradually displace a bone until it eventually fractures. It is also obvious that all of the methods described above are useful only for lesions in the long bones, and not for others. It has been especially difficult to predict the consequences of metastatic lesions in the vertebral column. Although several attempts to develop criteria that predict the stability of the spine involved with tumors have been made, none has been validated or proven useful in planning prophylactic treatment of vertebral lesions. The consequences of vertebral fractures, especially neurologic ones, have also been difficult to predict, possibly because a collapsed vertebra, in contrast to a fractured long bone, is capable of supporting weight. Although it is possible that new imaging modalities or new methods of using the currently available ones may be developed for the prediction of pathologic fracture, it is likely that they will be impractical for use in rehabilitation because of the large number of sites that are involved with bony metastases in patients who need rehabilitation.

Another problem with all attempts to predict pathologic fracture is that new or established treatments may change the nature of the lesions, thus further decreasing the reliability of these predictions. A case in point is the relatively recent introduction of the prophylactic use of pamidronate, a biphosphonate, in the treatment of patients with skeletal metastases.
Pamidronate is a small molecule that binds to hydroxyapatite or new bone and has been shown to inhibit osteoclast-induced bone resorption. Although it will not completely prevent skeletal complications, pamidronate has been shown to improve pain in patients with myeloma soon after the start of treatment. It took nine monthly treatments, however, before the number of patients with new pathologic fractures was significantly lower in the treated group. This effect on the occurrence of pathologic fractures did not persist, and a later report stated that after 15 months of treatment there was no statistical difference between the treated and untreated groups in the occurrence of any pathologic fracture, although there was a significant difference in the prevalence of vertebral pathologic fractures for up to 21 months of treatment. Similarly for patients with breast cancer and lytic metastases, pamidronate is a small molecule that binds to hydroxyapatite or new bone and has been shown to inhibit osteoclast-induced bone resorption. Although it will not completely prevent skeletal complications, pamidronate has been shown to improve pain in patients with myeloma soon after the start of treatment. It took nine monthly treatments, however, before the number of patients with new pathologic fractures was significantly lower in the treated group. This effect on the occurrence of pathologic fractures did not persist, and a later report stated that after 15 months of treatment there was no statistical difference between the treated and untreated groups in the occurrence of any pathologic fracture, although there was a significant difference in the prevalence of vertebral pathologic fractures for up to 21 months of treatment. Similarly for patients with breast cancer and lytic metastases, there was a significant decrease in pain in the treated group, but it took 9 months of treatment for this to occur; and although the number of patients with non-vertebral pathologic fracture was significantly decreased after 1 year of treatment, when both vertebral and nonvertebral fractures were considered, the differences were not statistically significant. These results were persistent through 24 months of treatment. These results suggest that, although certainly helpful in managing the adverse effects of skeletal metastases, prophylactic biphosphonate therapy will not completely eliminate the need for rehabilitation of patients with skeletal metastases.

In considering patients with bony metastases for rehabilitation, it appears that we have somewhat inaccurate methods of predicting pathologic fracture in long bones, marked inability to do so in other bones, and often a clinical situation in which bony lesions may rapidly change. Because this inability to predict accurately the occurrence of pathologic fracture makes rehabilitation professionals uncomfortable with treating these patients, a study to define the risk of fracture in attempting to rehabilitate patients with skeletal metastases in the hospital setting was undertaken. Fifty-four patients with bony metastases but no evidence of impending fractures on skeletal survey were admitted to a rehabilitation hospital and observed prospectively while they underwent rehabilitation programs. The most common primary cancer was breast cancer, followed by lung cancer and multiple myeloma. During this treatment period 16 fractures occurred in 12 patients, but only 1 of these clearly occurred while the patient was participating in rehabilitation activities. This patient had a spinal cord compression that caused some mild increase in pain but did not otherwise affect the patient’s course. Eight fractures were silent or painless and were only detected by radiologic follow-up; there were six vertebral compression fractures, one knee fracture, and one rib fracture in this group, and it is possible that some of these fractures occurred during rehabilitation activities. Of particular interest was the observation that six fractures clearly occurred while the patients were in bed; of these, there were two rib fractures, three of the humerus, and one of the femur. It is often suggested that patients with skeletal metastases should be given bed rest in order to prevent pathologic fractures from occurring, but this result suggests that such an intervention would not prevent this occurrence. This result is probably not surprising when it is considered that most of these fractures are ultimately due to progressive erosive disease (Fig. 4), which will not be stopped by lying in bed. Further characterization of the patients who sustained fractures was made. The patients who experienced fracture were significantly younger, with a mean age of 59 years, compared with 69 years for those who did not experience fracture; although it
was highly statistically significant, this result was unexplained and independent of the other variables measured. Schurman and Amstutz\textsuperscript{20} also reported a mean age of 50 years for patients with metastatic carcinoma of the breast who sustained a pathologic fracture, compared with a mean age of 55 years for all patients with metastatic breast cancer in their hospital. Other patients likely to have a fracture were those with a greater number of sites involved with bony metastases. There were an average of 6.3 sites involved in the fracture group compared with 4.3 in the non-fracture group. This difference was statistically significant. Another group at risk of fracture were patients who had already sustained two pathologic fractures; those who had had only one previous fracture were not at increased risk for a second.

Although these results are of general interest to the rehabilitation clinician treating these patients, they are of little practical value because, despite these results, it is still not possible to determine precisely which patients will break bones. Some general guidelines for treating these patients have evolved, mostly based on common sense. The typical therapy assessment is often modified to compensate for the risk of fracture. Manual muscle testing is not performed on an involved limb, nor is passive- or active-assisted range of motion routinely assessed on an extremity with a bony lesion. Only active movement is assessed, and this is likely to be limited by pain. Likewise, resistive exercise involving an affected area is generally contraindicated. The presence of rib metastases is usually ruled out prior to initiating chest percussion and vibration on these patients.

The rehabilitation of patients with skeletal metastases therefore has many inherent risks. As with any other clinical intervention, patients should be informed of these risks. It should be remembered, however, that the alternative to rehabilitation therapies is probably bed rest, and this therapy is certainly not without its complications. These include muscle contractures, weakness and atrophy, osteoporosis, orthostatic hypotension, pressure sores, pneumonia, confusion and disorientation, and increased risk of thromboembolic disease, to name only a few. It is also to be remembered that bed rest will not completely prevent pathologic fractures. When presented with the risk of pathologic fracture that occurs with rehabilitation and the alternative of bed rest, which for many of these patients would be life-long, almost all patients will accept the risk.

If the rehabilitation of patients with skeletal metastases can indeed be accomplished without undue risk, another question of obvious clinical interest that arises is whether or not this treatment is beneficial or worth the time, effort, and expense. There are two groups of patients\textsuperscript{5} with bony metastases who often have complications considered appropriate for rehabilitation. The first consists of patients with vertebral disease and subsequent spinal cord compression, usually considered in discussions of neurologic rehabilitation, and the second consists of patients who have had surgical repair of pathologic or impending fractures. It has been well documented that between 6\%\textsuperscript{21} and 43\%,\textsuperscript{22} of the latter group are left with significant functional deficits following surgery, often preventing their discharge home. In one study, 58 patients were admitted to a rehabilitation hospital after surgical repair of pathologic or impending fractures.\textsuperscript{23} None of these patients were able to ambulate independently and other functional deficits prevented home dis-

\begin{figure}[h]
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\caption{A progressive erosive lytic lesion of the humerus leading to pathologic fracture is shown in a female age 48 years with breast cancer.}
\end{figure}
charge. After completion of their rehabilitation pro-
grams, 34 of these patients were discharged home. It
can always be questioned that a discharge home may
not reflect a benefit from rehabilitation, and in this
case, patients could have been discharged home with
hospice for terminal care. Improvement in the pa-
tients’ mobility was documented to account for their
eventual ability to return home. Although these pa-
tients were not followed at home, it has been previ-
ously shown that the mean survival time after sur-
gical repair of a pathologic fracture is 15.4 months,
which suggests that this rehabilitation was not only
valuable to the patients but cost-effective as well. Of
the patients who were not discharged home, 7 were
transferred to other facilities and 17 died. In this latter
group, poor outcome was significantly associated with
a need for parenteral narcotics to control pain or the
development of hypercalcemia. This study was com-
pleted at a time when hypercalcemia was readily
treated when it occurred, but before the prophylactic
use of bisphosphonates in patients with bony metas-
tases. Hypercalcemia still occurs in patients who re-
ceive prophylactic biphosphonate treatment, and a
poor rehabilitation outcome would seem even more
likely when hypercalcemia occurs in bisphosphonate-
treated patients. When either severe pain or hypercal-
cemia is noted in patients being treated with aggres-
sive rehabilitation programs, alternatives for care
should be soon considered, including returning home
with hospice.

There are many practical rules for applying reha-
bilitation skills to the population of patients who have
undergone recent surgical stabilization. These will be
presented by body area.

Hip, Pelvis, and Lower Extremities
Subtrochanteric and diaphyseal lesions of the femur,
as well as lesions of the tibial shaft, are frequently
treated by insertion of an intramedullary rod and the
introduction of methylmethacrylate proximal and dis-
tal to the tumor or fracture site. The use of methyl-
methacrylate allows for immediate weight bearing and
does not interfere with postoperative radiation ther-
apy. The intramedullary rod with methylmethacrylate
fixation protects the bone from both compressive and
rotational forces.

Postoperative management includes early mobil-
ization and full weight bearing, although an assistive
device is often used early on to accommodate for
postoperative pain and to help the patient gain con-
fidence in his or her ability to bear weight on the
affected limb. A comprehensive exercise program is
prescribed, with emphasis on hip and knee muscula-
ture.

The hip joint is a common site of pathologic frac-
ture and will generally require surgical fixation. Even
nonambulatory patients may be surgical candidates in
order to relieve pain and permit basic nursing care.
Femoral head, neck, and intertrochanteric fractures,
with an intact acetabulum, are commonly treated by
insertion of a long-stem, bipolar prosthesis with or
without methylmethacrylate fixation. The long-
stemmed femoral component is used to protect the
remaining proximal femur. The bipolar prosthesis in-
cludes a stainless steel or titanium bipolar cup lined
with polyethylene. The cup portion is snapped over
the head of the femoral component and secured with
a polyethylene ring. The bipolar prosthesis has two
articulations, both of which contribute to hip motion.
Motion occurs between the bipolar cup and the head
of the femoral component and, to a lesser degree,
between the cup and the patient’s acetabulum. The
primary advantage of the bipolar arthroplasty is that it
lessens acetabular erosion. A second advantage is that
it can be converted into a total hip replacement with
relative ease. The bipolar cup can be removed and an
acetabular component cemented into the pelvis. The
femoral component is left in place. Patients undergo-
ning this procedure follow standard hip precautions,
including avoiding hip flexion beyond 90 degrees, ad-
duction, and internal rotation for up to 3 months.
They can be mobilized early, bearing weight as toler-
ated on the first postoperative day, and are generally
ambulating independently with an assistive device
within a few days. If the trochanters and their attached
musculature are sacrificed, the hip is rendered unstab-
able and a hip abduction brace, along with a more
conservative postoperative program, may be indi-
cated. Otherwise, postoperative rehabilitation in this
population is similar to standard rehabilitative proto-
cols for hip replacement.

Upper Extremities
Bony lesions of the upper extremities may be treated
conservatively with a fracture brace and/or the provi-
sion of a sling while the patient undergoes radiation
therapy. In this case, an occupational therapy consul-
tation should be sought, as these patients will require
instruction in one-handed activities.

In cases of larger humeral lesions or pathologic
fracture, fixation with an intramedullary rod is com-
monly performed. In some patients, the mid-diaphy-
seal medullary canal of the humerus is too small for
fixation with a rod and the use of a compression plate
may be indicated. Fractures of the humeral head and
Although they want to remain ambulatory, patients who require an assistive device to ambulate may be limited to activity at the wheelchair level. The possibility of pathologic fracture is a concern in both upper and lower extremities. Extensive bony disease in an upper extremity may prevent the patient from utilizing an assistive device that requires use of both upper extremities. Unfortunately, these patients may be limited to activity at the wheelchair level.

**Spine**

Spinal metastases are commonly treated with radiation, chemotherapy, or hormone therapy. Surgical resection is usually reserved for cases of neurologic compromise or significant instability. Patients with spinal metastases also benefit from physical therapy intervention. Treatment is focused on helping the patient to remain ambulatory, if feasible. Physical therapy sessions may include instruction in back-sparing transfers, training in the use of assistive devices, and evaluation of possible bracing needs.

Spinal pain that is made worse by spinal flexion or rotation is an indication that a spinal orthosis may be helpful in restricting movement and thereby alleviating symptoms. Because metastatic disease typically invades the vertebral body preferentially, an externally applied device that minimizes forward flexion should be considered.

In general, the location of the disease and the degree of immobilization that is sought determine the type of brace required. The greater the restriction of movement desired, the more rigid the device utilized. While movement is limited between the end points of the orthosis, spinal motion may actually be increased at either end of the brace. For this reason, it is recommended that the brace extend several segments above and below the involved area of the spine.

A spinal brace may also be prescribed on a short-term basis following spinal decompression, to minimize movement and control pain while soft tissue and bone are healing.

In cases where surgery is not planned, the objective of physical therapy is to unload the affected bone as much as possible, in order to lessen pain and the possibility of pathologic fracture. Patients with lower-extremity lesions are instructed in non-weight-bearing or partial-weight-bearing ambulation with a walker. These patients are often extremely fearful of falling, although they want to remain ambulatory. The security provided by a standard walker may not fully ablate this fear, as patients are afraid of losing their balance when they lift the walker to advance it. These patients may benefit from the use of a rolling walker with rear auto-stop brakes. Stair climbing will require the provision of crutches because a cane will not adequately unload the limb. Patients are encouraged to minimize the need for stair climbing. The goal for these patients is usually limited ambulation within the home. A wheelchair is frequently ordered upon discharge from the hospital to allow family members to take the patient outside and to facilitate transport to the physician’s office or hospital for follow-up appointments.

In summary, patients with skeletal metastases present a complex physical and psychologic picture. Optimal intervention by the rehabilitation therapist will require consideration of all aspects of the patient’s medical, psychologic, and social condition. Effective rehabilitation can help prevent a patient from becoming unnecessarily or prematurely bed-bound and/or dependent in activities of daily living. While achievements may be limited, they can be invaluable in helping the patient maintain some control over his or her life.

**REFERENCES**


