CME CREDIT

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Rapid assessment of rehabilitation options for functional disability

ABSTRACT

Although functional disability is common in elderly patients, physicians often overlook it or focus on acute illness, perhaps in part because they are unsure how to efficiently address the problem. A simple, stepwise protocol can be used in either an office or hospital setting to rapidly assess functional disabilities and identify potentially useful interventions.

KEY POINTS

A 15-minute systematic, stepwise examination that focuses on key organ systems is often sufficient to identify the cause of an impairment. Further workup can then be directed toward defining the underlying disease and understanding contextual factors.

Frail older patients and patients with severe disability benefit from multimodal treatment directed to all aspects of the disablement process.

Outpatient rehabilitation interventions include assistive technology, targeted exercise programs, and psychosocial support. Inpatient rehabilitation may help patients with new onset of moderate to severe functional disability.

INCREASINGLY, EVIDENCE indicates that rehabilitation can improve the disabling effects of chronic disease, such as arthritis, as well as acute illnesses, such as stroke—both of which are common in the elderly. Which patients are most likely to benefit from which intervention, however, can be difficult to determine in a brief outpatient visit. This guide for the primary care physician outlines how to rapidly determine the origins of the disability and identify which rehabilitation interventions are most likely to help restore independence and preserve quality of life.

INCIDENCE AND CAUSES

One in seven Americans has conditions that reduce the ability to carry out daily activities.[1] As many as 60% of patients seen in a primary care office have problems carrying out vigorous activities, 30% report problems with mobility, and 8% report problems with basic self care.[2]

Difficulty performing important functions (shopping and community mobility) are most common, but the type of difficulty most likely to result in institutionalization is difficulty with self-care (bathing and toileting).

Arthritis is the most prevalent cause of disability, although it usually causes less disability in an individual than other causes such as neurological diseases (stroke, parkinsonism, spinal cord injury). Other disabling conditions include orthopedic problems (hip fracture), cardiopulmonary disease, peripheral vascular disease (claudication, amputation), visual impairment, and impaired cognition.[3,4]

DISABLEMENT IS A PROCESS, NOT AN EVENT

Understanding how functional disability occurs is essential to effective assessment and treatment. The World Health Organization defines functional disability as a *process* with three levels of deficit:

- **Impairment** refers to a deficit at the level of the organ system, such as muscle weakness or pain.
- **Disability** refers to difficulty carrying out activities at the level of self care, such as dressing or bathing.
- **Handicap** refers to difficulty participating in societal roles, such as employment.

The World Health Organization proposes that both disease and contextual (personal and environmental) factors play causative roles in functional disability. For example, a person who is depressed and who faces discrimination at the workplace may avoid going to work altogether. Painful arthritis may discourage someone from making the physical effort to walk. Environmental barriers such as stairs may preclude employment for someone confined to a wheelchair.

Incapacity progresses from impairment to disability to handicap

EVALUATING FUNCTIONAL DISABILITY

Despite its prevalence, physicians tend to overlook functional disability,[2] focusing instead on treating acute illnesses, perhaps because physicians are unsure how to quickly and efficiently evaluate disability and when to refer to a rehabilitation specialist. Routine use of assessment tools[5] developed for the clinical setting can help.

Self-reported vs performance-based measures of disability

Self-reported measures tap the patient's own experience and allow for consideration of personal and environmental factors, but performance-based measures are more objective and replicable. A combination of self-reported and performance-based measures can sometimes be helpful, using the performance-based measures to confirm and quantify self-reported deficits.

Informal screening

Informal screening can also be useful: simply ask patients if they have any difficulties caring for themselves. For more disabled patients, it might be more useful to ask if they have experienced any change in their ability to care for themselves during the last 6 months. Simply observing a patient's ability to walk into the examination room or get onto the examination table is a good, informal performance-based test of function, and *should be a routine part of the physical examination of every older patient.*

If you detect a functional problem, focus part of the examination on identifying the cause of the disability and deciding on treatment.

Identify what disease or other factors contribute to the disability

To address functional disability in the older population, one must determine what disease factors, coupled with contextual factors, are contributing to disablement. In elderly patients, disability often has more than one cause, as opposed to young patients, in whom a single catastrophic event is usually the cause of disability. In the elderly, functional disability typically occurs gradually due to the cumulative effects of multiple diseases and is compounded by a loss of social supports. As a result, the individual can no longer function successfully in the same environment as previously.

For example, painful arthritis, obesity, decreased visual acuity, and loss of leg strength due to inactivity may combine to cause a patient to have difficulty climbing stairs and getting in and out of the tub, even though individually these conditions might not be sufficient to impair function. The problem may not come to the physician's attention until, for example, the patient has a fall or is brought in for placement in an assisted living environment after the death of a more functional spouse who had been assisting with these activities. By carefully sorting out the underlying causes, the physician can often discern what is needed to restore independence and preserve quality of life.

History: Look for specific clues

A focused history can greatly expedite assessment and treatment by revealing clues to the

TABLE 1

A brief, stepwise approach to evaluating lower extremity function*

SCREENING TEST OF ABILITY TO:	ORGAN SYSTEM TESTED	CONFIRMATORY TESTS IF SCREENING TEST RESULT IS ABNORMAL
Step 1: **Follow commands**	Brain	Mini-mental status test and screening neurological examination
Step 2: **Rise to seated position**	Muscular (trunk strength)	Ability to roll side to side
	Vestibular	Orthostatic blood pressure and pulse
	Cardiovascular	Ability to withstand challenge when seated
		Observe extraocular movements (nystagmus)
Step 3: **Rise to standing position from seated position without using hands**	Muscular (hip and knee strength)	Manual muscle test of quadriceps and gluteal muscles
	Skeletal (hip and knee range of motion)	Range of motion (Thomas test for hip extension on one side while simultaneously flexing hip on other side, straight leg-raise test)
	Cardiovascular	Orthostatic blood pressure and pulse
	Sensory (proprioception, vision)	Visual acuity (ability to identify objects in room) and sensory testing (vibration and/or joint position)
Step 4: **Tap toes**	Muscular (ankle strength)	Manual muscle test of ankle dorsiflexors
	Skeletal (ankle range of motion)	Passive range of motion
and	Brain (cerebellar function, midbrain)	Tests of coordination (rapid alternating movements of the hand, finger-nose-finger test, heel-to-shin test, cogwheel rigidity)
Rise on tiptoe	Muscular (ankle strength)	Manual muscle test of ankle plantar flexion
	Sensory (proprioception)	Romberg test (if abnormal, test vibration and/or joint position)
	Brain (cerebellar)	Tests of coordination (finger-nose-finger test, heel-to-shin test)
Step 5: **Walk**	Neurological	Detailed neurological and musculoskeletal examination of elements not yet examined (cogwheel rigidity, posture)
	Musculoskeletal	As above
	Cardiopulmonary	Pulse and respiration

*Difficulty with any of these functional tasks should prompt evaluation for lower extremity impairment: walking, climbing stairs, getting in and out of tub, getting on and off toilet, and housekeeping. Screening tests are listed in approximate sequence of their use during the clinical examination

origin of the disability: severity, time course, related symptoms, adaptations the patient has already made, related disabilities, and contextual (personal and environmental) factors.

Severity can be gauged in terms of task modification. Is the task being performed more slowly? With use of equipment, or with human help?

The time course. Whether the problem is of recent onset or slow progression provides a clue to the underlying disease process. For example, rapid onset is more typical of a stroke or occult fracture, whereas insidious onset is more typical of an arthritic process.

Related symptoms such as pain or shortness of breath also provide important clues.

Primary care workup of functional disability: Case scenarios

Note: Although the setting for both cases is institutional, the approach and principles also apply to geriatric disability in the outpatient setting.

CASE 1: AN 87-YEAR-OLD MAN REFUSES TO WALK

History. The patient has refused to walk after a 1-week hospitalization due to exacerbation of congestive heart failure. Prior to admission he was living alone, and had occasional support from his family. How far or how well he was walking just before hospital admission is unknown. He was an inpatient briefly 6 months ago, also because of congestive heart failure. Previous treatment included physical therapy and intervention by social services to increase family support (eg, bringing meals). He had a left below-knee amputation in 1990, uses a leg prosthesis, and is thought to have Alzheimer disease.

Screening physical examination. A smiling, emaciated man seated in a wheelchair in the examining room responds to request to return to his room. Without assistance, he guides his wheelchair to his room and uses his arms to rise to a standing position. He holds onto the examiner for balance, and becomes mildly short of breath.

Confirmatory physical examination. Manual muscle testing shows grade 4/5 muscle strength of the quadriceps and gluteal muscles, and normal ankle dorsiflexion and plantar flexion. Hip, knee, and ankle range of motion are normal. The patient's prosthesis fits firmly, and there is no skin breakdown on the stump. The Romberg test is negative, as are tests of cerebellar function and muscle tone. Bibasilar rales and 7 cm of jugular venous distention are noted.

Diagnostic evaluation. Further questioning reveals that he has lost 20 pounds over the last 6 months and that social support has diminished in the last 2 to 3 months. His serum albumin level is 3.0 g/dL. His ejection fraction during the recent hospitalization was 20%.

Impression. The patient's difficulty walking is due primarily to muscle weakness caused by malnutrition and deconditioning. It is compounded by his lower extremity amputation, which increases the work of walking, and by his congestive heart failure, which decreases his ability to meet the energy demands of walking. However, the patient's difficulty rising to a standing position indicates that the main impediment to walking is probably muscle weakness.

The patient's prosthesis appears to fit well, and his underlying dementia does not appear to be contributing to his difficulty walking. Resistance exercises for muscle strengthening are critical but are unlikely to be successful without treatment of the underlying malnutrition. Maintenance of nutrition and functional ability depends on improved social support so that the patient has access to adequate nutrition. Endurance training through graded aerobic exercise may provide additional benefit in terms of the congestive heart failure.

Treatment plan. The patient's treatment plan includes gentle diuresis, consultation with a dietitian, physical therapy, and social services. The goal of treatment is independent ambulation with a

Adaptations the patient has already made to cope with the disability may reveal unsafe practices (use of a borrowed cane that is in disrepair) and may provide an indication of the types of coping strategies the patient is willing to consider (preference for human assistance over devices).

Related disabilities are also important. For example, a person having difficulty getting in and out of the tub is also probably having difficulty climbing stairs and rising from the toilet.

Contextual factors. The mnemonic "SAFE" is useful when inquiring about personal and environmental factors:

Social support
Affect and attitude
Finances
Education and environment.

Financial and social support may affect a patient's ability to implement interventions

walker and transfer to an assisted-living facility.

CASE 2: AN 80-YEAR-OLD WOMAN IS UNABLE TO WALK OR CARE FOR HERSELF

History. The patient was discharged to a skilled nursing facility 3 months ago for physical therapy to treat difficulty walking after a 1-week hospitalization for a cholecystectomy. Two nurses and a Hoyer lift are required to transfer her to a chair, and she is unable to assist with bed mobility. She falls backwards when nurses attempt to get her to stand. She also requires assistance with eating, dressing, and bathing. There has been no improvement despite 3 months of physical therapy. Prior to admission she lived alone with daily visits from family members, and was able to walk short distances. Medical history includes obesity and a left knee replacement in 1988.

Screening physical examination. An obese woman seated in a wheelchair is alert and follows directions correctly. She is occasionally tearful during the examination, and vocalizations are soft. She is unable to propel the wheelchair herself and is unable to rise from the chair. She is able to place her hands behind her neck bilaterally, but the movement is bradykinetic. She is able to lift her feet off the floor only 1 to 2 inches.

Confirmatory physical examination. Muscle strength is graded 2+/5 for the hip, knee, and ankle. The right knee has crepitus and is mildly unstable and painful, although neither warm nor swollen. Manual muscle tests of the upper extremities show shoulder strength of 3+/5 and grasp strength of 4/5. Range of motion is limited to internal and external rotation due to pain, and there is bilateral crepitus. Range-of-motion testing also reveals cogwheel rigidity. Extraocular movements are intact, vocalizations are soft, but no dysarthria is noted. Deep tendon reflexes are symmetric, and the toes are downgoing. The mini-mental status test score is 24/30 with deficits in attention and recall. The Duke Depression Screen result is 5/11 (risk of depression rises with a score above 3).

Diagnostic evaluation. Further questioning reveals symptoms of depression (insomnia and decreased appetite) and withdrawal from social activities (family visits). The patient is taking metoclopramide 10 mg four times a day, which she started taking for preoperative vomiting.

Impression. The patient has parkinsonism, most likely due to the high doses of metoclopramide since her surgery. She is also deconditioned. But parkinsonism is the key factor limiting her self-care function. Physical therapy in the absence of treating the parkinsonism is unlikely to be effective. The patient also appears significantly depressed. Clinically, she appears to have degenerative joint disease of the right knee and shoulders. Given the right knee instability, the patient may need surgical intervention to walk, but a trial of exercise, nonsteroidal medication, and an elastic brace is reasonable.

Treatment plan. The treatment plan should include discontinuation of metoclopramide, physical therapy for generalized muscle strengthening (with an emphasis on the knees, hips, and shoulders), nonsteroidal anti-inflammatory drug therapy, an elastic knee sleeve, and antidepressant therapy with a selective serotonin reuptake inhibitor. The goals are a standing pivot transfer with the assistance of one person, independent bed mobility and feeding, and increased social interaction. If the patient responds well, surgical consultation about the right knee may be appropriate in the future.

that would enhance function, such as remodeling the home for wheelchair access. Physician referral to social services can help locate the financial and social resources needed to cope with disability.

Depression and motivation affect willingness to participate in rehabilitation and to carry out recommended interventions such as exercise. Treatment of underlying depression can improve rehabilitation outcomes. Lack of motivation to change or unwillingness to actively participate in treatment may be a contraindication for referral to rehabilitation.

Environmental barriers need to be corrected through modification of either the environment or the way the activity is performed.

Physical examination: 15-minute screening

The physical examination should include maneuvers that rapidly screen for underlying organ system impairment. Identifying involved organ systems(s) before proceeding

TABLE 2

Rehabilitative exercises for common disabling conditions

Benign positional vertigo	Balance exercise such as repetitive assumption of the position inducing vertigo
Cardiac disease	Aerobic exercise such as walking or swimming
Claudication	Walking to the point of pain
Deconditioning	Generalized aerobic, flexibility, and resistive exercise
Falling	Resistive and balance exercise such as Tai Chi
Fibromyalgia	Aerobic exercise such as walking or swimming
Low back pain	Flexibility and resistive exercise for the low back
Osteoarthritis of the knee	Flexibility and resistive exercise for the knee, and walking
Osteoporosis	Weight-bearing exercise such as walking or graded weight-lifting
Rotator cuff tendinitis	Flexibility and resistive exercise for the rotator cuff muscles

to disease-level diagnostic investigation greatly increases the efficiency of the evaluation. In contrast to the many underlying diseases that can affect ambulation, organ system causes are relatively few; these include neurological, musculoskeletal, cardiopulmonary, visual, and cognitive systems.

Simply ask patients if they have difficulty caring for themselves

A stepwise approach (TABLE 1), moving from severe to less severe impairments, can increase the efficiency of the examination and help prevent injury to the patient. A 15-minute systematic, stepwise examination that focuses on key organ systems is often sufficient to identify the cause of an impairment. Once the impaired organ system is identified, workup can be directed toward defining the underlying disease and understanding contextual factors.

The following stepwise assessment of a hospitalized elderly woman's ability to walk illustrates the concept:

- **Step 1.** Determine her level of consciousness and gross mental acuity to see if she is coherent and can follow simple directions.
- **Step 2.** If so, can she independently move from a supine to a seated position?
- **Step 3.** If she can, can she rise to standing without using her arms?
- **Step 4.** If so, can she stand on one leg, tap her toes, and stand on tiptoe (tests of higher levels of leg strength and balance)?
- **Step 5.** If so, observe her gait, as sometimes abnormalities will be seen with this more complex task that were not observable in steps 1 through 4.

Active vs passive screening tests. Active, rather than passive, motor tests more efficiently reveal problems with coordination, balance, or following commands. For example, ask the patient to move from a supine position to a seated position before standing up, rather than assisting him or her to do so.

Our screening tests are directed towards sensitivity rather than specificity, so if the screening test is abnormal, a more detailed examination is needed to confirm the specific impairments. For example, loss of hip and knee strength would be the most common reason why someone would be able come to a sitting position but then be unable to rise to a standing position; however, loss of hip and knee flexibility (ie, range of motion) could cause the same problem.

Some patients have a loss of both strength and range of motion; together, these exacerbate the resultant functional disability. Thus, if the patient in the example above of stepwise screening is unable to rise to a standing position, the next step would be to manually test the quadriceps and gluteal muscles and check passive range of motion of the hip and knee.

Two cases (see "Primary care workup of functional disability: Case scenarios," page 364) illustrate how a simple, brief workup using "active" screening maneuvers can achieve two important goals:

- Identify the chief causative factors, and

- Suggest a treatment plan, which may require both medical and rehabilitative components.

For example, in Case 2, a brief examination using the recommended screening maneuvers showed that the patient had the following primary organ system impairments: rigidity, muscle weakness, pain, limited range of motion, and depression. The underlying diseases were medication-related parkinsonism, situational depression, deconditioning, and osteoarthritis. An effective treatment consisted of medical management (discontinuing metoclopramide and starting an antidepressant drug) to treat the parkinsonism and depression, as well as referral to a rehabilitation specialist (for physical therapy) to treat the deconditioning and arthritis.

MANAGING FUNCTIONAL DISABILITY

Management of functional disability can take a comprehensive, multimodal approach, or it can be limited to a single rehabilitation provider using a single type of intervention, such as exercise intervention by a physical therapist. Rehabilitation interventions include exercise, assistive technological equipment, patient education in adaptive techniques for functional tasks, physical agents (heat, cold), prosthetics, and orthotics (splints, braces). TABLE 2 lists exercises for common disabling conditions.

Inpatient rehabilitation

Comprehensive rehabilitation takes place in the inpatient setting, yet the primary care physician plays an important role in these respects, particularly after the inpatient rehabilitation is completed:

- Inquiring how the patient is doing and reinforcing the importance of the rehabilitation regimen
- Referral back to physical therapy if further functional decline occurs
- Advising or prescribing periodic replacement or repair of assistive devices such as a cane, walker, or wheelchair
- Watching for and treating secondary conditions such as pressure sores in patients with limited mobility and rotator cuff tendinitis in wheelchair users.

Comprehensive inpatient rehabilitation is most useful for older patients with new-onset disability and multiple coexisting conditions. The inpatient setting is also usually preferable for conditions that cause catastrophic disability such as stroke,[6] hip fracture,[7–9] amputation,[10] or spinal cord injury.[11]

Outpatient rehabilitation

Slowly progressive disability can often be effectively treated in the outpatient setting. The most common approach is a single modality, particularly exercise or an assistive device.

Causes of progressive disability include osteoarthritis, rheumatoid arthritis, deconditioning due to hospitalization or to immobility related to pain or depression, progressive neurological diseases such as multiple sclerosis, or any condition that increases in severity over time, such as congestive heart failure or chronic obstructive pulmonary disease.

Selection of exercises. Commonly used exercises include aerobic exercise, resistive and range-of-motion exercises in a particular joint or joints, and balance exercise.[12]

Of note, not all conditions causing muscle weakness respond to exercise. For example, muscle weakness due to polymyalgia rheumatica needs treatment directed towards the underlying autoimmune disease, not resistive exercise. Moreover, some types of exercise may be contraindicated for some conditions: aerobic and resistive exercise would be contraindicated in a patient with unstable angina, but not in a patient with congestive heart failure or after a myocardial infarction, as long as the patient's condition is stable.

Direct instruction during one to two visits is better than a pamphlet

Moreover, not all exercises are created equal, and there are important differences among exercise types. Major types of exercise include aerobic exercises that stress the cardiovascular system (eg, walking or swimming), resistive exercises (eg, weight-lifting), flexibility exercises (ie, which require lengthening of the muscle), and balance exercises (ie, which stress the vestibular system and muscles used in balance activities). Within each of these major categories are important subcategories. For example, the category of resistive exercise includes isometric exercise (in which the muscle belly contracts but does

TABLE 3

Optimal use of assistive devices

DEVICE	DEGREE OF SUPPORT	OPTIONS	FITTING AND PATIENT INSTRUCTIONS	CONTRAINDICATIONS	COMMENTS
Cane	Minimal (15%-20% of body weight)	Single-point Quad-cane Hemi-cane	To ulnar styloid with arm extended Use on side opposite	Arm weakness Moderate to severe gait deficit	May provide inadequate support
Walker	Up to 30% of body weight	Two-wheel, two-post type (most frequently used) Four-post type Four-wheel type (seldom used) Three-wheel type Forearm supports Seat, basket	To ulnar styloid with arm extended Walk within base of support from walker Don't pull on walker to assist with rising or sitting	Environmental barriers, eg, steps Severe arm weakness Severe gait deficit	Easy to use, but slows gait and is hard to maneuver
Crutches	Full body weight	Underarm Forearm	2 inches under shoulder Don't lean on crutches with the armpits	Arm weakness Shoulder arthritis Cognitive impairment	May cause neuropathy, shoulder pain Proper use may be difficult to learn
Wheelchair	Full body weight	Manual Motorized (scooter also available) Cushions, armrests, footplates, headrest Hemi-chair (lower to ground or one-sided drive)	Leave 1 to 1.5 inches of clearance around hips and under knees Footplates should clear floor by 1 to 2 inches Armrest at elbow height	Patient is unable to sit Patient can walk to desired destinations safely	May lead to deconditioning, contractures, pressure sores. Removable footplates and armrests safer and more convenient than fixed models

not change in length), isotonic exercise (in which the amount of resistance varies as the muscle contracts or lengthens), isokinetic exercise (in which the amount of resistance remains the same as the muscle contracts or lengthens), concentric exercise (in which the resistance occurs while the muscle is contracting, as opposed to eccentric exercise, in which the resistance occurs while the muscle is lengthening), and progressive resistive exercise (in which the amount of resistance is typically set at 80% of a maximal contraction, and repeated a number of times over the course of several sets of exercise).

It is beyond the scope of this paper to provide detailed information about types of exercise prescribed for various conditions. Moreover, there is substantial controversy over the best application of some of these exercise types.

As a rule of thumb, it is best to start at a comfortable level, to raise the level of difficulty slowly, and to minimize the potential for trauma. For example, high-impact aerobics would seldom be appropriate for the geriatric population, owing to the risk of trauma. If weight-bearing is needed to prevent osteoporosis, then a low-impact form of weight-bearing aerobic exercise such as walking would be more appropriate. If weight-bearing is not

TABLE 4

Conditions for referral to a physician rehabilitation expert

Moderate to severe new-onset functional disability related to:

Brain disorder (traumatic brain injury, stroke, multiple sclerosis)
Spinal cord injury
Neuromuscular disorder (neuropathy, muscular dystrophy, motor neuron disease)
Amputation
Orthopedic condition (hip fracture, joint replacement, multiple trauma)
Burns
Cardiopulmonary rehabilitation
Chronic pain
Cancer or acquired immune deficiency syndrome*

*Referral depends on the cause of the functional disability and the prognosis. A patient in hospice care might have a rehabilitation goal of reducing caregiver burden. This goal might be best achieved by brief assessment and recommendations from an occupational or physical therapist, for bathroom equipment and training in safe transfer techniques. On the other hand, a patient with new-onset paraplegia due to spinal metastases who is likely to benefit from radiation or chemotherapy may be referred to a physician specialist in rehabilitation and treatment with comprehensive inpatient rehabilitation.

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essential, swimming or bicycling are good alternative for low-impact aerobic exercises.

Generally, exercises are either goal-directed or not goal-directed. Goal-directed activities may help sustain patient participation. Their greatest benefit is in improving a specific functional activity (an activity similar to the one being used for exercise).[13] For example, repetitively rising from a chair (goal-directed) might be more effective at improving transfers on and off the toilet or from the bed to the chair than performing gluteal exercises on a mat (not goal-directed), even though both exercises work the gluteal muscles.

On the other hand, exercises that are not goal-directed focus on a specific problem and may provide more benefit per amount of time spent. Exercises directed specifically at each of the rotator cuff muscles may be more effective at treating rotator cuff tendinitis than a goal-directed activity that might not provide balanced strengthening and might overstress a particular muscle group.

'Start low and go slow.' Although there is some controversy over precisely when and how to start an exercise program, the rubric "start low and go slow" generally applies to prescribing exercise, just as it does to prescribing drugs, for older patients. Patients with hemodynamic instability or unstable cardiac function should be stabilized prior to starting an exercise program, and if there is any question, exercise testing should be performed.

Referral to a physical therapist or exercise physiologist is often helpful when initiating an exercise program. While some patients may respond as well to a written pamphlet as to individualized instruction, many patients benefit from assessment and instruction in the exercise regimen from a professional over the course of one to two outpatient visits.

Promoting patient compliance. Encouragement from the physician, ensuring that the exercise is in a form the patient will enjoy, and social reinforcement through classes or club activities all help to promote patient compliance with the exercise regimen.

Exercises and classes or club activities that the patient enjoys promote compliance

Selecting the best assistive device

Mobility aids such as canes, walkers, and wheelchairs are the most commonly used form of assistive technology.[14] Other types of assistive devices include self-care aids (raised toilet seat, bathtub bench) and sensory aids (hearing aids).

TABLE 3 describes common reasons for prescribing different types of mobility aids and simple methods to rapidly assess whether a

TABLE 5

Non-physician rehabilitation specialists: roles and methods

DISCIPLINE	PRIMARY TARGET OF TREATMENT	PRIMARY METHODS USED IN EVALUATION AND TREATMENT
Physical therapist	Impairment, disability	Assessment of range of motion and muscle strength Assessment of gait and mobility Exercise training to increase range of motion, strength, endurance, and coordination Physical treatment (heat, cold, ultrasound, massage, electrical stimulation)
Occupational therapist	Disability, handicap Environmental and personal factors that influence functional disability	Evaluation of self-care skills and other activities of daily living Home safety evaluation Self-care skills training, recommendations and training in use of assistive devices to increase independence Fabrication of splints and treatment of upper extremity deficits
Speech therapist	Impairment, disability	Assessment of all aspects of communication Assessment of swallowing disorders Treatment of communication deficits Recommendations for alterations of diet and positioning to treat dysphagia
Nurse	Impairment, disability, and handicap, as well as disease and contextual factors	Evaluation of self-care skills Evaluation of family and home-care factors Self-care training Patient and family education Liaison with community
Social worker	Handicap, personal (eg, financial) and environmental (eg, housing) factors	Evaluation of family and home care factors Assessment of psychosocial factors Counseling Liaison with the community
Dietitian	Impairment	Assessment of nutritional status Alteration of diet to maximize nutrition
Recreation therapist	Disability, handicap	Assessment of leisure skills and interests Involvement of patients in recreational activities to maintain social roles

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mobility aid the patient is already using is the best choice, whether it fits correctly, and whether it is being used properly.

Key factors in determining what type of mobility aid is needed include:

- **The weight the device will need to bear.** If the patient cannot bear weight on the leg (eg, owing to an acute fracture), then the device will have to bear all of the body weight during at least part of the gait cycle, and a cane or walker is not appropriate; rather, the patient needs crutches or a wheelchair
- **The patient's cognitive ability.** For example, it may be harder to learn to use crutches than a two-wheeled walker, which uses a more natural gait pattern
- **Comorbidity.** For example, upper extremity weakness or deformity may preclude use of underarm crutches or a cane.

Generally, a cane is often sufficient for a

problem that affects a single joint of the lower extremity, as long as the patient is able to bear weight on it. A problem that affects both legs is more likely to require use of a walker. If the patient is unable to bear weight on the extremity, either crutches or a wheelchair will be needed. Older patients often have difficulty managing crutches due to insufficient upper body strength and because crutches, in contrast to a cane or a walker, do not use a natural gait pattern.

If mobility appears inadequate, if the mobility aid does not fit, or if it is being used improperly, a physical therapist should assess the patient's gait. Gait assessment and recommendations for a specific mobility aid often is best performed by a physical therapist rather than in a busy physician's office. The therapist will try out several types of mobility aids, fit the best choice to the patient (contacting the physician with a recommendation so that an appropriate prescription can be written if needed), and train the patient in proper use of the device.

WHEN TO CONSULT A REHABILITATION SPECIALIST

Physician rehabilitation specialists

Physician rehabilitation specialists, or physiatrists, are physicians board-certified in physical medicine and rehabilitation. They have the broadest understanding of rehabilitation concepts. Other physicians have expertise in specific areas of rehabilitation; for example, a neurologist may specialize in neurological rehabilitation.

The decision to consult also depends on the availability of specialists, the patient's specific problems, and the distance the patient must travel. Physiatrists are more likely to be found in larger communities and rehabilitation centers. One multidisciplinary panel[9] concluded that consultation with a physiatrist is best for patients with multiple medical problems, for those in whom the disablement process is unclear, or if the merit of rehabilitation for a particular condition is unclear.

Medical conditions that often warrant referral to physician specialists in rehabilitation are listed in TABLE 4.

Non-physician rehabilitation specialists

Non-physician rehabilitation specialists, or allied health providers (TABLE 5), are consulted according to the specialists' expertise in treating specific impairments. There is some overlap in the expertise of different rehabilitation specialists. For example, both occupational therapists and physical therapists treat functional mobility problems such as bathroom transfers. The advantage of the overlap is that the work of one therapist reinforces that of the other. The disadvantage is that it is difficult to provide hard and fast rules for which type of professional to consult in what circumstances.

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