Because work is a core element of our physical, social, and psychological survival, the significance of work for spinal cord–injured persons is no less than it is for able-bodied persons. To develop expectations of a productive lifestyle, vocational planning must be initiated early in the rehabilitation process, with the occupational therapist contributing significantly to the initial and ongoing functional and prevocational assessment. Interaction between the therapist and the spinal cord–injured person can promote the experience of control over environment, a feeling of responsibility for success of the rehabilitation process, the ability to solve functional problems outside of the rehabilitation environment, an understanding of the range of behavioral and environmental options available to the individual, and successful performance of job-related tasks in a supportive setting. The interaction between the occupational therapist, the vocational rehabilitation specialist, and the employer should be characterized by clear, nontechnical communication, an understanding of what functional activities the patient actually does (rather than what the person can do), a willingness to try creative solutions to environmental and performance problems, and a recognition of the employer’s need for quantity and quality of production. All these combined reduce the potential for failure on the job and enhance the likelihood of achieving the highest possible level of vocational potential.

Historically, the rehabilitation movement in the United States has been virtually synonymous with vocational rehabilitation. The predominant criterion for judging “success” in rehabilitation involves the entry or restoration of the handicapped individual to the world of work. Indeed, the goal of competitive employment is not simply one that the state-federal rehabilitation system imposes on its participants, but it is also one that is highly valued by disabled persons as well (1). Neff (1) said, “We live in a strongly work-oriented society, in which the ability to perform remunerated employment is not only virtually a sine qua non of full citizenship, but has been internalized by most of us as the indispensable requirement for becoming an autonomous and independent adult” (p 111).

Persons with spinal cord injury appear to value work similarly before and after their injuries (2). However, the ability of our current rehabilitation system to move
spinal cord-injured persons with work-oriented values and goals into competitive employment has been disappointing. Studies report that post-injury employment varies from 20% to 85%, depending on the definition of "employment." Weidman and Freehafer (3), who define the "vocational mode" as worker, homemaker, or student, found a 48.3% "positive vocational mode," which is similar to the 49% reported by the National Spinal Cord Injury Data Research Center. However, of the 145 persons they studied with spinal cord injury, 21% were working as homemakers and 12% as students. Studying patients eight years after injury, Goldberg and Freed (4) found 15 of 29 persons in the competitive labor market, 1 person a student, 1 person retired and 17 people unemployed. Siegel (5), in a survey of persons with quadriplegia, found 34% in competitive employment, 2% as homemakers, 47% in school, and 17% unemployed. Finally, a study by Jellinek and Harvey (6) revealed an employment rate of 19% for spinal cord-injured persons considered able to benefit from vocational/educational services after they had participated in a medical rehabilitation inpatient program without on-site vocational/educational services. Placement rates increased to 75% when on-site vocational/educational services were provided. The confusing inconsistencies in research results seem to be a function of the wide variety of criteria for success (work, school, homemaking) and the composition of the sample group (persons able to benefit from vocational services, all spinal cord-injured patients, persons with quadriplegia). These inconsistencies also point to a need for a hard-nosed analysis of employment outcomes for persons with spinal cord injury. Even so, Trieschmann (7), in her review of the literature, concluded that if success is defined as employment, we have not been very successful.

The vocational potential of the spinal cord-injured person depends mostly on his or her ability to analyze and solve problems, plan and execute the plan, apply skills and technologies, engage the physical and social environment, and maintain health and physical capabilities. While the occupational therapist's role in the restoration of physical function contributes significantly to the ultimate outcome of rehabilitation, it can also have important cognitive, emotional, and social impacts. Whether the traditional role of the occupational therapist facilitates the vocational rehabilitation of the spinal cord-injured person is, however, a subject deserving of critical inspection. Some of the questions that should be asked relative to vocational outcomes. Closer inspection of the five questions reveals what are essentially five key issues that can be reduced to short descriptors and examined in greater depth. These five issues are:

1. Is the occupational therapy plan developed with comprehensive vocational goals in mind as well as discrete functional objectives?
2. Does the occupational therapist consciously engage in behaviors and activities that foster realistic vocational expectations rather than contribute to the spinal cord-injured person's feelings of helplessness and diminished sense of self-worth?
3. Does the occupational therapist actively engage family, friends, and community support systems in the therapy program through education and counseling relative to realistic functional expectations and problem-solving functional difficulties?
4. Does the occupational therapist consider innovative and non-traditional vocational options that may be available to the individual with spinal injury and work actively with other rehabilitation team members to explore the feasibility of those options?
5. Does the occupational therapist translate functional capabilities into lay terminology in such a way that vocational counselors and other members of the rehabilitation team can make informed judgments relative to vocational options?

The ability to affirmatively answer these five questions will, to a large degree, provide some measure of assurance that the occupational therapy program contributes to vocational outcomes. Closer inspection of the five questions reveals what are essentially five key issues that can be reduced to short descriptors and examined in greater depth. These five issues are:

- long-range planning,
- therapeutic behaviors,
- involvement of family and community,
- consideration of all options, and
- appropriate follow-through.

Principles

Long-Range Planning

The examination of these five issues can logically begin with long-range planning. The value of long-range vocational planning in rehabilitation has only recently been recognized. Athelstan (8) stated, "Vocational planning seems most likely to succeed if it starts early and sustains some momentum throughout the rehabilitation process" (p 181). Vocational planning needs to be initiated at the outset of the rehabilitation program.
Some rehabilitation practitioners would have us defer vocational planning until after the restorative phase of treatment is completed. As an example, a position paper on the role of occupational therapy in the vocational rehabilitation process states, “Once the restorative phase of treatment has been completed, the need for prevocational assessment of clients with residual disabilities is considered” (9, p 882). Planning the restorative program without considering long-range outcomes and developing a therapeutic plan that is designed to achieve these outcomes is suspect both conceptually and practically.

Prevocational assessment should begin at the outset of the rehabilitation program and should logically develop into vocational planning, programming, and follow-through. Long-range vocational planning is not an easy task. Athelstan (8) cited factors that confound the planning process, including uncertain medical prognosis, changes in financial status or family arrangements, financial disincentives, or other aspects of the spinal cord-injured person’s life. Often the patient is resistant to planning. “Some patients resist planning as a way of denying the reality of their disability. However, plans are needed to guide the treatment program and to establish some landmarks for measuring progress aside from physical restoration” (8, p 181). Counselors and therapists must acknowledge the individual’s desire and even determination to return to work with his or her previous physical capabilities, and a positive, practical approach to the future can often engage the person in an interim plan for return to work that entails the use of a wheelchair and deals with barriers. Because the patient’s physical function, environments, resources, and understanding of impairment are sure to change, the plan must be flexible and alterable as the rehabilitation program progresses.

The concept of prevocational planning is not a new idea, although the term therapeutic behaviors is of relatively recent origin. Taylor (10), in writing about the way that occupational therapists interact with persons having spinal cord injury, said, “Therapists may not be communicating with patients what they perceive the goals of the treatment to be or they may not be acting upon the feedback from patients regarding their wants and goals. If it is assumed that active patient involvement in treatment is desirable, effective communication between therapists and patients is vital.”

Failure to actively engage the patient in the therapeutic program can encourage the progression of behavior that is characteristic of those individuals. Albrecht and Higgins (13) emphasized that patients who do not adopt the traditional sick role can be problematic, saying, “After extensive observation of staff conferences, it became apparent that medical rehabilitation staff do not seem pre-

The theory of learned helplessness states that unless the person who has experienced trauma begins to control the events around him or her, the person may cease making efforts to control the environment. By providing opportunities for the hospitalized person to exercise some control over the environment, especially those factors that provide the potential for pain or pleasure, an occupational therapist is in a key position to positively affect the individual’s early motivation, cognition, and emotional adjustment. While the therapeutic experience itself may be part of the solution, Wool and others (12) have suggested that confidence training through positive practice or rehearsal experiences before exposure to physically or emotionally taxing real-life challenges develops confidence and expectation of success.

Locus of control is another factor to assess and include in the therapist’s development of the therapeutic program. The differences between people who exhibit behaviors consistent with external locus of control and those who exhibit behaviors consistent with internal locus of control are significant and present different problems for the therapist. The external locus of control person may not assume an active role in directing the therapeutic program. This allows the therapist to plan and direct the rehabilitation process, thus reinforcing the patients’ feelings of helplessness.

The spinal cord-injured person with an internal locus of control can present quite a different problem for the therapist who is unprepared for the independent, self-directed behavior that is characteristic of these individuals. Albrecht and Higgins (13) emphasized that patients who do not adopt the traditional sick role can be problematic, saying, “After extensive observation of staff conferences, it became apparent that medical rehabilitation staff do not seem pre-
pared to accept these new patient roles and therefore judge some of these independent patients to be uncooperative and not to have completed the staff's conception of the rehabilitation program" (p 44). The therapist's challenge is to recognize the willingness and ability of the patient to assume an active role in the therapeutic program and to develop a therapeutic plan that takes into account differences between individuals. The goal is to provide as many opportunities for direct control over the hospital environment and rehabilitation outcomes as possible. By setting goals, choosing therapeutic activities, setting schedules, ordering priorities, and monitoring progress toward objectives, spinal cord-injured persons can practice the skills they need to succeed in the world of work.

Involvement of Family and Community

The third issue, involvement of family and community, has received considerable attention in the rehabilitation literature, but it continues to receive inadequate attention from many rehabilitation professionals. Often the interaction with the patient’s family (or rehabilitation counselor) is perceived as the responsibility of the medical social worker or psychologist and is avoided or accorded minimal attention by other clinical specialists. Only by working directly with family members can the occupational therapist ensure that they have a clear understanding of the patient’s functional capabilities. Intrinsic to this understanding is the notion that, although the patient may be functionally capable of performing a certain task or activity in the rehabilitation setting, it may be unreasonable to expect that person to consistently perform that task or activity in the home or other environment. The therapist should be actively involved in determining whether home, work, or another environment is conducive to the patient’s performance of discrete tasks and functions and, if not, what alternatives are available for dealing with the problem. As Trieschmann (7) stated, “Rehabilitation is the process of learning to live with one’s disability in one’s own environment” (p 20). And because rehabilitation is also behavior change, what should merit the therapist’s attention in the final analysis is what the patient actually does rather than what he or she can do.

If the patient either cannot or chooses not to perform certain behaviors “in one’s own environment,” then those behaviors, although they may be documented in a progress note, do not serve his or her rehabilitation. Most occupational therapists have faced people who have declined the use of adaptive equipment. In such a case, the occupational therapist should identify and teach alternative strategies for solving problems related to that function. The therapist plays a pivotal role in environmental assessment and should work with the patient’s family, friends, and employers to develop strategies for living in an environment that may be less than optimal in terms of functional accommodation.

Consideration of All Options

Perhaps the most significant of the key issues is the fourth, consideration of all options. Through a process of unplanned standardization, there has come to be an informal protocol that limits one’s thinking with respect to the vocational opportunities available to people who use a wheelchair for mobility. The obvious “desk” and “bench work” type of occupations come to mind. Jobs traditionally requiring the ability to stand, walk, or use certain upper extremity functions are often ruled out even before they are thoroughly examined with respect to the patient. This unconscious vocational selection process may also be accompanied by the immediate supposition that the patient will require additional education or vocational training to reenter the job market. These preconceived notions, entrenched over time, have significantly impaired the ability of many professionals to seek creative and innovative solutions to the injured person’s vocational problems.

In exploring creative and innovative solutions to the employment problem, the role of assessment cannot be overemphasized. Proper assessment requires the involvement of the full rehabilitation team, with the patient and vocational specialists assuming key roles. Hightower-Vandamm (14), commenting on the changed role of the occupational therapist in vocational evaluation and rehabilitation, noted that the therapist’s contribution is now more specialized and functionally oriented.

In looking at the role of occupational therapy in vocational evaluation and rehabilitation, it is apparent that the occupational therapist no longer holds the major role as vocational evaluator, since this role has been taken over by the persons especially trained in vocational evaluation and the professional vocational specialist. The occupational therapist, however, does have a role in the vocational evaluation of physically and mentally handicapped clients through the provision of a physical and functional evaluation and a sensorimotor evaluation, when indicated, and through the management of a sustaining evaluation program (p 633).
A vocational counselor's analysis of the patient's transferrable vocational skills and an investigation of the application of these skills to the world of work can be of special value to the occupational therapist, although it may not readily be available in some settings. The counselor's assessment should incorporate the patient's educational and work history, testing results (if available), the observations and judgments of the members of the interdisciplinary rehabilitation team, current occupational status, and the realities and resources of the workplace. Without a vocational counselor's assessment, the therapist may stimulate an individualized approach to the assessment of vocational options by asking the following questions: Can the patient return to his or her former job? If so, what needs to be done to facilitate the return? Can the patient return to work for his or her employer in a similar or modified job? Do new technologies have the potential of replacing critical job functions that the spinal cord-injured person cannot perform? If not, what would the patient like to do? Is his or her vocational preference one that is reasonable in light of functional capabilities and economic and social realities? If the vocational preference is not reasonable, what alternatives are available, and will one of these alternatives be acceptable to the patient? Finally, have we exhausted all possible alternatives and looked beyond the typical options in exploring this issue?

Some of these questions may be difficult to answer. Trieschmann (7) noted the common tendency to think of all the possible reasons why a solution will not work and stressed the need to generate "ideas in profusion." It is unfortu-nate that, in some respects, we become prisoners of our experience. Because rehabilitation professionals have, through education and experience, developed a repertoire of solutions to common or recurring problems, it is often difficult to escape from the trap of relying on the convenient or proven path to success. True creative problem solving requires both open-mindedness and work. Solutions to difficult problems do not emerge fully developed and ready to put into place; they require time for development, testing, and implementation. In a work environment where time is often the most costly commodity, it is often more expedient to look for the readily available solution.

Follow-Through

Addressing the first four issues, no matter how effectively, can fail to produce desired results if the fifth issue, appropriate follow-through, receives inadequate attention. There is a natural tendency to perceive follow-through as something associated with the finishing or ending of a process. This is not the case in vocational rehabilitation. Follow-through is a continuous process that involves ongoing assessment, modification, and further planning and implementation. Because rehabilitation is an evolving process, it is fallacious to assume that success or failure can be judged by taking a measurement at one point in time and developing plans based on that static measurement.

Evaluators use the terms formative evaluation and summative evaluation to differentiate between process assessment and product assessment. If it is assumed that the successful end product in rehabilitation is the patient's return to the community in some productive (i.e., vocationally satisfying) capacity, then the summative evaluation of this success is fairly easy to complete.

The formative evaluation of the rehabilitation process is more important to success and more difficult to perform. What is required is a) ongoing performance assessment that takes into account the changes in the spinal cord-injured person's medical, psychological, and social situation; b) frequent and critical examination of the therapeutic regimen to determine appropriateness and suitability to his or her needs at any given point and time; and c) constant monitoring of the communication style and network to ensure that all key people, including the patient, rehabilitation professionals, family, and appropriate community members, are informed and involved to the extent necessary for optimal results. Without follow-through, vocational rehabilitation becomes a lock-step process that is unresponsive to change in the individual, the environment, or the other participants in the process, including rehabilitation professionals and members of the family and community. With the proper amount and timing of follow-through, the process is flexible and fosters creative approaches to problem solving and vocational planning.

Discussion: Occupational Therapy Interventions

Expectations

With these five issues in mind, it is worth examining the role that the occupational therapist can play in the vocational rehabilitation process. The most basic yet significant contribution that any member of the rehabilitation team can
make to a positive vocational outcome is the expectation of return to employment. Study after study reaffirms the validity of the Pygmalion Principle; however, we who work with spinal cord–injured persons sometimes fail to apply the concept for fear of encouraging false hopes. Trieschmann (7) admonished that, "We need to consider each person to be a candidate for some job, and we must assess the person's strengths using multiple evaluation strategies, psychological tests and behavior samples" (p 124).

**Assessment**

Initial and ongoing functional assessment is an essential task of the occupational therapist. In this regard, the occupational therapist is responsible for assessing a) mobility, b) upper extremity and hand function, c) coordination, d) speed of motor response, e) strength and endurance, f) ability to bend, lift, reach, handle, and feel, and g) spatial limits of work activity. The contributions of the occupational therapist in the initial assessment of these vocational parameters are certainly important. However, of equal importance is the ongoing role of the occupational therapist in documenting change and reporting changes to the patient and other rehabilitation team members. Communication between the patient and the various members of the rehabilitation team should be frequent and clear. As capabilities increase (or in some cases decrease), the patient and those people involved in implementing a vocational program must be kept informed.

Stolov and Hooks (15), in their discussion of prevocational evaluation, pointed out the two factors that most affect success in the workplace: quantity (total output of the worker) and quality (measure of acceptability of the unit of work). These constructs should remain in the consciousness of the therapist who translates the patient's performance in therapy into vocationally relevant data. It is not enough that the patient simply demonstrate the ability to perform a behavior in the context of the rehabilitation hospital. To include it in the patient's behavioral repertoire, the task must be performed such that the speed or quantity of the behavior and the quality of the output allow the patient to be productive at some level.

The occupational therapist who works with spinal cord–injured persons can also create an awareness of critical work behaviors on the part of the patient and assess the individual's performance of those behaviors as part of participation in regularly scheduled therapy. Stolov and Hooks (15) have identified 14 examples of work behavior critical to job success, all of which can be observed by the therapist in the routine therapy program. However, the expertise of the occupational therapist is of particular value when evaluating factors such as endurance (ability to sustain activity for the period of a day, week, or month) and vitality (whether performance levels sustain or deteriorate over time); production consistency (whether the worker's output varies from unit to unit); work methods (organization of tools and materials); supervision requirements; and personal hygiene, grooming, and dressing.

By using clear, precise, non-technical lay terminology to describe the patient's performance to the vocational rehabilitation counselor applying this information to the world of work, the occupational therapist also contributes to successful vocational outcomes. Knowing that the quadriplegic person can operate devices such as a push-button telephone, stapler, or copy machine may be more helpful to the rehabilitation counselor than knowing the degree of wrist extension, the number of repetitions lifting a weight, or the pounds of prehension. Resources to bridge the communication gaps that often separate professional groups are available. For example, *The Selected Characteristics of Occupations Defined in the Dictionary of Occupational Titles* (16), a standard reference of all professions that relate to the world of work, defines six categories of physical activities required of a worker in a job and further breaks down the physical demands into five degrees in fairly specific terms. Another publication, *Physical Demands Job Analysis: A New Approach* (17), breaks down the job task into detailed, precisely defined physical requirements.

**Therapeutic Activities**

In addition to the important role that occupational therapists play in the assessment process, they also have significant therapeutic responsibilities. In many cases, the therapeutic program is designed with the express purpose of enhancing motor skills but without regard for the importance of those motor skills as they relate to vocational competence. People with spinal cord injury may find themselves doing leather work or ceramics when their vocational goals are focused on electronics work or computer careers. Although the therapeutic program was designed to strengthen upper extremity muscles, alternate activities might have been identified that produced similar results and also accelerated
progress toward vocational goals. Furthermore, the self-esteem that can come from learning new skills and engaging in activities perceived as productive and contributing to society is a benefit that is, although difficult to measure from a quantitative perspective, of undeniable value.

From a behavioral perspective, the occupational therapist can create opportunities for the spinal cord–injured person to experience success, gain control over the environment, and avoid developing behaviors associated with learned helplessness. For example, confidence training (positive practice or rehearsal experiences prior to exposure to physically or emotionally taxing real-life challenges) may counteract the forces promoting learned helplessness in the individual who has sustained the trauma of spinal cord injury (12). Developing a gradual hierarchy of steps that bridge the gap to difficult activities is a similar approach (18). Also, by analyzing activities in which the patient was previously engaged, the therapist can help him or her gain access to reinforcers as expeditiously as possible.

Other techniques involve the extinction of disability-inappropriate behaviors, the selection of reinforcers to increase desired behaviors, modeling, the use of performance graphs to monitor progress, and the evaluation of progress in terms of environmental and patient changes (19).

The person with spinal cord injury is confronted by an environment that offers substantial barriers to employment. Machines are designed for people who have use of upper and lower extremities. Work stations are generally designed with little regard for wheelchairs or other equipment. The occupational therapist must manipulate the environment to better accommodate the patient. This manipulation can take the form of designing modifications in the workplace or prescribing adaptive equipment that can help the patient perform prescribed task and function in a particular job. Of even greater importance is the teaching of creative problem-solving approaches so that the patient can assess environmental obstacles and develop solutions on his or her own.

Conclusion

The occupational therapist brings to vocational rehabilitation unique knowledge and skills that can potentially enhance vocational outcomes. Failure to involve the occupational therapist in prevocational and vocational programming to a substantive degree detracts significantly from the likelihood of achieving desired outcomes. The occupational therapist’s involvement is needed in prevocational stages with respect to the expectation of productivity, the development of good work habits, the practice of personal hygiene, which will enhance the likelihood of acceptance in the work setting, the refinement of writing and other motor skills to a degree that they are applicable in the work setting, and the provision of other ancillary skills, such as driver training, which improve the likelihood of securing employment. The occupational therapist’s role in actually securing employment includes evaluating and recommending changes in the work environment and prescribing, fitting, and instructing in the use of job-specific, adaptive equipment.

In summary, the emergence since World War II of new categories of rehabilitation professionals (e.g., vocational specialists and counselors) has led to a diminution of the role that occupational therapists play in vocational rehabilitation. It should not be assumed, however, that the occupational therapist’s role in vocational rehabilitation has diminished in proportion to the percentage of the process for which they were and are responsible. Because rehabilitation services to provide a more comprehensive program to the spinal cord–injured person have expanded, the sophistication of vocational evaluation and vocational rehabilitation services has increased dramatically. It would be erroneous to conclude that occupational therapists could assume the added assessment and service delivery demands that came with expansion of services. What has developed is a situation in which the knowledge and skills of the occupational therapist complement the knowledge and skills of other members of the rehabilitation team (in general) and vocational specialists (in particular), all to the ultimate benefit of the spinal cord–injured person. However, this complementary process will not automatically occur. A conscious effort must be made by the occupational therapist to be actively involved in vocational rehabilitation, just as other team members must remain cognizant of the contributions that occupational therapists can make.

To quote from the American Occupational Therapy Association’s AD Hoc Committee of the Commission on Practice: “Occupational therapy is based upon the fundamental belief that engagement in purposeful activity (occupation), including both the interpersonal and environmental dimensions, may prevent or reme-
diately dysfunction and elicit maximum performance in the work role adaptation" (9, p 881).

When services are provided on the basis of narrowly focused functional objectives and do not take into account the broader goals, both with respect to vocational outcomes and general quality of life, optimal results are not likely to be achieved. A true collaborative effort that actively engages the occupational therapist in planning and implementing the vocational program results in reduced trial and error in identifying vocational options, clarification of functional strengths and weaknesses, and enhanced likelihood of achieving the highest possible level of vocational potential. These, ultimately are the goals of the rehabilitation process.

REFERENCES


