

SHORT COMMUNICATION

INTRODUCING THE CONCEPT OF LEARNING STYLES IN REHABILITATION

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A major focus of rehabilitation is that of optimizing patients' activities. Learning and teaching are key elements in this respect, but raise important questions: what do rehabilitation professionals know with respect to learning and teaching, what do they do, and what do they need? This paper discusses the issue of learning and teaching in rehabilitation practice, and introduces the concept of learning styles. This concept, new in the field of rehabilitation, but well-known in other areas, is presumed to benefit both patients and professionals, as it allows teaching strategies to be matched to individual patients. As a consequence, the process of learning may be more efficient and optimizing activities may be more effective.

Key words: rehabilitation; training activities; learning.

J Rehabil Med 2010; 42: 697–699

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Submitted December 23, 2009; accepted April 28, 2010

INTRODUCTION

Imagine a patient with a central neurological disorder standing at the top of the stairs, and you, a rehabilitation professional, standing at the bottom of the stairs. You intend to get this patient to come downstairs independently for the first time.

A situation like this is very common in rehabilitation practice. The focus is on optimizing the patient's *activities*, i.e. the patient's execution of his or her actions (1). Key elements here are *learning* by the patient and *teaching* by the professional. Learning is defined as the process by which the underlying abilities to execute actions are acquired, re-acquired, enhanced, or changed consistently, through practice and experience (2, 3). Teaching, in addition, can be defined as the facilitation of this process. However, as many patients in rehabilitation have cognitive impairments, learning is often problematic and teaching often requires special effort. Thus, when focusing on activities in rehabilitation, learning and teaching are essential, but challenging, matters.

This paper first discusses the issue of learning and teaching of activities in rehabilitation, then introduces a new concept

in the field of rehabilitation that might be beneficial to both patients and professionals; the concept of learning styles.

LEARNING AND TEACHING OF ACTIVITIES IN REHABILITATION

The patient at the top of the stairs has already shown some ability to step downwards during a recent therapy session. The present situation with real stairs is, however, a new experience for both of you. To enable the patient to come downstairs independently, what do you know, what do you do, and what do you need?

These questions can be placed in a broader perspective in order to assess how rehabilitation professionals deal with learning and teaching of activities. First of all, *what do we know?* Knowledge about learning and teaching of activities has grown in recent decades, with relevant knowledge for rehabilitation being generated, especially in the fields of educational psychology and sports psychology (2, 4). Knowledge is, for instance, available on matters such as feedback, mental practice, environmental constraints, and goal-directed training (5, 6).

What do we do? Applying available knowledge to individual patients in rehabilitation practice appears to be difficult. In the case of our imaginary patient, for example, should you choose to facilitate mental practice or environmental constraints? Choosing an appropriate teaching strategy is a rather complex dilemma (7). Consequently, what is done in rehabilitation practice with respect to learning and teaching occurs implicitly, i.e. by the professional's intuition, rather than explicitly (8). There are probably as many strategies to enable the imaginary patient to come downstairs independently as there are professionals.

What is needed? In order to choose and use appropriate teaching strategies in daily clinical practice, rehabilitation professionals may need some tools, one of which might be the concept of learning styles. This concept may make the complex dilemma of "which strategy to select for which patient" more accessible and explicit.

THE CONCEPT OF LEARNING STYLES

Learning styles are individuals' preferences for the process of learning (9). These preferences may change slightly from

situation to situation, but are generally considered to be stable over time, providing the learner with confidence and routine. Some people, for instance, always translate information to concrete examples, while others are always concerned with abstract concepts in order to learn.

The concept of learning styles emerged in the second half of the 20th century. In recent years, interest in this concept has revived for several reasons. First, the concept does not concentrate on weaknesses or limitations, but on strengths and talents. Secondly, it does not merely involve information processing within an individual, but also person-environment interaction. And, thirdly, it does not relate to average persons and large populations, but to individuals.

Various instruments have been developed to assess learning styles (10). One example is Kolb's Learning Style Inventory (LSI). This self-report questionnaire contains dimensions of "task" (concrete vs abstract) and "process" (active vs reflective) in order to classify an individual's learning style as 1 of 4 combinations: reflector (concrete-reflective), theorist (abstract-reflective), pragmatist (abstract-active), and activist (concrete-active) (11, 12). Table I describes the characteristics of each of these styles.

In the field of education, instruments such as Kolb's LSI have been used for tailoring teaching strategies to individuals. Central in this is the "match" of a certain teaching strategy to a certain learning style. By matching teaching strategies to learning styles, selection of teaching strategies can be more appropriate and explicit. In addition, matching can make the process of learning more efficient and the outcomes of the learning process more effective (13, 14).

USING LEARNING STYLES IN REHABILITATION

The patient is still at the top of the stairs. Prior to the current therapy session, you have identified your patient's learning style according to Kolb's LSI. Now, 1 of the following 4 scenarios seems possible for teaching.

Scenario 1. The patient shows a preference for concrete tasks combined with reflective processes, and thus appears to be a "reflector". Matched to this learning style, you choose to let your patient imagine the activity in advance and reflect on the actual experience after the activity. A possible instruction could be: "Can you imagine yourself coming downstairs?"

Scenario 2. The patient shows a preference for abstract tasks combined with reflective processes, and thus appears to be a "theorist". Matched to this learning style, you choose to analyse the activity together with your patient and enable the patient to practice mentally. A possible instruction could be: "How would you come downstairs?"

Scenario 3. The patient shows a preference for abstract tasks combined with active processes, and thus appears to be a "pragmatist". Matched to this learning style, you choose to give your patient technical information. A possible instruction could be: "Coming downstairs, your good leg must do the heavy work".

Scenario 4. The patient shows a preference for concrete tasks combined with active processes, and thus appears to be an "activist". Matched to this learning style, you choose to let your patient do the activity with little information in advance and enable the patient to learn from occurring errors. A possible instruction could be: "Please come downstairs".

In fact, using the concept of learning styles like this seems logical, but is new in the field of rehabilitation. In view of its potential to match strategies to individuals, it is worth considering its use in rehabilitation practice. The learning style concept can be approached as one important basis for optimizing activities in rehabilitation. An outline of such an approach is shown in Fig. 1. Using learning styles in rehabilitation practice is very likely to make the learning process more efficient, and, ultimately, possibly more effective as well.

DISCUSSION

The concept of learning styles is an important example of how rehabilitation professionals can explicitly choose and

Table I. Characteristics of learning styles according to Kolb's Learning Style Inventory

Learning styles	Main characteristics	Teaching strategies
Reflector	"Concrete-reflective" Likes to imagine Views concrete situations from many perspectives Interested in people and tends to be feeling-oriented	"Focus on meaning" Learning by imagination Reflection on experience Personal feedback
Theorist	"Abstract-reflective" Likes to reason Thinks theories must be logical rather than practical Is more concerned with concepts than with people	"Focus on intellect" Learning by analysis Observation and writing Own opinion
Pragmatist	"Abstract-active" Likes to solve problems Does best in situations like conventional intelligence tests Prefers technical problems rather than interpersonal issues	"Focus on application" Learning by information One answer is correct Teacher-driven
Activist	"Concrete-active" Likes to do things Good at adapting to changing circumstances At ease with people, but sometimes impatient and "pushy"	"Focus on experience" Learning by doing Real life cases Skills-driven

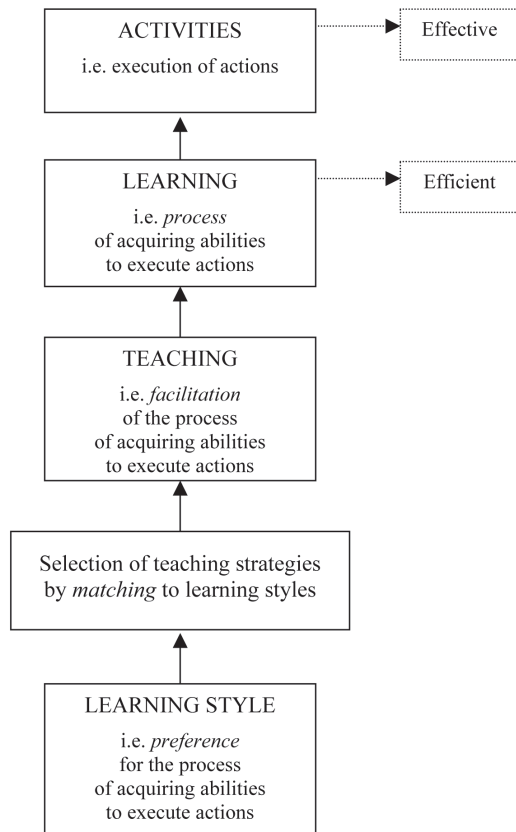


Fig. 1. The concept of learning styles as a basis for optimizing patients' activities in rehabilitation.

use appropriate teaching strategies. In addition, it is likely that matching teaching strategies to patients' learning styles makes the process of learning more efficient and the outcomes more effective. Hence, we are convinced that this concept provides opportunities to optimize a patient's activities in rehabilitation.

We would like to note, however, that it is still early for a satisfactory assessment of learning styles in rehabilitation practice. In this paper, Kolb's LSI was used as a first example, and may not be the most useful instrument for patients in rehabilitation. The next challenge, therefore, is to determine the feasibility, reliability and validity of learning style instruments in various patient populations.

In conclusion, we hope to have shown the importance and usefulness of the concept of learning styles in rehabilitation practice. This introduction should still be followed by further efforts in research, including establishing adequate instruments. But then, how else can we optimize patients' activities if we do not know how they learn?

ACKNOWLEDGEMENTS

We would like to thank Eline Lindeman, MD PhD, and Jan Willem Gorter, MD PhD, for supporting and stimulating the topic of this paper. We also would like to thank the Dr W. M. Phelps Foundation for their financial support.

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