February 2016

Newsletter IPNFA research committee

What distinguishes a really good physical therapist from a good physical therapist? Is that the manual skill to provide physical interventions or is it more the appropriate choice of interventions? A well provided intervention requires to be well chosen, hence the reasoning why the chosen intervention (in PNF wording: the chosen patterns, the chosen basic principles and procedures, the chosen techniques and the chosen patients position) is applied distinguishes the really good therapist within the profession. To help the physical therapist (and in our case the PNF therapist) information on the "what and how" of clinical reasoning is provided in this newsletter edition.
I wish a joyful reading. Fred.

Rothstein JM, Echternach JL, Riddle DL. The Hypothesis-Oriented Algorithm for Clinicians II (HOAC II): a guide for patient management. *Phys Ther. 2003;83:455– 470.*

In this era of health care accountability, a need exists for a new decision-making and documentation guide in physical therapy. The original Hypothesis-Oriented Algorithm for Clinicians (HOAC) provided clinicians and students with a framework for science-based clinical practice and focused on the remediation of functional deficits and how changes in impairments related to these deficits. The HOAC II was designed to address shortcomings in the original HOAC and be more compatible with contemporary practice, including the *Guide to Physical Therapist Practice*. Disablement terminology is used in the HOAC II to guide clinicians and students when documenting patient care and incorporating evidence into practice. The HOAC II, like the HOAC, can be applied to a patient regardless of age or disorder and allows for identification of problems by physical therapists when patients are not able to communicate their problems. A feature of the HOAC II that was lacking in the original algorithm is the concept of prevention and how to justify and document interventions directed at prevention.
Full text is free available at: http://ptjournal.apta.org/content/83/5/455.full.pdf+html?sid=fb734188-b49d-4b48-869b-cacaa2e810a6

Jones MA. Clinical reasoning in manual therapy. *Pbys Ther 1992; 72:875-884.*

Clinical reasoning refers to the cognitive processes or thinking used in the evaluation and management of a patient. In this article, clinical reasoning research and expert-novice studies are examined to provide insight into the growing understanding of clinical reasoning and the nature of expertise. Although hypothetic~deductive method of reasoning are used by clinicians at all levels of experience, experts appear to poses a superior organization of knowledge. Experts often reach a diagnosis based on pure pattern recognition of clinical patterns. With an atypical problem, however, the expert, like the novice, appears to rely more on hypothetico-deductive clinical reasoning.

Five categories of hypotheses are proposed for physical therapists using a hypothetico-deductive method of clinical reasoning. A model of the clinical reasoning process for physical therapists is presented to bring attention to the hypothesis generation, testing, and modification that I feel should take place through all aspects of the patient encounter. Examples of common errors in clinical reasoning are highlighted, and suggestions for facilitating clinical reasoning in our students are made.

Full text is free available at: http://ptjournal.apta.org/content/72/12/875.full.pdf+html?sid=8da41b7d-55ed-4050-9ebf-c7d169785b6f

Steiner WA, Ryser L, Huber E, et al. **Use of the ICF model as a clinical problem-solving tool in physical therapy and rehabilitation medicine**. *Phys Ther. 2002;82:1098-1107.*

The authors developed an instrument called the "Rehabilitation Problem-Solving Form" (RPS-Form), which allows health care professionals analyze patient problems, to focus on specific targets, and to relate the salient disabilities to relevant and modifiable variables. In particular, the RPS-Form was designed to address the patients' perspectives and enhance their participation in the decision-making process. Because the RPS-Form is based on the *International Classification of Functioning, Disability, and Health* (ICF) Model of Functioning and Disability, it could provide a common language for the description of human functioning and therefore facilitates multidisciplinary responsibility and coordination of interventions. The use of the RPS-Form in clinical practice is demonstrated by presenting an application case of a patient with a chronic pain syndrome.

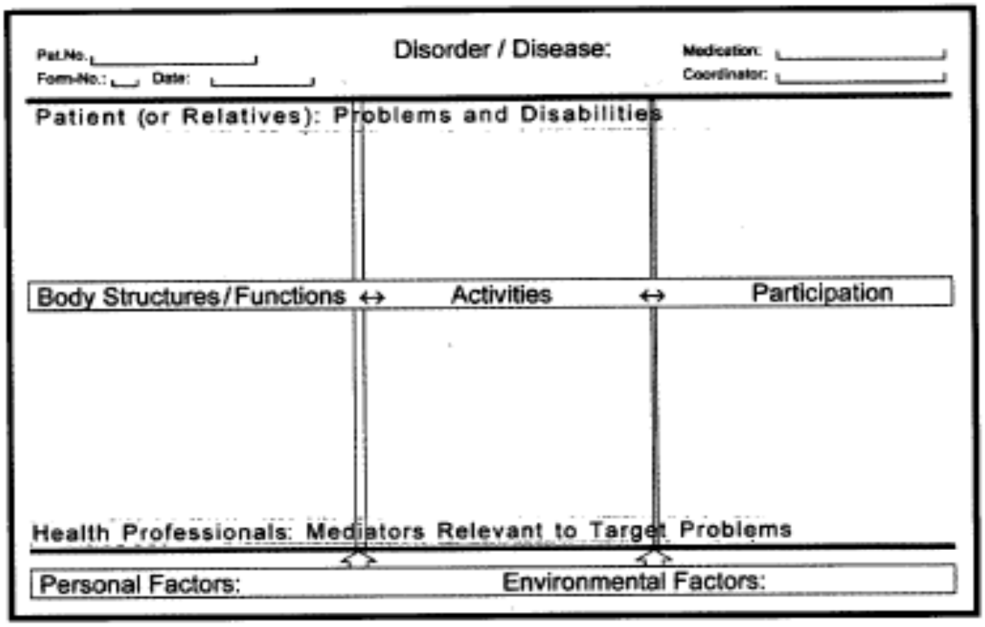


Figure 2.
The Rehabilitation Problem-Solving Form (RPS-Form) is based on the *International Classification of Functioning, Disability, and Health* (ICF) Model of Functioning and Disability[13] (see Fig. 3). The main difference is that the RPS-Form is divided into 3 parts: (1) header for basic information, (2) upper part to describe the patient's perspective, and (3) lower part for the analysis of the health care professionals. Copyright 2000 by Dr Werner Steiner, Switzerland. Reprint allowed with permission only.

Full text is free available at: http://ptjournal.apta.org/content/82/11/1098.full.pdf+html?sid=eb188bbf-9a64-4a5e-bc66-7269fec800f3

Atkinson HL, Nixon-Cave K. **A tool for clinical reasoning and reflection using the International Classification of Functioning, Disability and Health (ICF) framework and patient management model**. *Phys Ther. 2011;91:416–430*

Background and Purpose. *Professional development is a cornerstone of physical therapist practice. As the profession moves toward the ideals of Vision 2020, more emphasis is being placed on the process of clinical decision making. Although reflection and mentorship are widely regarded as important instruments to facilitate the progression of clinical reasoning skills, little guidance exists in the post-professional arena to assist clinicians with these essential needs. As more organizations develop formal mentoring programs, a need arises for a tool that will engage mentors, protégé's, and clinicians of all abilities in thoughtful reflection and discussion that will help develop clinical reasoning skills.*

Case Description. *The process of developing reflective clinical decision-making skills in physical therapist practitioners is described, and how this process was used at one institution is illustrated. A tool for clinical reasoning and reflection is proposed that incorporates the existing conceptual frameworks of the Guide to Physical Therapist Practice and the International Classification of Functioning, Disability and Health (ICF).*

Outcomes. *This case report discusses how the tool was implemented by staff with varying levels of expertise, their outcomes in regard to the development of their clinical reasoning skills, and how the tool facilitated mentoring sessions around patient cases to improve care.*

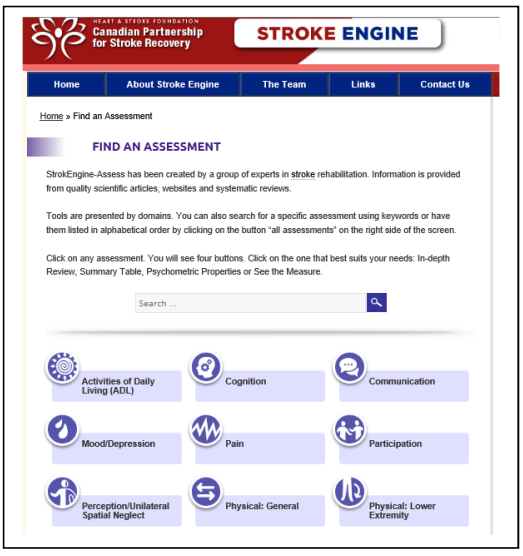
Discussion. *This case report describes a practical application of a post-professional educational process designed to develop reflective and patient-centered clinical reasoning skills. Although this process has shown some preliminary success, more research is warranted. By cultivating reflective thinking and critical inquiry, the physical therapy profession can help develop autonomous practitioners of physical therapy and promote the ideals of Vision 2020.*

Full text is free available at: http://ptjournal.apta.org/content/91/3/416.full.pdf+html?sid=3c37dce2-9376-4135-b732-1b4cffc7e932

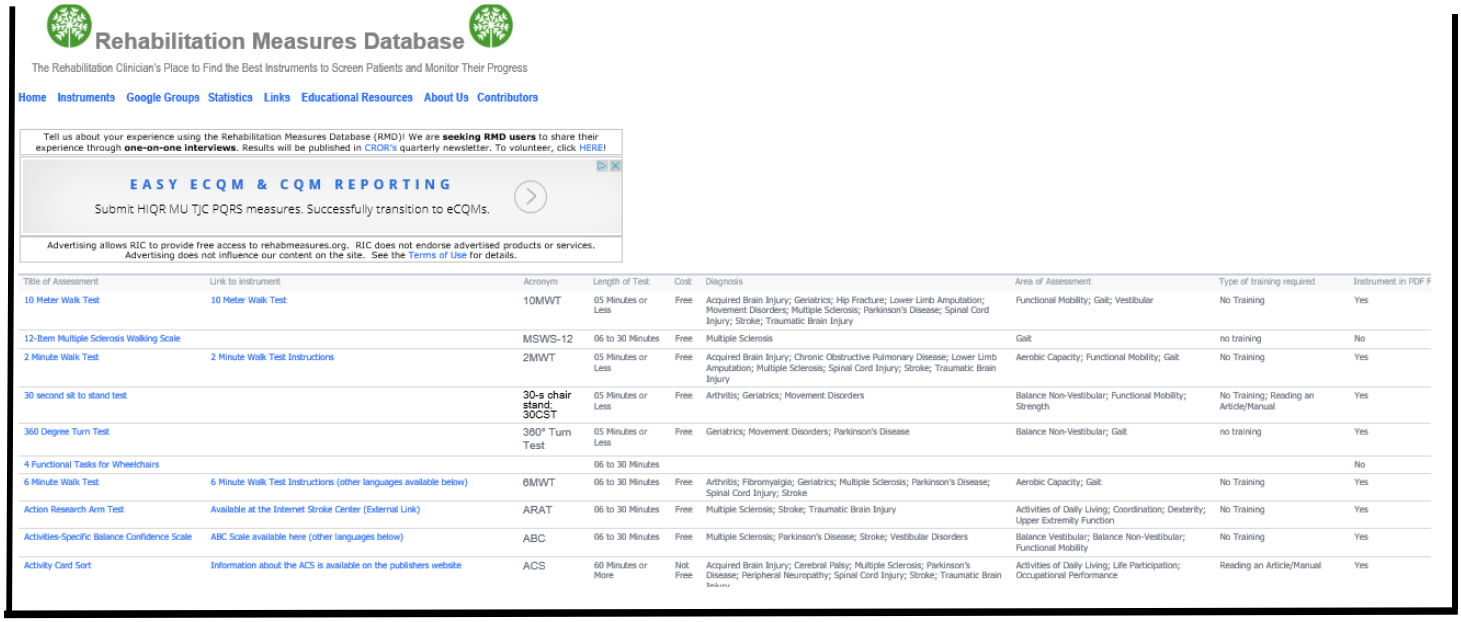
In clinical reasoning as suggested and proposed in the above provided texts the key is to develop hypothesis within the ICF categories. The further patient assessment is then depending on adequate assessment instruments to be able to choose appropriate interventions and to monitor the effect of the interventions. Hence an overview of appropriate tests is essential for the physical therapist.

The following websites provide a wide spectrum of tests with information about their validity and reliability.

Specifically for neurological / stroke patients:
http://www.strokengine.ca/find-assessment/



More general applicable measurement instruments you can find in:
http://www.rehabmeasures.org/rehabweb/allmeasures.aspx?PageView=Shared



Rehabilitation Measures Database

The Rehabilitation Clinician's Place to Find the Best Instruments to Screen Patients and Monitor Their Progress

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Title of Assessment	Link to instrument	Acronym	Length of Test	Cost	Diagnosis	Area of Assessment	Type of training required	Instrument in PDF F
10 Meter Walk Test	10 Meter Walk Test	10MWT	05 Minutes or Less	Free	Acquired Brain Injury; Geriatrics; Hip Fracture; Lower Limb Amputation; Movement Disorders; Multiple Sclerosis; Parkinson's Disease; Spinal Cord Injury; Stroke; Traumatic Brain Injury	Functional Mobility; Gait; Vestibular	No Training	Yes
12-Item Multiple Sclerosis Walking Scale		MSWS-12	06 to 30 Minutes	Free	Multiple Sclerosis	Gait	no training	No
2 Minute Walk Test	2 Minute Walk Test Instructions	2MWT	05 Minutes or Less	Free	Acquired Brain Injury; Chronic Obstructive Pulmonary Disease; Lower Limb Amputation; Multiple Sclerosis; Spinal Cord Injury; Stroke; Traumatic Brain Injury	Aerobic Capacity; Functional Mobility; Gait	No Training	Yes
30 second sit to stand test		30-s chair stand; 30CST	05 Minutes or Less	Free	Arthritis; Geriatrics; Movement Disorders	Balance Non-Vestibular; Functional Mobility; Strength	No Training; Reading an Article/Manual	Yes
360 Degree Turn Test		360° Turn Test	05 Minutes or Less	Free	Geriatrics; Movement Disorders; Parkinson's Disease	Balance Non-Vestibular; Gait	no training	Yes
4 Functional Tasks for Wheelchairs			06 to 30 Minutes					No
6 Minute Walk Test	6 Minute Walk Test Instructions (other languages available below)	6MWT	06 to 30 Minutes	Free	Arthritis; Fibromyalgia; Geriatrics; Multiple Sclerosis; Parkinson's Disease; Spinal Cord Injury; Stroke	Aerobic Capacity; Gait	No Training	Yes
Action Research Arm Test	Available at the Internet Stroke Center (External Link)	ARAT	06 to 30 Minutes	Free	Multiple Sclerosis; Stroke; Traumatic Brain Injury	Activities of Daily Living; Coordination; Dexterity; Upper Extremity Function	No Training	Yes
Activities-Specific Balance Confidence Scale	ABC Scale available here (other languages below)	ABC	06 to 30 Minutes	Free	Multiple Sclerosis; Parkinson's Disease; Stroke; Vestibular Disorders	Balance Vestibular; Balance Non-Vestibular; Functional Mobility	No Training	Yes
Activity Card Sort	Information about the ACS is available on the publishers website	ACS	60 Minutes or More	Not Free	Acquired Brain Injury; Cerebral Palsy; Multiple Sclerosis; Parkinson's Disease; Peripheral Neuropathy; Spinal Cord Injury; Stroke; Traumatic Brain Injury	Activities of Daily Living; Life Participation; Occupational Performance	Reading an Article/Manual	Yes

We received and found three interesting publication using PNF based therapy in low back pain patients. Reading and analyzing the discussion will demonstrate how important it is to have a reliable clinical reasoning in demonstrating efficacy of a chosen intervention

Mavromoustakos S, Beneka A, Malliou V, Adamidis A, Kellis E, Kagiaoglou A **Effects of a 6-week Proprioceptive Neuromuscular Facilitation Intervention on pain and disability in individuals with chronic low back pain.** *Journal of Physical Activity, Nutrition and Rehabilitation, 2015*

A randomized controlled trial was used to compare the effects of a 6-week proprioceptive neuromuscular facilitation (PNF) and a General Exercise (GE) program on pain and disability in patients with chronic low back pain (CLBP) recruited from the outpatient department of a hospital clinic. CLBP patients were randomly assigned into a PNF (n=40) or a General Exercise group (n=40) and trained for 6 weeks, 2 times per week. The PNF group executed 11 exercises from the seated, supine and standing/walking position using various PNF techniques. The GE group followed a standard strengthening and co-ordination program. The measures used were pain (McGill questionnaire), functional disability (Rolland Morris questionnaire) and emotions before, immediately after and 8-weeks after treatment. Pain decreased more in the PNF (45.68% post and 38.05% 8-weeks-post-intervention)than the GE group (22.82% post and 5.89%8-weeks post-intervention).Roland Morris scores increased for the PNF group (from 23.35%to 28.51%) while the GE group showed an increase only immediately after the program. Positive emotions increased significantly only for the PNF group (from 53.23% to 55.00%) while there was a reduction in negative emotions for both groups. In conclusion, the use of structured programs utilizing all PNF techniques is recommended for CLBP treatment.

Chae-Woo Lee, Kak Hwangbo, In-Sil Lee. **The Effects of Combination Patterns of Proprioceptive Neuromuscular Facilitation and Ball Exercise on Pain and Muscle Activity of Chronic Low Back Pain Patients** *J. Phys. Ther. Sci. 26: 93–96, 2014*

Abstract. [Purpose] The purpose of this study was to compare two methods for the muscle stabilization of the trunk of patients with chronic low back pain. The methods comprised combination patterns of proprioceptive neuromuscular facilitation (PNF) and ball exercise.
[Subjects and Methods] The subjects were 40 volunteers who had low back pain. All subjects were randomly assigned to either a group which received proprioceptive neuromuscular facilitation or a group which performed ball exercise. Measurements were taken four times in total, at pre-intervention, two weeks later, four weeks later, and six weeks later. The main measurement methods used were the visual analogue scale (VAS) for pain and electromyography (EMG) for muscle activity.
[Results] VAS and EMG activity were significantly reduced in the PNF combination pattern group and the ball exercise group. A comparison of the groups showed significant differences. In VAS and EMG activity; in particular, the combination pattern group using PNF increased EMG activity more than the ball exercise group did after six weeks of intervention.
[Conclusion] This study showed that PNF combination pattern training for six weeks was more effective for patients with low back pain than performing ball exercise.

Manmeet K Dhaliwal, Dr Amandeep, Dr Jagmohan, Dr Manjeet
To Compare The Effect Of Proprioceptive Neuromuscular Facilitation Program Versus Core Stabilization Exercises For Decreasing Pain And Improving Functions In Patients With Low Back Pain. *IOSR Journal of Sports and Physical Education1. 2014,5.29-35*

Abstract: *Low back pain has been a matter of concern, affecting up to 90% of population at some point in their lifetime, up to 50% have more than one episode. People of all age group can be affected by this menace irrespective to their gender and quality of life. It has become one of the leading causes for the visit to physician thus also puts a heavy burden on the currency of the country. Physiotherapy is the most widely used form of treatment adopted for gaining relief from low back pain. The exercises include stretching, strengthening, range of motion exercises, McKenzie therapy and core stability exercises other techniques like Proprioceptive neuromuscular facilitation program etc. It has been concluded in various studies core stability exercises and Proprioceptive neuromuscular facilitation are beneficial in low back pain patients but comparison of their effect needs to be established to provide early and better relief from the disability. Therefore objective of the study was to compare the effect of Proprioceptive neuromuscular facilitation program and Core stabilization exercises on low back pain patients. 40 subjects aged 30 – 50 years with low back pain for more than 4 weeks were made part of the study based on inclusion and exclusion criteria and were then divided into two groups named A, B. Group A received Proprioceptive neuromuscular facilitation and group B received Core stabilization exercises and hot pack given initially for 10-15 minutes to the lower back. The exercise program was given for 4 weeks with a total of 24 sessions and progression of the activity was made within the tolerance of the patient. Pre and post treatment readings were taken of pain, Oswestry Disability Questionnaire and Functional Reach Test. Results were analyzed using paired, unpaired t- test. Results showed that there is significant effect on pain, Oswestry Disability Questionnaire and Functional Reach Test in the two groups but group A was clinically more significant than groups B. The study concluded that patients with low back pain are benefitted more by Proprioceptive neuromuscular facilitation program. So, Proprioceptive neuromuscular facilitation program should be practiced more.*

The three above provided abstracts are in full text available (click on the PDF icon and open in new window):

1. http://www.panr.com.cy/index.php/article/effects-of-a-6-week-proprioceptive-neuromuscular-facilitation-intervention-on-pain-and-disability-in-individuals-with-chronic-low-back-pain/
2. https://www.jstage.jst.go.jp/article/jpts/26/1/26_jpts-2013-271/_article
3. http://iosrjournals.org/iosr-jspe/pages/v1i5.html (first scroll down until you see the titel as given above the abstract, then click the pdf button).

Reading these three papers the reader will recognize that in the first article the quality English in the text is superior over the 2nd and 3rd articles mentioned. The description of PNF in the article number 1 is clear described whereas the description in article number 2 is referring to "sprinter and skater" combinations without explaining those precisely. Furthermore is the use of wording in the analysis in the last 2 articles relatively poor. For *example "…. A more significant reduction of…."* This should be*:"… there is a statistical significant difference in both groups. The inter group calculation demonstrated a statistically significant difference in the favour of……"*
Whether the difference is clinically important has to be described as well, by providing the rate of the minimal clinical important difference (MCID) of the measurement instrument.
The argumentation of Mavromoustakos et al. is more objective and provides a comparison of their results with pre-existing results from literature.
(We like to mention that two of the authors are our colleagues Savvas (nr 1) and Sakis (nr 4).

From the WCPT (World Confederation for Physical Therapy) the following information:

Free peer-reviewed research publications

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One of WCPT's continuing education partners, Educata, has made several peer-reviewed research publications freely available to download. Recent papers added include topics such as:

- cavitation sounds during cervical manipulation
- sports-related extensor carpi ulnaris pathology
- prevalence and correlates of dizziness in community-dwelling older people

To download these and others go to: www.educata.com/articles.aspx.

Educata is a global web-based continuing education scheme for physical therapists offering a broad spectrum of online courses.

From Elsevier publisher we received the following information.

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