Challenging your Patients with Cardiopulmonary Disease: An Annotated Bibliography

One of the clinical challenges we face is the use of outcome measurement in a timely and meaningful manner in developing a patient’s plan of care. Our clinical reasoning is shaped by principles of evidenced based medicine and patient-centered care as well as clinical environments that demand high productivity.

This annotated bibliography reviews essential research publications that are the basis of this presentation to not only meet these challenges, but also to suggest that fun and rewarding experiences can be had for both you and your patients. The articles listed can be used as sources for research or individual continuing education and I hope, a continuing dialog.

Use of Standardized Outcome Measures in Physical Therapist Practice: Perceptions and Applications

Based on a survey of physical therapists from a variety of settings, the use of outcome measures by PTs is minimal despite the beliefs of PTs that the measures will improve management of their patients. Practice and system issues aside, the author discusses how outcome tools do not lend themselves to a meaningful assimilation by the PT into daily practice.


Self-report measures are relatively ubiquitous and easy to assimilate into busy clinical settings. These authors found that a self-report measure specific for pain and arthritis (Western Ontario and McMaster Osteoarthritis Index, WOMAC) did not demonstrate a strong relationship between pain sub-scores on the WOMAC and pain scores using the 11-point numeric pain rating scale obtained during performance testing. In other words, the self-report of pain is good for research (group data), but does not help in the plan of care for the individual patient. Other research suggests this could be due to memory bias and the use of language that queries the patient on harder versus easier may be a stronger approach to pain assessment.

Approaching the Challenge:

Physical Therapist Management of Acute and Chronic Low Back Pain Using the World Health Organization's International Classification of Functioning, Disability and Health

Using two case examples of low back pain, one acute the other chronic, the author provides examples of how the WHO model is applied. He addresses the poor activity levels of these patients by “recommending” increased waking- prescriptively. My contention is that increasing activity and exercise in all patients has important health outcomes that are life saving and should be considered a primary outcome of PT interventions.

Using a grounded theory approach and a qualitative study design, these authors developed a model of clinical reasoning that PTs can use as a framework for clinical decision-making. The model has two branches, 1) diagnostic reasoning that will result in a movement diagnoses and 2) narrative reasoning that will result in communication and education strategies. The therapists who were studied in this paper did not work in a setting categorized as cardiopulmonary… but in settings (home health) that would mange patients that have cardiopulmonary co-morbidities (my assumption).


Dr. Tuttle asks a very provocative question that has little research evidence Based on his opinions and the research he reviewed as applied to manual therapy he concludes that improving active movement and centralization of pain are the only two parameters that can predict long term change. Even these findings are limited because they really only predict long-term change in those impairments and not necessarily functional limitations. He recommends a net loss/ net gain approach to clinical reasoning rather than a hypothetical-deductive reasoning approach. We will discuss this further in the presentation as it applies to patients with cardiopulmonary co-morbidities.

Diagnostic Reasoning:


From my perspective this paper is one of most concise and comprehensive reviews of exercise physiology and its applications to both health and unhealthy individuals. The emphasis is on the evaluation of a patient’s risk of for increasing exercise intensity, versus the risk of harmful hemodynamic stress from exercise. There are very few instances when the risk greater than the benefit—diagnoses that are often missed in general practice and present a danger of a cardiac event for the patient will be reviewed in the presentation.


The authors reviewed the benefits of exercise training and physical activity as primary and secondary prevention factors for cardiovascular disease events as well as other causes of mortality. Using either treadmill tests or estimated peak-MET levels the authors found that for every 1 MET increase in cardiopulmonary fitness, cardiovascular events were reduced by 25% in both males and females (6 year follow-up study). The authors cite many other examples of this finding—underscoring that improving fitness levels has strong associations with not only CV outcomes but also other causes of morbidity and mortality. Improving patients’ activity levels can be a “lifesaving endeavor”.

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Using a variable-occasion repeated measures design these researches modeled recovery from total hip arthroplasty based on the 6 min walk and LEFS. This type of study is the best example of evidenced based decision making that takes into consideration clinical realities of time, scheduling etc. The usefulness of this article is that it presents the clinician with the concept that patterns of change over time are what we are trying to predict by using outcome measures. The presentation will provide an approach that is focused on outcome measures that are predictive of change in patients activity level, musculoskeletal fitness and that will also drive the development of the patient’s plan of care (efficiency).

Assessment Toolkit:

The following articles contain information on the reliability/validity as well as age gender norms of a variety of outcome measures. We will focus on the Duke Activity Status Index (DASI) as an example of one tool that is easy to administer but that also drives your intervention for cardiopulmonary fitness and that is predicative of improved quality of life for your patients with cardiopulmonary disease.

Performance Measures


Ability to Rise from the Floor as a predictor of all-cause mortality. Barreto de Brito LB, Rocardo DR, et al. European Journal of Preventative Cardiology December 2012. video illustrating sit rising test (SRT) is available at www.youtube.com/watch?v=MCQ2WA2T2oA


Self-Report Measures


This tool was developed to assess patient’s quality of life concept as well as to estimate their functional capacity using MET levels. This is its key feature that will make it a useful tool for therapists in the clinical setting that is predictive, time efficient and linked to the plan of care. It takes less than 5 min for the patient to fill out and the therapist to compute their MET level.
**Self-Efficacy for Exercise in Cardiac Rehabilitation: Review and Recommendations.**

These authors provide a literature review examining the outcomes of interventions in cardiac rehabilitation that promote ongoing lifestyle changes for exercise. Self-efficacy research measures two facets: task mastery and self-regulation. The author challenges the reader to consider self-efficacy as a primary outcome for our exercise interventions considering that mastering specific exercise tasks may not often lead to self-regulation and exercise compliance. The presentation will apply this thinking to the prescription of home exercise programs.


This study examined the psychometric properties of this self-report tool that examines a patient’s confidence in exercising under a variety of conditions (after an illness etc). The researchers found that patient confidence to manage an exercise program is high if they achieved greater than 500 m in the 6 min walk. Change scores in self-efficacy were also correlated with change scores in the 6 min walk.

**Narrative reasoning to improve communication: Meaning attached to patient-therapist interactions**


EPIGRAPH: ...I had grasped well that there are situations in life where our body is our entire self and our fate. I was in my body and nothing else…. My body…was my calamity. My body… was my physical and metaphysical dignity. Jean Amery (quote taken from the text entitled Holocaust Testimonies). The presentation will take this “death and dying context” of the wounded storyteller and apply it to the prescription of home exercise programs that are based on sociological concepts.

**The interpretation of experience and its relationship to body movement: A clinical reasoning perspective.**

Edwards extends his research on narrative reasoning from his 2005 publication to explore how narrative reasoning can be used to facilitate the patients learning of new movement patterns. This discussion is useful as it examines both the therapist and patient perspective. The author challenges the therapist to examine how the patient’s experience in learning new movement patterns is contextually dependent, socially constructed and having multiple realities, supporting the work of Arthur Frank. The presentation will discuss how these principles can be applied to the prescription of home exercise programs.
Embedding psychosocial perspectives within clinical management of low back pain: integration of psychosocially informed management principles into physical therapist practice--challenges and opportunities. Foster NE, Delitto A., Phys Ther. 2011 May; Created by Kehler91(5): 790-803.

This is one article of many presented in a special edition on the logistics of applying the biopsychosocial theory-model in PT practice. The presentation will expand on these principles in patients that have cardiopulmonary co-morbidities using a sociological framework with an emphasis on structuring a home exercise program and using outcome measures that predict long-term change.

Communication style and exercise compliance in physiotherapy (CONNECT): a cluster randomized controlled trial to test a theory-based intervention to increase chronic low back pain patients' adherence to physiotherapists' recommendations: study rationale, design, and methods. Lonsdale C, Hall AM, Williams GC, McDonough SM et al. BMC Musculosketet Disord 2012 June 15; 13:104

This article describes a study that will address methods to teach physiotherapist how to improve their communication skills so as to promote greater adherence to home exercise programs. The article provides an excellent review of self-determination theory and a model of application to the patient. The presentation will focus on a sociological approach that resonates with motor learning theory and the ability of the therapist to predict long term change as an alternative clinical strategy based on PT theories rather than psychological, self-determination theory.

Thank you,
Please join me on facebook to continue the dialog.  

Outcome Measurement in Physical Therapy

“Clinical reasoning and movement: it is not only what the therapists sees but how they see it …an understanding of how patient behaviors are the consequences of interpretive and decision making process by patients.” Edwards 2006.
### Duke Activity Status Index (DASI)

**Instructions:** “I have some questions to ask you regarding your current level of physical activity (last two weeks). Your answers to these questions will help us determine your initial exercise levels. Please answer ‘yes’ or ‘no’ to each question.”

<table>
<thead>
<tr>
<th>Can you:</th>
<th>No</th>
<th>Yes</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Take care of yourself, that is, eat, dress, bathe or use the toilet?</td>
<td>No</td>
<td>2.75</td>
</tr>
<tr>
<td>2. Walk indoors, such as around your house?</td>
<td>No</td>
<td>1.75</td>
</tr>
<tr>
<td>3. Walk a block or two on level ground?</td>
<td>No</td>
<td>2.75</td>
</tr>
<tr>
<td>4. Climb a flight of stairs or walk up a hill?</td>
<td>No</td>
<td>5.50</td>
</tr>
<tr>
<td>5. Run a short distance?</td>
<td>No</td>
<td>8.00</td>
</tr>
<tr>
<td>6. Do light work around the house like dusting or washing dishes?</td>
<td>No</td>
<td>2.70</td>
</tr>
<tr>
<td>7. Do moderate work around the house like vacuuming, sweeping floors or carrying groceries?</td>
<td>No</td>
<td>3.50</td>
</tr>
<tr>
<td>8. Do heavy work around the house like scrubbing floors or lifting or moving heavy furniture?</td>
<td>No</td>
<td>8.00</td>
</tr>
<tr>
<td>9. Do yard work like raking leaves, weeding or pushing a power mower?</td>
<td>No</td>
<td>4.50</td>
</tr>
<tr>
<td>10. Have sexual relations?</td>
<td>No</td>
<td>5.25</td>
</tr>
<tr>
<td>11. Participate in moderate recreational activities like golf, bowling, dancing, doubles tennis or football?</td>
<td>No</td>
<td>6.00</td>
</tr>
<tr>
<td>12. Participate in strenuous sports like swimming, singles tennis, football, basketball or skiing?</td>
<td>No</td>
<td>7.50</td>
</tr>
</tbody>
</table>

Duke Activity Status Index (DASI) = \( \text{Sum of “yes” replies} \)

Estimated VO2 Peak (mL*kg\(^{-1}\)*min\(^{-1}\)) = \(0.43 \times \text{DASI}\) + 9.6

Estimated VO2 peak = \( \text{_______} / 3.5 = \text{____ estimated PEAK MET Level} \)

Decide exercise intensity  (low 40-60%; moderate 60-70%)

Training MET level = \([(\text{peak MET level} -1)\times \% \text{ex intensity}] +1 \)
FEEDBACK

What is your take home message from today’s presentation?

What do you want more information on before you would begin to use the Duke Activity Status Index in your practice?