How can future physiotherapy practice become more evidence based?  
ER-WCPT, 4th European Congress, Liverpool-2016

Kari Bø  
Rector  
Professor, PhD  
Physical therapist  
Exercise scientist

Norwegian School of  
Sport Sciences  
Department of Sports Medicine
PEDro (Herbert R, Sherrington C, Moseley A, Maher C, Elkins M January 15: 23,520 RCTs, 5220 reviews, 513 guidelines)
In 2016:
Is clinical physiotherapy practice based on evidence from high quality RCTs or theories/clinical experience?
Diastasis recti abdominis (DRA)

- Prevalence Sperstad et al 2015:
  - GW 21: 33.1%
  - 6 wk pp: 60.0%
  - 6 mo pp: 45.7%
  - 12 mo pp: 32.6%
WWW....
Physiotherapy for DRA? Keeler et al-12

- Questionnaire to 2200 members of APTA Women's health (13.5% response rate)
- Average visits/week: 1.6
- Duration: 4-6 weeks
- Reported success rate: 41-100%
- 89% TrA training
- 83% TrA + functional
- 63% "Noble technique"
- 87% pelvic floor muscle training
- 81% therapeutic modalities
- 59% manual therapy
"Manual therapy": 59%  
Keeler et al 2012

- Myofascial release: 46%
- Triggerpoint release: 36%
- Muscle energy technique: 33%
- Visceral manipulation: 21%
- Other: "Joint mobilization":
  - Sacrum
  - Innominate
  - Lumbar spine
  - Coccyx
  - Pelvic symphysis
- Theory/mechanism???
**Trigger point**  Lucas et al. Clin J Pain, -09

- «Hyper-irritable nodule located within a taut band of skeletal muscle that when palpated is tender and produces referred pain»  Stockman 1913, Travell 1952, Simons 1973

- Reliability?
  - 9 studies
    - None satisfied all quality and applicability criteria
    - No reliability studies on identification of location of active trigger points
    - Low reliability for taut band (k= -0.08-0.75) and local twitch response (k=-0.05-0.57)

- Physical examination cannot be recommended as a reliable test for diagnosis of trigger points
Not possible to reach TrP by digital palpation  S. Mercer
A critical evaluation of the trigger point phenomenon
Quintner et al, Rheumatology 2014

- The construct of myofascial pain syndrome caused by TrPs remains conjecture.
- All working hypotheses derived from this conjecture have been refuted and therefore the theory can be discarded.
- In contrast, evolving insights into the neurobiology of nociception and pain suggest plausible hypotheses that form a basis for advancing knowledge and therapeutics in this challenging area.
Do we need RCTs?

- We need basic research!
- Theories are floating around!
  - What is normal?
  - Reliability of assessment tools?
  - What is the underlying mechanism?
  - Can we change tissue/ the condition?

It is just a theory - must be tested

Experiments

Case control studies – control for confounders
Several important questions arise from PT practice

- How many?  Prev/Inc  Cross-secti
- Risk?  Etiology  Cohort/C-C
- Time to rec.?  Prognosis  Cohort/C-C
- Identify?  Diagnosis  Cross-secti
- Experience?  Qualitative  Cross-secti
- Effect  Intervention  RCT

Hagen 2001
Evidence for abdominal training for DRA: Systematic review
Benjamin et al 2014

- 8 studies; 1 RCT + 2 additional RCTs
- Poor quality

«Based on the available evidence and quality of this evidence, non-specific exercise may or may not help to prevent or reduce diastasis of the rectus abdominal muscle during the ante- and postnatal periods»
INTERNAL VALIDITY

- To which extent the changes observed are caused by the experiment/intervention/physiotherapy and not by confounding factors
WHY RCTs for intervention studies? INTERNAL VALIDITY (Thomas & Nelson-96)

- History
- Maturation
- Testing
- Instrumentation

- Statistical regression
- Selection biases
- Experimental mortality
- Selection maturation interaction
- Expectancy
7 stages in the career of a medical innovation  
McKinlay- 81, Wall-01

1. Promising report, clinical observation, case report, short clinical series
2. Professional and organizational adoption of the innovation
3. The public accepts the innovation – state or third party pays for it
4. Standard procedure – into textbooks *(still no critical evaluation)*

5. **RCT !**
6. Professional denunciation
7. Erosion of professional support, **discredit**
Which factors influence clinical practice?

- Evidence
- Skills
- Enthusiastic, humourous message
- Marketing
- Referral systems
- Health service systems
- Economy
- Competition
When and how should new therapies become clinical practice?

EBM Evidence Pyramid

Most Clinically Relevant

Systematic Reviews and Meta-analyses
Comprehensive survey of studies previously done on a topic. A meta-analysis takes results and combines statistically.

Patients randomly assigned to control or experimental group. Standard method of answering questions about the effectiveness of different therapies.

Patients who presently have a certain condition and/or receive a particular treatment are followed over time and compared with another group who are not affected.

Studies in which patients who already have a certain condition are compared with people who do not.

Collections of reports on the treatment of individual patients.

Reports on a single patient.

Least Clinically Relevant

In vitro ('test tube') research
Animal research
Case Reports
Case Series
Case Control Studies
Cohort Studies
Randomized Controlled Double Blind Studies
Protocol for implementation of new therapies  
Bø & Herbert, Physiotherapy-09

1. Clin obs/lab studies
2. Clin exploration
3. Pilot studies
4. RCTs
5. Refinement (additional RCTs, dose – response)
6. Active dissemination (courses, pragmatic studies)

Development phase
Testing phase
Implementation phase
Future physiotherapy

- Open mind; but stay critical

- We can save a lot of RCTs by performing basic research on mechanisms, challenging theories and statements

- Get on bord the evidence based boat!

- Non-efficient physiotherapy may not harm, but is:
  - Expensive
  - Time-consuming

Thank you for your attention!