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**Topics to Cover**

- Electrotherapy / EPA as a pillar of physiotherapy practice
- Little bit of history / context
- Evidence base – what about it?
- Evidence – Practice mismatch
- Overview of current evidenced interventions + examples of evidenced applications
- Summary & Conclusion

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**A Pillar of Physiotherapy?**

- "Contemporary practice has developed a great deal since its early days but the four broad ‘pillars’ granted to the profession by Royal Charter in 1920 still hold today:
  - massage
  - exercise and movement
  - electrotherapy
  - kindred methods of treatment"
  
  [www.csp.org.uk, 2015]

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**Reduction of use in Clinical Practice (and Education)**

- Electro / EPA’s used to be ‘mainstream’
- Several (UK) education programmes have now taken out of their curriculum
- General use decreased in clinical practice (worldwide, not just UK)
- Use by professions outwith physiotherapy is INCREASING

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**Singing Fatbusher**

*Study shows how electrotherapy may treat depression*

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**How ultrasound helps wounds heal 3 times faster**

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**Gale 1802**

*Look at one of his treatments in a moment*
**Electrotherapy vs Electro Physical Agents (EPA's)?**

**[EPADU in the UK]**

**[ISEAPT worldwide]**

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**Birch 1780**

(Will look at a case study from this paper)

**Case I.**

A young lady, of an exceeding healthy constitution, whose periods had commenced about her fourteenth year, and had established themselves regularly without any inconvenience, took cold, by walking in a windy day at an improper time; the mesens were immediately checked.

From Birch 1780

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Accordingly I placed my directors in such a manner as to convey the electric matter through every part of the uterus, and having continued this method two days, on the third I had a message to acquaint me of the success that attended it; a mild and easy discharge was produced, and continued, without interruption, its proper time.

Evidence??... so the 'treatment' works....
Evidence Based Practice :: Couple of Key Issues ::

EBP : the most often quoted quote(s) . . . .

- Evidence based medicine is the conscientious, explicit, and judicious use of current best evidence in making decisions about the care of individual patients.
- The practice of evidence based medicine means integrating individual clinical expertise with the best available external clinical evidence from systematic research.

Sackett et al 1996

and where the evidence comes from ....

"Evidence-based medicine is not restricted to randomised trials and meta-analyses. It involves tracking down the best external evidence with which to answer our clinical questions.....If no randomised trial has been carried out for our patient's predicament, we follow the trail to the next best external evidence and work from there"

Sackett et al 1996

Evidence Hierarchy

- systematic reviews of randomised controlled trials are TOP RANKED evidence
  - EVERYBODY says so

The Evidence Base Issue

- Often cited that there is a lack of evidence with regards Electrotherapy/EPA's
- Often employed as a reason why they should be 'dropped' from practice
- There IS however a substantial and significant evidence base
- NO claim that EPA's are 'better' than any other mode of intervention
- BUT used in conjunction / alongside / as an adjunct to other Rx, they DO make a difference

Evidence Base

- TW database (been 'collecting' since 1982)
- Currently stands at ≈ 243,000 papers
- Across a whole range of modalities
- E.g. 155,000 relate to electrical stimulation
- Some are cell / lab based, some animal work, but a good proportion have a clinical base
- Not all supportive, but many areas of practice would struggle to get near this volume of evidence
... but what about the QUALITY ???

- Some therapy research papers are pretty poor quality
- Reduces the confidence that one might have in employing results and transferring from paper to practice
- PEDro – Physio Based quality tool (Aus based)
- Analysis by Bjordal et al (2015) showed that of the 28 trials scoring 10/10 for quality, 25/28 were EPA papers

Sono-Electro-Magnetic Therapy for Treating Chronic Pelvic Pain Syndrome in Men: A Randomized, Placebo-Controlled, Double-Blind Trial

Evidence – Practice mismatch

- Spoken / published on this topic several times
- Appears to be a fundamental mismatch between the current available evidence and the reality in clinical practice
- The evidence says INTEGRATE EPA’s alongside other elements of the therapy package (NOT for every patient, NOT for every clinical issue)
- The reality – maybe less so in your speciality – is that it is infrequently practiced
- Whether due to lack of awareness, fashion, time constraints or . . . . . . . who knows

PEDro search for quality score = 10/10 in any topic. N = 28 (25/28 = EPA’s)
PEDro search for Continence and Women’s Health
N=3223 (includes all quality scores)
PEDro search for quality score = 10/10 in Continence and Women’s Health
N=3 :: all EPA!!!!
So where in POGP practice is the evidence supportive?

- RANGE of CLINICAL AREAS
  - Dominated by INCONTINENCE intervention
  - Increasingly in MALE CONTINENCE area and FECAL INCONTINENCE
  - Also for a range PAIN related issues

- RANGE of MODALITIES
  - Primarily ELECTRICAL STIMULATION (esp NMES)
  - Often link the NMES with Biofeedback
  - Post Tibial Nerve and Sacral Nerve stimulation gaining ground especially for fecal incontinence
  - Also ultrasound, pulsed shortwave, laser used post pelvic floor damage/trauma/injury/disorders less of them

- INTEGRATED CARE PACKAGES dominate recently

2010-15 Incontinence and Electrical Stimulation Papers

Example of a recent review considering Biofeedback and Electrical Stimulation for Stress Incontinence

Ghaderi + Oskouei (2014)
Physiotherapy for women with stress urinary incontinence: a review article

Ghaderi + Oskouei (2014)
Greater improvements in SUI occur when women receive a supervised exercise program of at least three months.
The effectiveness of physiotherapy treatment is increased if the exercise program is based on some principles, such as intensity, duration, resembling functional task, and the position in which the exercise for pelvic floor muscles is performed.
Biofeedback and electrical stimulation may also be clinically useful and acceptable modalities for some women with SUI.

PFME with Biofeedback

- A practical strategy may be to initiate PFME with biofeedback for those who might have difficulty in understanding how to contract or are unable to contract the PFM.
- Biofeedback can also be used to teach correct PFME form.
- (TW : recent work by Crotty using ultrasound guided feedback gave positive results)
The physiological objectives of ES are to produce muscle hypertrophy, to normalize the reflex activity of the lower urinary tract, and to increase circulation to muscles and the capillary system. ES of the pudendal nerve improves urethral closure by activating the PFM. ES is a priority for women with difficulty in contracting the PFM initially.

Summary from Ghaderi + Oskouei (2014)

<table>
<thead>
<tr>
<th>Modulation</th>
<th>Effect</th>
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| Biofeedback[12], [14] |  - To promote strength and endurance  
|                     |  - To increase coordination  
|                     |  - To promote muscle relaxation  
| PFM electrical stimulation[13], [14] |  - To improve PFM strength (of 0.5 PFM strength)  
|                     |  - To promote sensory awareness due to sensory impairment  
|                     |  - To reduce pain

Example of a recent review considering Biofeedback and Electrical Stimulation for Fecal Incontinence

Vonthein et al. (2013)

Electrical stimulation and biofeedback for the treatment of fecal incontinence: a systematic review.


13 RCT's considered

Biofeedback included in 12 of the trials

E Stim included in 7 of the trials

Vonthein et al (2013) RESULTS

- NONE of the trials showed SUPERIORITY of CONTROL
- Used in ISOLATION, neither BIOFEEDBACK nor E STIM showed SUPERIORITY over COMBINED Rx
- Used in COMBINATION, Biofeedback + E Stim gave optimal outcome
- Of the various E Stim modes evaluated, pre-modulated IFT gave optimal results

Conclusions There is sufficient evidence for the efficacy of BF plus ES combined in treating fecal incontinence. AM-MF plus BF seems to be the most effective and safe treatment.
Example of a recent paper considering Biofeedback and Electrical Stimulation for Fecal Incontinence

Kuo et al. (2015)
Improvement of Fecal Incontinence and Quality of Life by Electrical Stimulation and Biofeedback for Patients With Low Rectal Cancer After Intersphincteric Resection
Arch Phys Med Rehabil 96(8): 1442-1447

- N = 32 patients with fecal incontinence post sphincter saving surgery (F15:M17)
- Pelvic rehab programme included E Stim and Biofeedback
- Results showed a significant improvement, including objectives scores and QoL

Examples of recent papers considering various EPA’s with Continence and Pelvic Floor Treatments

100% +ve for surgery : 75% +ve for E Stim

- Multiple low-quality studies show improvement in FI after PTNS
- Stimulation modified anorectal physiology by strengthening the myogenic response to distension in patients with FI

(Hotouras et al 2013) Outcome of sacral nerve stimulation for fecal incontinence in patients refractory to percutaneous tibial nerve stimulation. Dis Colon Rectum 56(7): 915-920
Sacral nerve stimulation is an effective treatment for patients who do not gain an adequate therapeutic benefit from percutaneous tibial nerve stimulation

3 different neuromodulatory protocols were used over 6 different study periods. Short term primary endpoint success ranged from 30.0% to 83.3%.
(Post) Tibial Nerve Stim for Overactive Bladder Issues
N = 567 papers

  Combined Rx including E Stim 2 x weekly most effective with longer lasting results
  Supported indications include urinary urge incontinence, urgency-frequency, nonobstructive urinary retention, and fecal incontinence
  TENS is an effective and safe treatment for refractory OAB

Summary & Conclusion
- Have certainly moved on since the 1780’s in terms of evidence!
- There IS evidence of benefit for the ADDITION of EPA’s to exercise and treatment programmes
- Strong evidence for the use of electrical stimulation and biofeedback for urinary and fecal incontinence
- Whether it is actually employed in practice is less certain and an example of a potential evidence-practice gap

Electrical Stimulation for Stress Incontinence Issues
N = 342 papers

- Ultrasound applied to the perineum
  N = 31 papers

- Laser (LLLT) applied to the perineum post partum / trauma
  N = 4 papers

- Biofeedback used as treatment component for Pelvic Floor activity
  N = 666 papers

Electrical Stimulation for Prostate related issues
N = 133 papers

Thank You
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