# Newsletter No.4 2013

## *Final Newsletter for the 2013 Membership Year!*

Dear Colleagues,

As many of you are aware, the WHTA membership year runs from 1st February to the 31st January. May I therefore begin by just thanking you all for your membership and support over the last 12 months.

Many of you have already renewed for 2014. It is obviously very humbling to have your support again and I do hope I can help make this another rewarding year of education and professional development for us everyone.

***IMPORTANT!!***

**1. Change-Over to New 2014 Member E-Mail List**

The new WHTA member mailing list will commence on the first day of the new Membership Year (ie 1st February 2014).

Important Dates

| | |
|---|---|
| **31st January** | **2013 Membership Year E-mail List Finishes** |
| **1st February** | **2014 WHTA Member Mail list Begins** |
| **1st – 7th February** | **2014 WHTA Member Test Email sent** |

In the first week of February I will send a test email to everyone who I believe has paid for renewal of membership. If by Friday 7th February you have paid for your renewal but have not received this email please email Taryn directly at taryn@jongraham.com.au. It is important that you are not left off the mail list as this is how we send all mini-tutes, newsletters, new patient handouts etc.

***IMPORTANT ALSO!!***

**2. New 2014 Drop-Box ….. or ……. Possibly Member Web-Site??**

At the moment, I am working on developing a password protected *member website* to make access to patient handouts, assessment forms, past newsletters etc more easily accessible. This may or may not be ready by the 1st February. If not, please look for a new Drop-Box invite in the first week of February also. The 2013 Dropbox folder will cease to exist after the 1st Feb.

Anyway, I hope you enjoy this final newsletter for 2013……

*Taryn*

## Contents pp

# Clinical Focus Topic: ***Obturator Internus*** – ***Is it more important than we give it credit for?***

There is now fairly widespread acceptance that the functional ability of the "pelvic floor muscles" plays a significant role in conditions such as urinary incontinence, pelvic organ prolapse and various defecation disorders. As a result, large volumes of research money has been allocated in recent years by governments and funding bodies to increase our understanding of the normal structure and function of the pelvic floor muscles. Usually such research focuses on ***Levator Ani***, but what about ***Obturator Internus***??

As physiotherapists we all know that muscle function is dependent on a range of factors. These include the muscle fibre density, cross-sectional area of the muscle, muscle fibre direction, degree of motor and sensory innervation, central neural patterning, as well as length-tension factors. In addition though, muscle function is obviously also dependent on the structural integrity of the muscle's origin and insertion.

## QUICK REVIEW!! What defines an "Origin" vs "Insertion"?

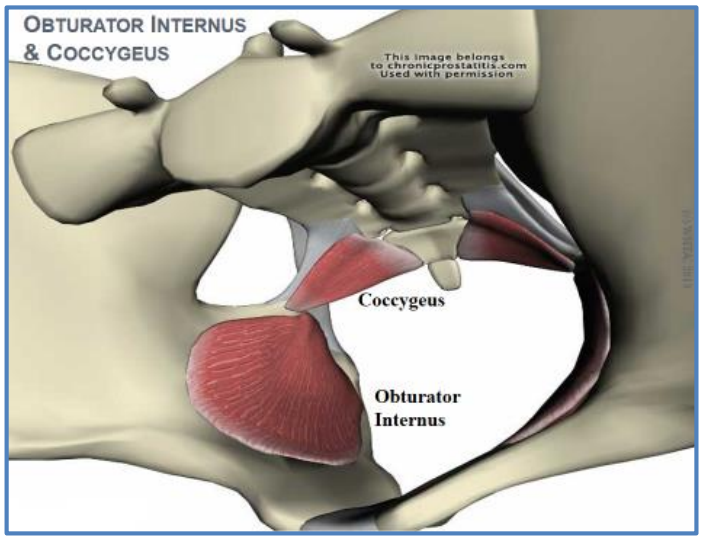
Origin and Insertion is a fairly simple anatomical concept (we all learnt it in our first semester of Uni!). Ultimately there are four main important points about the origin and insertion of a muscle:

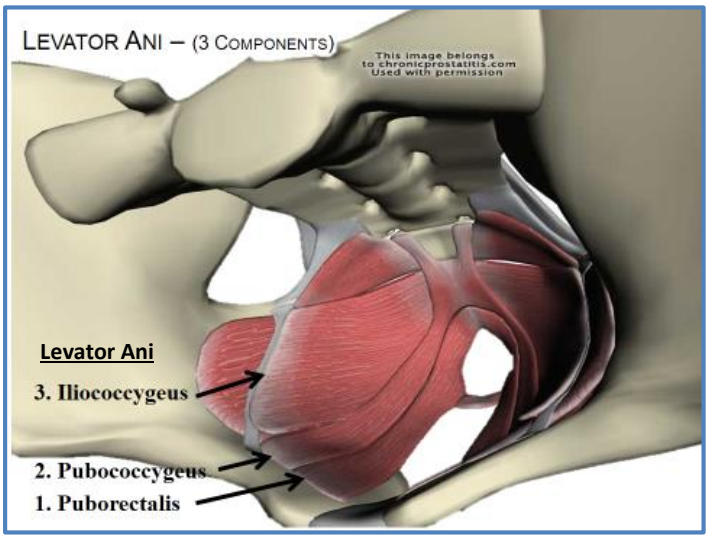
1. The **Origin** and **Insertion** are simply the attachment points of each end of a muscle (usually to bone).
2. The **Origin** is defined as the attachment to the **Non-moving** Bone.
3. The **Insertion** is defined as the attachment to the **Moving** Bone.
4. Therefore…..During muscle contraction the Insertion moves toward the Origin.

Whilst the above four points are obviously a little oversimplified, the basic premise of muscle function is that one of the attachment ends should be a "STABLE, IMMOVABLE ATTACHMENT". This stability at the origin enables the muscle to maximise the movement at its insertion end.

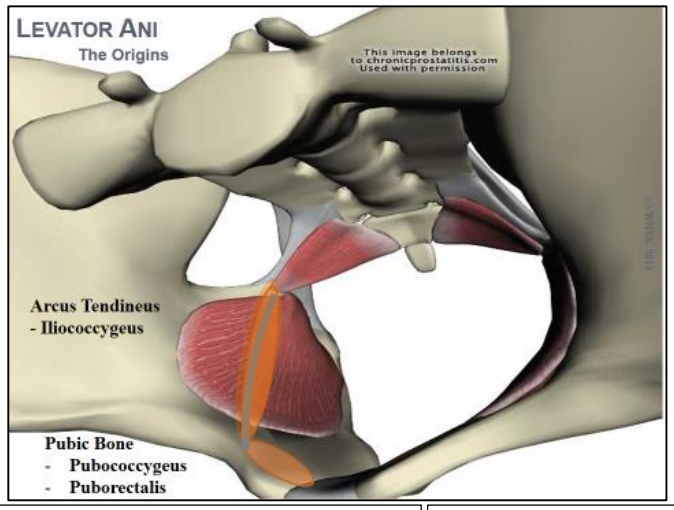
## Why is this relevant to the Pelvic Floor??

Consider the following muscles of the pelvis…… ***Obturator Internus, Coccygeus and Levator Ani.***



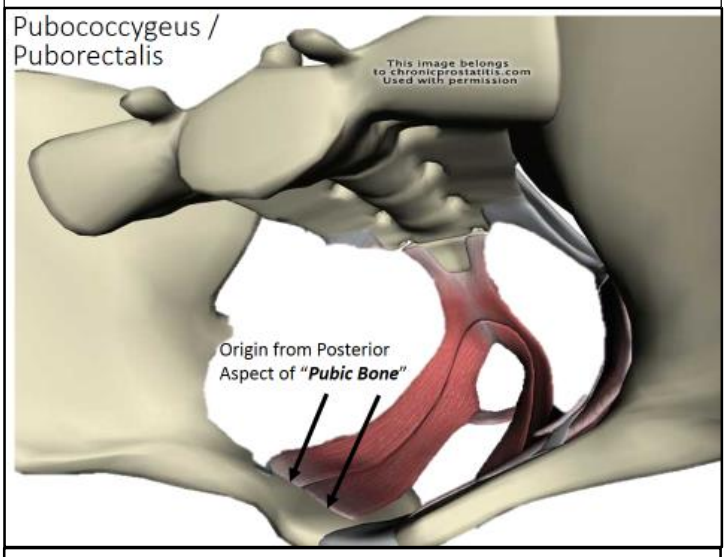



**NOW CONSIDER THE ORIGINS OF *LEVATOR ANI***

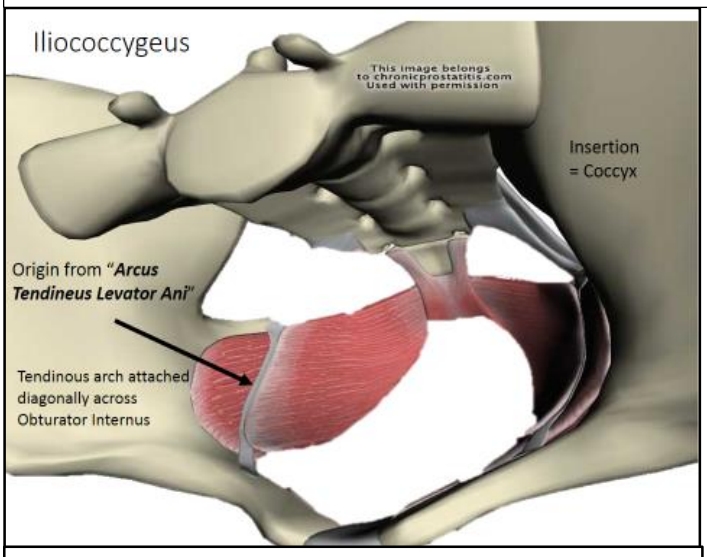



The ***Puborectalis*** and ***Pubococcygeus*** portions originate from the posterior aspect of the pubis.

The ***Iliococcygeus*** portion arises from a tendinous arch called "***Arcus Tendineus Levator Ani***" which lies diagonally across the Obturator Internus Muscle




***Pubococcygeus & Puborectalis have a stable "UNMOVING" origin (assuming no avulsion)***




***The Stability of Iliococcygeus' origin depends on tension created by Obt. Int on Arcus Tendeneus***

## Hypothetical Implications of this…….

This concept brings about some interesting questions……

1. In women who have conditions that require regular activation of their pelvic floor (eg women with detrusor overactivity who regularly need to contract their PF to prevent incontinence):
   - ➔ Are they also constantly tensioning Obturator Internus to create a stable origin for Iliococcygeus?
     - ➢ Do they end up with overactive Obturator Internus which could lead to hip issues?

2. In women with weakness through Obturator Internus
   - ➔ Do they have more difficulty creating a stable origin for iliococcygeus to contract
     - ➢ Does this make women with hip issues more likely to have Pelvic Floor Disorders?

**So is there any research linking this???**

**RESEARCH PAPER #1**

**Is urinary incontinence the hidden secret complication after total hip arthroscopy?**

**Baba T, Homma Y, Takazawa N, Kobayashi H, Matsumoto M, Aritomi K, Yuasa T, Kaneko K**

European Journal Orthopaedic Surgery & Traumatology, 2014, Jan 10 (epub ahead of print)

*Location:* Japan

*Participants:* n = 76 female patients undergoing primary total hip arthroscopy
Compared those undergoing an anterior vs posterior approach to arthroscopy

*Background:* The root of the Obturator Internus Muscle (short hip external rotator) connects to the Levator Ani Muscle which has a role in pelvic organ support and urinary incontinence.

*Hypothesis* That the posterior approach (PA) for total hip arthroscopy, which requires dissection of the short external rotators will have different influences on the pelvic floor muscles and subsequent urinary incontinence rates when compared to the anterior approach (AA) which does not dissect the external rotators.

*Methods:* Screened pre-operatively and up to 1.5 years post-operatively for urinary incontinence using the International Consultation on Incontinence Questionnaire-Short Form

**RESULTS:**

| Urinary Incontinence | Improved | Slightly Improved | Unchanged | Slightly Aggravated | Aggravated |
|---|---|---|---|---|---|
| Anterior Approach | 22.2% | 2.8% | 72.2% | 2.8% | 0% |
| | Improved – 25% | | | Aggravated = 2.8% | |

| Urinary Incontinence | Improved | Slightly Improved | Unchanged | Slightly Aggravated | Aggravated |
|---|---|---|---|---|---|
| Posterior Approach | 2.5% | 0% | 75% | 10% | 12.5% |
| | Improved – 2.5% | | | Aggravated = 22.5% | |

**Conclusions**

Since the short external rotators may have been atrophied due to hip joint dysfunction before surgery, if the strength of this muscle group recovers, support of the pelvic organs and urinary incontinence may be improved.

It was assumed that surgery through an AA improved external rotation contracture of the hip joint, which increased tension of the internal obturator muscle, tensioning the pelvic floor muscles and improving urinary incontinence.

**Taryn's Additional Comments:**

It would seem that this study is suggesting that in the posterior approach to hip arthroscopy there can be operative trauma to Obturator Internus resulting in diminished stability of the iliococcygeus insertion → worsening of urinary incontinence.

Alternatively, an anterior approach to hip arthroscopy prevents operative trauma to Obturator Internus. Minimal operative trauma combined with the post-op improvement in hip function may allow for improvement/recovery of obturator internus function → Improvement in incontinence.

**RESEARCH PAPER #2**

**Myofascial Pain and Pelvic Floor Dysfunction in Patients with IC**

**Bassaly, Tidwell, Bertolini S, Hoyte, Downes, Hart**

International Urogynaecology Journal (2011), Vol 22 (4), pp413-418

Performed a retrospective review of 186 patients with a diagnosis of interstitial cystitis for muscular hypertonicity / myofascial trigger points.

**Results:**

- 78.3% of patients had at least one myofascial trigger point
- 67.9% of patients had numerous myofascial trigger points
- The most common locations for myofascial trigger points were
    - Puborectalis: Left = 69% Right = 74%
    - Iliococcygeus: Left = 67.2%
    - **Obturator Internus Left = 72% Right = 69%**

**Taryn's Comment on Bassaly et al 2011:**

The research paper above is simply one of a number of papers that links urgency, frequency and bladder pain syndrome at least in part to Obturator Internus overactivity. The difficult question with these studies is whether it is "Chicken or the Egg", ie cause or effect.

Using our previous hypothesis it could be argued that women with a bladder dysfunction who constantly need to activate their pelvic floor to control urgency may end up with obturator internus overactivity in their attempt to stabilise iliococcygeus' origin. ie Obturator Internus Overactivity is the by-product of a bladder dysfunction.

Another theory though, is that Obturator Internus overactivity is the actual cause of urgency / frequency / bladder pain syndrome. Whilst the mechanism behind this is too long to explain in this newsletter, the three main theories involve:

- Persistent Obturator Internus Hypertonicity resulting in a direct Myofascial Ischemic Pain behind the pubis which mimics Bladder Pain
- Obturator Internus Hypertonicity tensioning the Obturator Fascia → compression of the Pudendal Nerve as it courses through the inferior channel in the Obturator Fascia (alcock's canal) reducing urethral sphincter activation and resulting in a 'urethral urgency' as urine enters the upper urethra.
- Obturator Internus Hypertonicity activating somatic nociceptors → a Somatovisceral convergence in the sacral dorsal horn → an antidromic propogation down the visceral afferent to the bladder → inflammatory neurotransmitter release within the bladder → bladder pain syndrome / haemorrhagic cystitis.

In each of these hypotheses, the Obturator Internus is the 'starting problem' that is simply resulting in lower urinary tract symptoms. This is in contrast to the suggestion that an original bladder issue (eg detrusor overactivity) leads to regular overactivation of obturator internus to stabilise the origin of the levator ani. Obviously, the final possibility this interaction becomes cyclical – a vicious circle of one condition irritating the other.

## So…… How do we assess Obturator Internus???

It is important to remember that Obturator Internus is a hip joint **"EXTERNAL ROTATOR".**

**FINDING RIGHT OBTURATOR INTERNUS** (if you are right-handed. Swap all descriptions if you are left handed)

1. Insert your right index finger diagonally into the vagina, palm upwards at about 10 o'clock. Try to palpate around the inferior pubic ramus until you fall into the soft obturator foramen with OI (and possibly levator ani) over the top.

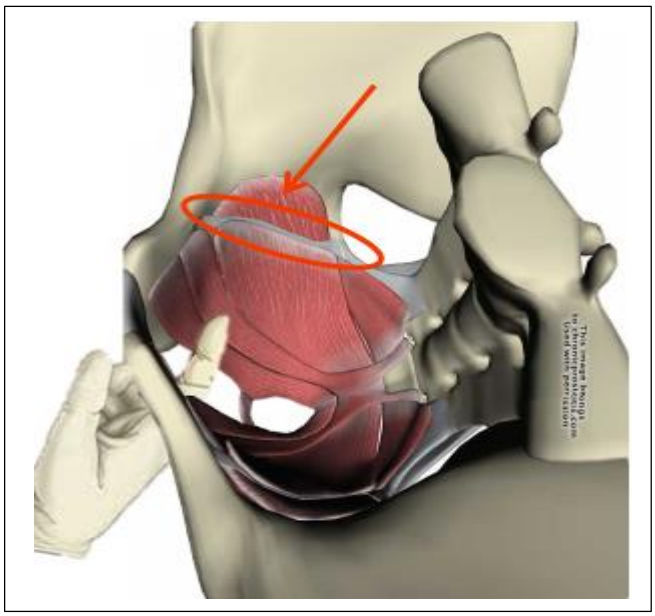
2. With the pad of your right index finger on the muscle you believe to be OI, place the palm of your left hand against the lateral aspect of the patient's right knee.

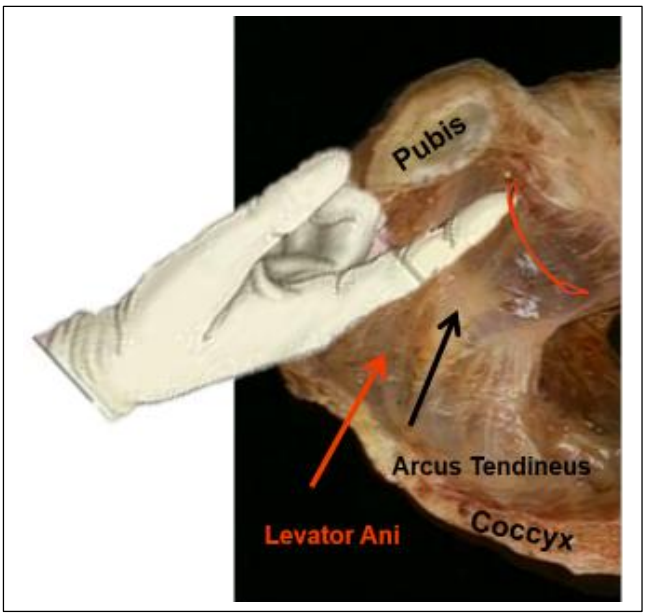
3. Ask the patient to "Push their knee outward against your hand" whilst you palpate OI internally.

4. Resist the external rotation of the right lower limb / knee firmly with your left hand to allow a strong activation of Right OI that can be palpated internally.

Note: Ensure that when the patient externally rotates they DO NOT push down through their foot on the bed. This is more likely to activate other external rotators (eg Gluts), minimizing activation of OI. I tend to use the visualization that they should pretend that their foot is on soft sand, explaining that when they push their knee outward against my hand they are not allowed to dent the sand with their foot.

**It is useful to try to palpate above arcus tendinues to get more direct contact with Obturator Internus**
(rather than below arcus tendineus where levator ani is over the top)

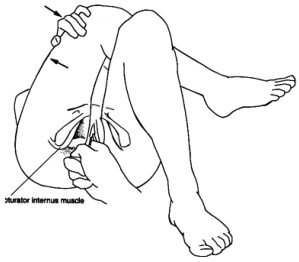





**Note**

Weiss 2001, in the Journal of Urology originally described the palpation of OI for bladder pain syndrome to require the leg crossed over the opposite knee.

*I do not find this to be necessary* and simply allow the patient to remain in standard crook lying (this diagram is also palpating the inferior portion of OI rather than the superior portion)



# Clinical Tip: Symptoms of ISD

## Background

As we all know, Stress Urinary Incontinence can be broadly split into two different sub-types:

1. Urethral Hypermobility – usually underpinned by
    a. Weakness of Levator Ani
    b. Inability to maintain a functional contraction of the pelvic floor during Increases in IAP
    c. Damage to the Pubocervical Fascia behind the urethra
    d. Damage to the Pubo-Urethral Ligaments

    Or

2. Intrinsic Sphincter Deficiency – usually underpinned by
    a. Loss of Striated External Urethral Sphincter Fibres
    b. Denervation of the Urethral Sphincters
    c. Surgical Trauma / Scarring / Fibrosis of the Urethral Wall
    d. Lack of Vascular Supply to the Urethral Wall

Being able to differentiate these two sub-classifications can be useful to direct our treatment.

### Differential Diagnosis

Whilst Urethral Hypermobility can be identified by a non-invasive 2D transperineal ultrasound, the standard diagnostic tests to identify ISD is quite invasive. The patient needs to have a urethral pressure profile performed during urodynamics (passing a pressure microtransducer down the urethra), looking for a maximum urethral closure pressure <20cmH20 or a Valsalva Leak Point Pressure (VLPP) <60cmH20.

### WHAT ABOUT A SYMPTOM BASED DIAGNOSIS?

The subjective history is without a doubt a clinician's most important skill. It is non-invasive (although sometimes a bit confronting for the patient), guides the objective assessment plan and enables us to determine the most important issues for the patient. Interestingly though, research has also now indicated that the patient history can possibly assist us in determining whether there is likely to be an Intrinsic Urethral Component to a person's stress incontinence.

Kim et al 2011 reviewed 185 women with SUI and compared a range of factors (age, BMI, hormonal stage, previous surgery) with the diagnosis they received by undergoing a urodynamics. They found that the only factor linked to ISD diagnosis on urodynamics was the patient's subjective history Stamey Grade.

The Stamey Grade is something I find is used a lot in research coming out of Asia and the United States, but not so often in research out of Australia or Europe. Therefore, I find many physiotherapists in Australia haven't heard of it. It is a way of grading the severity of SUI based on which activities cause the person to be incontinent of urine.

**STAMEY GRADE FOR STRESS INCONTINENCE:**

| Grade | Description |
|---|---|
| Grade 0 | Continent / dry |
| Grade 1 | Patient only loses urine with very sudden, strong increases in intra-abdominal pressure (sneeze, strong cough), never in bed at night |
| Grade 2 | Patient's incontinence occurs with lesser degrees of stress such as walking, standing erect from a sitting position, or sitting up in bed |
| Grade 3 | Patient has total incontinence and urine is lost without any relation to physical activity or position |

When Kim et al (2011) reviewed their 185 women with SUI (some with urethral hypermobility and some with Intrinsic Sphincter Deficiency) they found a much higher incidence of ISD the higher the Stamey Grade.

| Stamey Grade | Intrinsic Sphinc Def VLPP < 60 | Grey Zone VLPP 60-90 | Urethral Hypermobility VLPP > 90 |
|---|---|---|---|
| I | 10% | 28% | 62% |
| II | **54%** | 21% | **25%** |
| III | **63%** | 23% | **14%** |

**WHAT ABOUT COITAL INCONTINENCE & POST-VOID DRIBBLE?**

Many of you recently attended the Webinar "Sex, Lies and Sub-Urethral Tape" as part of your renewal for 2014. For those of you who didn't, there has also been a study published that now links the specific symptoms of Coital Incontinence at Penetration and Post-Void leakage on standing from the toilet as indicators of ISD.

Emery, Book and Novi 2010 performed urodynamic / urethral pressure profile assessment on 90 women symptomatic of Stress Incontinence.

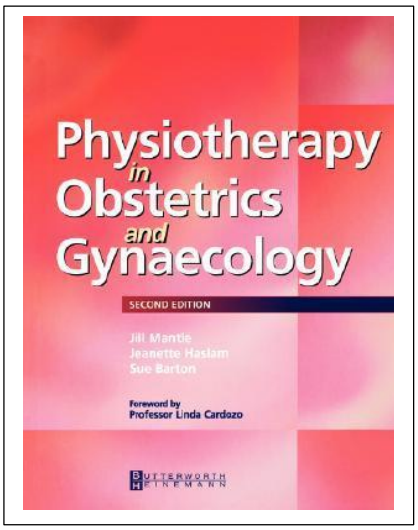
They found that the positive predictive value for ISD was:

- 87.5% if the patient had EITHER coital incontinence OR post-void leakage
- 90% if the patient had BOTH coital incontinence and post-void leakage

Therefore, when asking about activities that cause leakage of urine, symptoms of coital incontinence and post-void leakage should trigger thoughts of some degree of Intrinsic Deficiency. *(But Note!!* – when asking about coital incontinence make sure you state…. "*If you didn't empty your bladder before intercourse*, do you think you would leak urine?" If you don't specify, they will all simply deny coital incontinence because they empty their bladder first!)

# Book Review

**TITLE:** **Physiotherapy in Obstetrics and Gynaecology**
**2nd Edition**




**EDITORS** Jill Mantle, Jeanette Haslam and Sue Barton

**PUBLISHER:** Butterworth Heinemann

**PRICE:** ~$143.50 in Hard Copy via Booktopia
~$106.50 in Hard Copy via Fishpond.com.au
~$31.50 per chapter PDF via Science Direct
?? Kindle Electronic Edition

**Taryn's Rating** **OVERALL:** ★★★★½
**4.5 out of 5**

**DIFFICULTY** Basic - Intermediate (Definitely not Advanced)

**TARGET AUDIENCE?** This textbook would be useful for Women's Health Physiotherapists, Midwives or Shared Care GP's.

**In terms of Physiotherapists,** I would most recommend this to:

- Physiotherapists with less than 3 years' experience in women's health
  OR
- Physiotherapists who supervise either Junior WH Physiotherapists in Women's Health or Students undertaking women's health clinical placements. It's a great reference for them to refer to.

**RECOMMENDED?** If you are looking for a general Introductory *Women's Health* Physiotherapy Text…..
**Definitely!**

**POSITIVES**

I think this is a fantastic text. It is open minded, easy to read and covers a broad range of topics (see chapter outline below). It is concise, clearly written and provides an exceptional quick reference to virtually any women's health condition or surgery a patient may mention, making it ***a great book to race out to the office and look up when you have that patient that mentions something you haven't heard of***.

This textbook will cover the basics of virtually everything a women's health physiotherapist may encounter (and more!), ranging from understanding labour and birth, antenatal education classes, pregnancy complications (endocrine, medical, musculoskeletal, neurological, breast conditions), pelvic floor conditions, gynaecological surgeries, chronic pelvic pain conditions, gynaecological infections, sexual dysfunction, endocrine conditions etc.

Ultimately, If there was a book I was going to prescribe as a textbook for my 5 Day "Women's Health Physiotherapy – 5 Day Introductory Course" this would be it.

**NEGATIVES**

1. It may be too basic for a lot of WHTA members, however even I still find it useful to read through now and then. It really is a great summary book.

2. Whilst it has a lot of physio information, it has a fair amount of non-physio information (that seems more relevant to Midwives / childbirth educators). However, it is always good to have a holistic view of our patients?

3. It is definitely a WOMEN'S HEALTH textbook, not a pelvic floor textbook. If you only treat Pelvic Floor Disorders (ie you don't have an interest in general women's health conditions such as pregnancy related musculoskeletal, breast conditions etc) you may find there are too many chapters that you aren't interested in.

**Book Chapters**

**There is so much in this book I couldn't write it all. Here is just some of it** (but note - all topics are just covered in a basic manner)

1. **Anatomy – 26 pages**

   *The Pelvis, Pelvic Floor and Muscles of the Pelvis, The Perineum, The Abdominal Muscles, The Breast, The Reproductive Tract, The Urinary Tract, The Anorectal Region.*

2. **Physiology of Pregnancy – 25 pages**

   *Menstruation, Pregnancy and foetal development, The Physical and Physiological changes of Pregnancy, The Endocrine System (effects of progesterone, oestrogen, relaxin), Changes to the reproductive system, cardiovascular system, respiratory system, nervous system, urinary system, musculoskeletal system, breasts, skin and gastrointestinal system, Complications of Pregnancy (anemia, antepartum haemorrhage, breech position, cardiac disease, ectopic pregnancy, diabetes mellitus, genital herpes, intrauterine death, HIV, multiple pregnancies, placenta praevia, pregnancy induced hypertension, fibroids etc)*

3. **Physical and Physiological Changes of Labour and the Puerperium – 40 pages**

   *Prelabour, The Stages of Labour, Signs Labour may be Imminent, Process of Normal Labour, Pain of Labour, The mechanics of Labour, Effect of Labour on the Pelvic Floor and Perineum, Understanding Medical Notes of Labour, Complications of Labour, Interventions in Labour (forceps, vacuum), Caesarean Section, The Puerperium – vaginal and perineum, lactation,*

4. **The Antenatal Period – 48 pages**

5. **Relieving the Discomforts of Pregnancy – 24 pages**

*Back and Pelvic Girdle Pain, Adaptation of Back-Care principles in pregnancy, Rolling, Standing, Walking, Lifting, Management of Back and Pelvic Girdle Pain, Assessment of the Patient, Sacroiliac Joint Dysfunction, Sciatica, Symphysis Pubis Dysfunction, Coccydynia, Thoracic Spine Pain, Pregnancy Associated Osteoporosis, Carpal Tunnel Sydnrome, Meralgia Paraesthetica, Varicose Veins, Haemorrhoids, Muscle Cramps, Pain from Abdominal Adhesions,*

6. **Preparation for Labour – 40 pages**

7. **The Postnatal Period – 44 pages**

*The role of the Physiotherapist, Assessment, Individual and Group Education, Exercise, ADL/ Baby Care posture advice, Return to Sport / Exercise Advice, Perineal Trauma (warm baths / bidets, ultrasound, pulsed electromagnetic energy), Urinary Incontinence, Faecal Incontinence, Urinary Retention, Constipation, Diastasis Recti, Back Pain, Epidural Site Pain, Coccydynia, Symphysis Pubis Pain, Circulatory Dysfunction (varicose veins, oedema, haemmorrhoids), Breast Problems (engorgement, cracked nipples), Baby Blues, Puerperial Psychosis, Postnatal Depression, Sexual Problems, Caesarean Section Recovery.*

8. **The Climacteric (ie menopause) – 20 pages**

*Hot flushes and night sweats, vaginal soreness and atrophic vaginitis, sexuality in the climacteric, postmenopausal problems, prevention of osteoporosis, hormone replacement therapy, selective oestrogen receptor modulators*

9. **Common Gynaecological Conditions – 40 pages**

*Infections (vulvitis, vaginitis, cervicitis, endometritis, salpingitis), Pelvic Inflammatory Disease, AIDS, Cysts and New Growths, Bartholin's Glands, Benign Tumours, Malignant Tumours (cervix, ovaries), Endometriosis, Genital Prolapse, Menstrual Disorders (primary amenorrhea, secondary amenorrhea, dysmenorrhea), Dysfunctional Uterine Bleeding, Polycystic Ovarian Syndrome, Sexual Dysfunction (General Sexual Dysfunction, Orgasmic Dysfunction, Vaginismus, Dyspareunia), Vulvodynia.*

10. **Gynaecological Surgery – 24 pages**

*Hysterectomy (abdominal, vaginal, LAVH), Oophorectomy, Ovarian Cystectomy, Myomectomy, Vulvectomy, LLETZ, Colporrhaphy, Manchester Repair, Salpingostomy, Stress Incontinence Procedures (colposuspension, TVT), Pre-operative Physiotherapy, Post-Operative Physiotherapy*

11. **Urinary Function and Dysfunction - 50 pages**

12. **Bowel and Anorectal Function and Dysfunction - 44 pages**

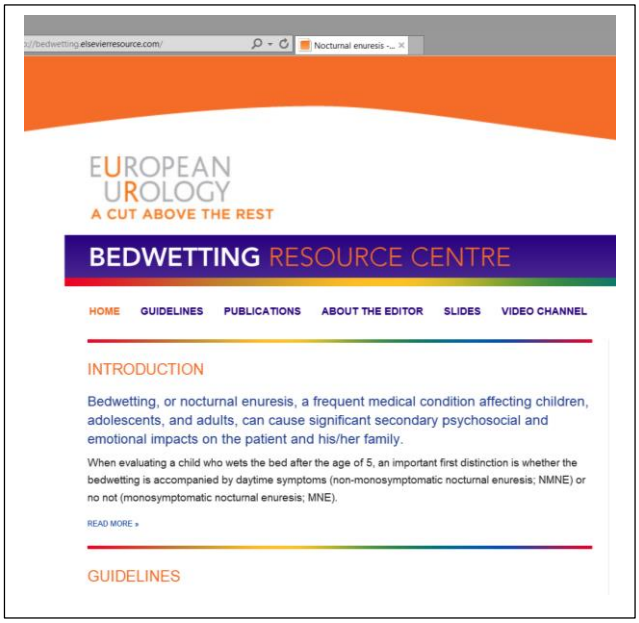
*Normal Bowel Function, Bristol Stool Chart, Storage Physiology, Defecation Physiology, Bowel and Anorectal Dysfunction, Definitions (Descending Perineum Syndrome, Dyschezia, Faecal Incontinence, Megacolon, Megarectum, Paradoxical Puborectalis Contraction, Passive soiling etc etc etc), Constipation, Abnormal Defecation Techniques, IBS, Neurological Conditions, Anal Fissures, Pregnancy and Postpartum, Anal Incontinence, Anal Sphincter Dysfunction, Liquid Stool, Physiotherapy Assessment, Bowel Habit Diary, Food Diaries, Endoanal Ultrasonography, Pudendal Nerve Terminal Motor Latency, Bowel Retraining, Medication, Anal Sphincter Exercises, Neuromuscular Electrical Stimulation, Massage for Constipation, Anal Plugs, Rectal Sensitivity Training, Anal Cones.*

# Website Suggestion

**WEBSITE** **Bedwetting Resource Centre**
**By European Urology**

**WEB ADDRESS** http://bedwetting.elselvierresource.com

**ACCESS:** FREE
Site was set up through a grant by Ferring Pharmaceuticals




**REVIEW**

Admittedly I do not do very much paediatric work. However, I am aware that some of you work with children and teenagers regularly, and many of you have the occasional paediatric patient referred to your private clinic. I therefore thought this website may be useful.

This website was set up by the European Urology Society for the education of Health Professionals on this common condition. You do need to click a button on the opening page to verify that you are a health professional (however, there is no requirement to input personal details so anyone could click yes with no mechanism to confirm this).

So what do they give you on the site??

- **Power Point Presentations**
  - Access to two PowerPoint presentations from the 2nd Conference on Nocturia and Nocturnal Enuresis in Korea in 2012
    - Brain Focused Treatment, by Akihiro Kawauchi
    - Bedwetting is a Problem for Children and Parents, by Johan Vande Walle

- **Video Channel**
  - Ability to watch numerous conference presentations / interviews (10 in total) with international experts on nocturnal enuresis. For example
    - Global Treatment Guidelines on Primary Nocturnal Enuresis 18min
    - The Different Aspects of Bedwetting 10min 27sec
    - Future Research in Nocturnal Enuresis 31min 31sec

- **Access to Numerous Full Text Articles on Bed-Wetting**

- **Access / Links to Clinical Guidelines –** some full text, some abstract links
  - Free Access to European Urology Consensus Guidelines on the Management of Enuresis
  - Management of Bedwetting in children and young people: summary of NICE guidance

- **E-Alert:** Option to register with the site so that you will be notified by email when new content is added.

# IN THE NEWS: e-pub ahead of print

## What research is coming up in the literature?

Note - Most of the article summarised below are prior to official publication in their respective journals, but have been released ahead of print online. The dates are therefore often the online publication date rather than the true publication date.

Included are:

1. **Pelvic Floor Trauma – Does the second baby matter?** Horak et al 2013
2. **Pelvic Floor Muscle Morphology in Women with Vestibulodynia** Morin et al 2013
3. **3D Pelvic Floor Findings and Severity of Anal Incontinence** Rostaminia et al 2013
4. **Internal vs Surface Electrical Stimulation for SUI** Cirreia et al 2013
5. **Posture and Micturition: Does it really matter how a woman sits on the toilet?** Rane & Iyer 2013

**PAPER #1: Pelvic Floor Trauma: Does the Second Baby Matter?**
**Horak Ta, Guzman Rojas, Shek and Dietz 2013, *Ultrasound Obstetr Gynecol, Nov 21*, epub ahead of print**
LINK TO ABSTRACT http://www.ncbi.nlm.nih.gov/pubmed/24311466

Compared the morphology of the PFM and positioning of the pelvic organs pre and post a second birth in 94 women:

**Second Birth Distribution for n = 94**

| N = 65 Vaginal Deliveries | N = 29 Caesarean Sections |
|---|---|
| - 59 Vaginal Births after previous Vaginal Birth | - 26 Planned Caesarean Section |
| - 6 x Vaginal Birth after Caesarean (VBAC) | - 3 attempted VBAC → Caesarean |

**Results**

1. Organ Descent
   - There was a trend toward greater bladder neck descent after second birth
   - There was no significant increase in cystocele descent after second birth

2. Levator Hiatus
   - There was no significant increase in levator hiatal diameter after second birth

3. Avulsion
   a. N = 88 with no avulsion after first birth (including first births that were caesarean)
      i. N = 87 maintained normal anatomy after second birth
      ii. N = 1 new avulsion after a VBAC with vacuum assistance

   b. N = 6 with avulsion after first birth (all were vaginal births for first baby)
      i. N = 5 Avulsion unchanged after second birth
      ii. N = 1 Avulsion diagnosis improved from complete to partial

**Taryn's Discussion**
Regularly our patients ask questions such as *"Will having another baby worsen my condition?"* and *"Should I have a caesarean for my second child?"* Obviously there are so many factors that go into this decision that are not within our scope of practice (fetal well-being, medical risk factors etc). But if we purely look at this from a pelvic floor point of view……

The good news from this study is that the only woman who sustained a new avulsion of the levator ani after a second birth was a woman who had actually had a caesarean for her first birth and then a VBAC with ventouse for her second – ie although it was her second baby it was actually her *first vaginal birth*. There were no new avulsions in the women who were actually having a 2nd Vaginal Birth (vaginal birth after a previous vaginal birth).

From this data it seems reasonable to suggest that avulsion is probably a "first vaginal birth" issue. Having a second vaginal birth is unlikely to cause an avulsion, nor is it likely to worsen the morphology of the levator ani in women who already have an avulsion after their first birth.

Interestingly, Horak and colleagues also found there was no significant increase in levator hiatal area after a second birth. This is in contrast to findings by Dietz and Wilson (2005) who found that there is a significant increase in hiatal area after each of the first and second births, but no further increase from the third birth onwards. Therefore, there probably still needs to be some more research to determine a consistent answer to the question regarding how many births a woman will have before there is likely to be no further increase in levator hiatal area.

**PAPER #2. Morphometry of the PF Muscles in Women with & without Provoked Vestibulodynia using 4D US.**
**Morin, Bergeron, Khalif, Mayrand and Binik 2013, Nov 6 Journal of Sexual Medicine, Epub ahead of print**
LINK TO ABSTRACT: http://www.ncbi.nlm.nih.gov/pubmed/24344835

Goal: To compare the morphology of the pelvic floor in women with provoked vestibulodynia to asymptomatic controls.

Participants: N = 49 women with provoked vestibulodynia (PVD)
N = 51 Asymptomatic women

Methods: 2D Transperineal Ultrasound Mid-Sagittal Plane
3D Transperineal Ultrasound Axial Plane

**Understanding the Outcome Measures:** Taryn's explanations – not definitions from article

**1. Mid-Sagittal 2D Trans-perineal Ultrasound Measures**
Remember that the 2D trans-perineal scans are upside down. The black curve at the top of the image is the location of the curved transducer head against the perineum. The pubis is on the left, you can then see the black line of the urethra leading up to the bladder neck.

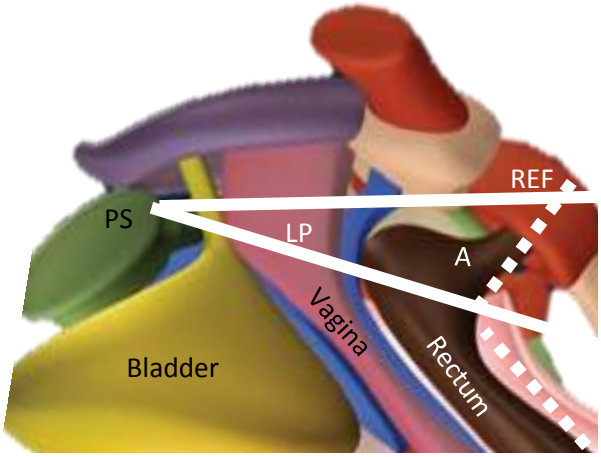
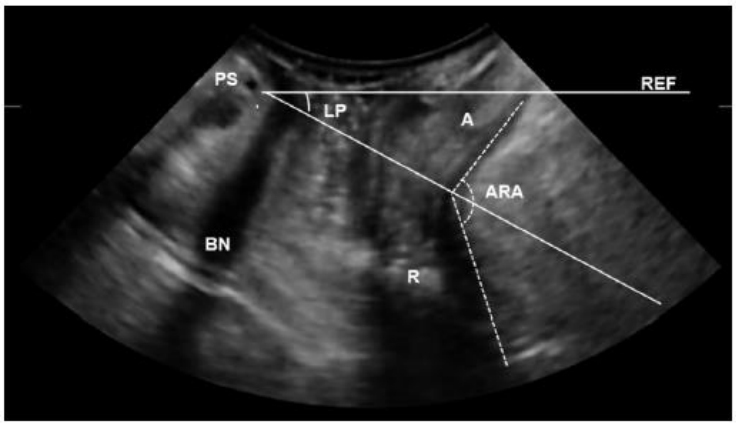



Image from p. 4 of article Morin et al 2013 epub.




1. **Anorectal Angle** (ARA) Indicates the degree of kinking at the Anorectal junction as created by the arc of puborectalis pulling forward toward the pubis.
A line is drawn to identify the direction of the posterior wall of the anal canal which is then compared to the direction of the posterior wall of the rectum (dotted line). The higher the PFM tone the smaller/narrower the angle will become (increased kinking)

2. **Reference Line** (REF) A Horizontal line starting from base of Pubis. This is used as a base reference line to compare the elevation line of levator ani muscular plate.

3. **Levator Plate Angle** (LP) Angle between the horizontal reference line and the plane of the levator ani Muscle. The plane of the levator ani muscle is found by drawing a line from the inferior pubis to the posterior aspect of the Anorectal junction (attachment of puborectalis). The larger the angle the higher the levators have "lifted" the organs away from the reference line.

**2. Axial Plane – 3D /4D Transperineal Utrasound**

The major benefit of this type of scan is to identify the size of the levator hiatus which is outlined by the solid white line. The higher the tone (increased contraction) of the levators, the more the levator ani will pull toward the pubis and the smaller the hiatus will become.

Image from www.miklosandmoore.com

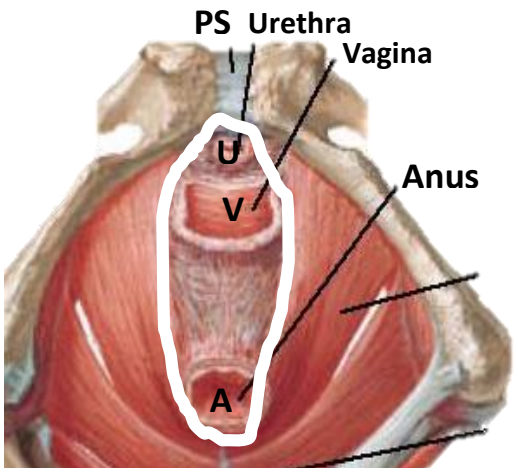
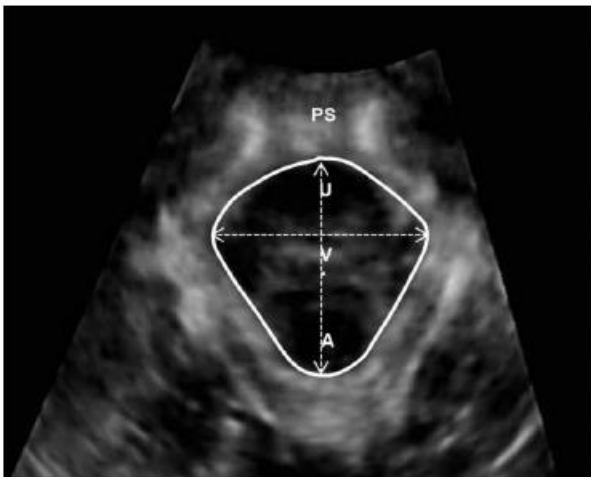



Image from p. 5 Morin et al, epub 2013




**STUDY RESULTS:**

At rest, women with PVD appeared to have increased PFM tone as demonstrated by:

| | | PVD | | Controls | |
|---|---|---|---|---|---|
| 1. | A smaller Levator Hiatus area | 9.77 | vs | 10.83 | p= 0.011 |
| | Note: predominantly due to a difference in AP Diameter | 4.21 | vs | 4.50 | p = 0.028 |
| 2. | A significantly smaller Anorectal angle | 105 | vs | 117 | p < 0.001 |
| 3. | A significantly greater Levator Plate angle | 29.9 | vs | 26.7 | p = 0.013 |

Women with PVD had evidence of poorer PFM function as demonstrated by *smaller changes* in :

| | | | | | |
|---|---|---|---|---|---|
| 1. | Levator hiatus area reduction on PFM contraction | 16.06% | vs | 27.12% | p < 0.001 |
| 2. | Levator plate angle on PFM contraction | 7.7deg | vs | 17.11deg | p < 0.001 |
| 3. | Displacement of the bladder neck on PFM contraction | 0.62cm | vs | 0.93cm | p <0.001 |
| 4. | Anorectal angle on PFM contraction | 7.9deg | vs | 15.3deg | p <0.001 |

**CONCLUSIONS:**

This paper provides sound evidence that women with PVD display PFM impairments at rest and during maximal contraction….. This finding has promising clinical implications as it supports the rationale for physical therapy treatment targeting these impairments in women with PVD

TARYN'S COMMENT

The one factor we always need to be careful with observational studies such as these is assuming a cause and effect. Whilst the PF of women with PVD appear to be higher tone and weaker, we do not know from this study whether the pelvic floor is *causing pain* on the vestibule or whether the pelvic floor is *simply reactive* to the pain on the vestibule.

**PAPER #3: 3D Pelvic Floor Ultrasound Findings and Severity of Anal Incontinence**
**Rostaminia, White, Quiroz and Shobeiri 2013, *December 6 epub International Urogynaecology Journal***
LINK TO ABSTRACT: http://www.ncbi.nlm.nih.gov/pubmed/24310989

N = 97 women underwent 3D pelvic floor Ultrasound Assessment
- N = 45 Major Anal Incontinence
- N = 29 Minor Anal Incontinence
- N = 23 Controls

**Results:**

*EAS = external anal sphincter, IAS = Internal Anal Sphincter, ARA = Anorectal Angle (due to Puborectalis contraction),*

| | No Anal Incontinence | Minor Anal Incontinence | Major Anal Incontinence | p-value |
|---|---|---|---|---|
| **ANAL SPHINCTER INTEGRITY** | | | | |
| **No Sphincter Defect** | 91.3% | 79.30% | 24.44% | P < 0.001 |
| **EAS Defect** | 8.7% | 13.79% | 35.56% | |
| **EAS + IAS Defect** | 0.0% | 6.9% | 40.00% | |
| **ANORECTAL ANGLE** | | | | |
| **ARA < 170 degrees** | 55.67 | 73.91 | 52.72 | P = 0.1273 |
| **ARA >170 degrees** | 44.33 | 26.09 | 48.28 | |

**ODDS RATIOS:** Risk of Severe Anal Incontinence Compared to Controls

- Women with an identified external anal sphincter defect were 20.36x more likely to have severe anal incontinence compared to those with no anal incontinence
- Women with both and Internal and External Anal Sphincter Defect were 102.5 times more likely to have severe anal incontinence.

**Taryn's Discussion:**

It is not surprising to find that patients who are symptomatic of severe anal incontinence are much more likely to demonstrate either an isolated EAS defect or a combined EAS & IAS defect. The interesting point was that this was diagnosed via *Endo-vaginal* Ultrasound.

Historically, anal sphincter integrity has been assessed via *endo-anal* ultrasound, making diagnosis the domain of colorectal surgeons. I think this has been a major impediment to childbearing women obtaining an accurate diagnosis as they are usually being attended to by an obstetrician / gynaecologist. Hopefully this ability to assess anal sphincter injury via a vaginal approach may improve accessibility and start to break down the barrier to women obtaining accurate information on their anal sphincter anatomy.

In terms of the Anorectal Angle result. It does not surprise me that the result came out not statistically significant. Whilst some women may have an exacerbation of their anal incontinence due to a weakness in Levator Ani preventing appropriate kinking of the Anorectal angle, I also find that in a large proportion of my women who have anal sphincter damage, they attempt to compensate by over-activating puborectalis to help maintain their continence. It would be interesting to compare the Anorectal Angle results to degree of anal sphincter trauma.

**4. Effects of surface and intravaginal electrical stimulation in the treatment of women with stress urinary incontinence: a randomised controlled trial.**

**Cirreia, Perieira, Hirakawa, and Driusso 2013, Dec 4, epub ahead of print.**

LINK TO ABSTRACT: http://www.ncbi.nlm.nih.gov/pubmed/24382548

Compared three groups - S-ESG, IV-ESG and Control Group

1. N = 15 treated with: Surface Electrical Stimulation (2 suprapubic; 2 just medial to Ischial Tuberosities)
2. N = 15 treated with: Intravaginal Electrical Stimulation
3. N = 15 Control Group

Electrical Stimulation Protocol:

- 20min sessions twice per week
- Settings: 50Hz 200usec
- Contraction: 4sec on : 8 sec off (Contraction = rise for 2sec, fall for 2sec)
- Intensity: Maximum tolerable

**Results**

Pelvic Floor Contraction

Significant improvement in pelvic floor pressure of squeeze in both the Surface and Intra-vaginal Stimulation group. Change in Pelvic Floor Strength *Grade* only reached significance in the Intra-vaginal Group.

| Pressure of PFC (cmH20) Cardiodesign Perineometer | Pre-Treatment | Post-Treatment | p-Value |
|---|---|---|---|
| Surface ES | 39.41 | 47.37 | **0.004** |
| Intravaginal ES | 37.42 | 44.23 | **0.04** |
| Control Group | 37.92 | 37.65 | 0.58 |

| Grade of PFC Modified Oxford Scale | Pre-Treatment | Post-Treatment | p-Value |
|---|---|---|---|
| Surface ES | 2.06 | 2.53 | **0.07** |
| Intravaginal ES | 2.00 | 2.66 | 0.007 |
| Control Group | 2.16 | 2.25 | 0.99 |

URINARY INCONTINENCE

Significant improvement in urinary incontinence in both the Surface and Intra-vaginal Stimulation group.

| 1 Hour Pad Test (grams of urine) | Pre-Treatment | Post-Treatment | p-Value |
|---|---|---|---|
| Surface ES | 6.28 | 3.31 | **0.010** |
| Intravaginal ES | 2.20 | 0.41 | **0.010** |
| Control Group | 7.33 | 7.62 | 0.61 |

QUALITY OF LIFE

There was significant reduction in the incontinence impact, limitations of daily activities, physical limitation, emotion, sleep and disposition and severity domains in the S-ESG (all $p<0.02$) and IV-ESG (all $p<0.04$) after the treatments.

| Kings Health Questionnaire Incontinence Impact | Pre-Treatment | Post-Treatment | p-Value |
|---|---|---|---|
| Surface ES | 57.78 | 6.66 | **0.0005** |
| Intravaginal ES | 64.44 | 4.44 | **0.0005** |
| Control Group | 58.33 | 61.11 | 0.44 |

**Conclusion**

S-ES and IV-ES are important treatments to improve SUI. Both S-ES and IV-ES improved the QOL, urinary leakage, strength and pressure of PFM contraction.

**********

TARYN'S COMMENT:

Obviously there are some patients who would either not physically tolerate vaginal treatment, or are reserved about undergoing vaginal based treatments. It is positive to see that women who underwent surface E-Stim were therefore still able to see improvements in symptoms without the need for internal treatment.

One note of caution with this study regarding the Vaginal Stimulation Group – the Vagina e-stim group did appear to have a substantially smaller urine loss on the 1 hour pad test pre-treatment. It would be interesting to see this study repeated in a more homogenous group.

**5. Posture and Micturition: Does it really matter how a woman sits on the toilet?**

**Rane A, Iyer J, International Urogynecology Journal, 2013, epub ahead of print, December 18.**

LINK TO ABSTRACT: http://www.ncbi.nlm.nih.gov/pubmed/24346813

**COMPARED** Standard Upright Positioning (on the Toilet) to Three Different Alternate Postures

**TARYN'S COMMENT BEFORE YOU READ THE SUMMARY:**

*This paper actually appears to be a summary of about 7 mini-studies, all compiled into one publication. Each mini-study appeared to have different cohorts of subjects.*

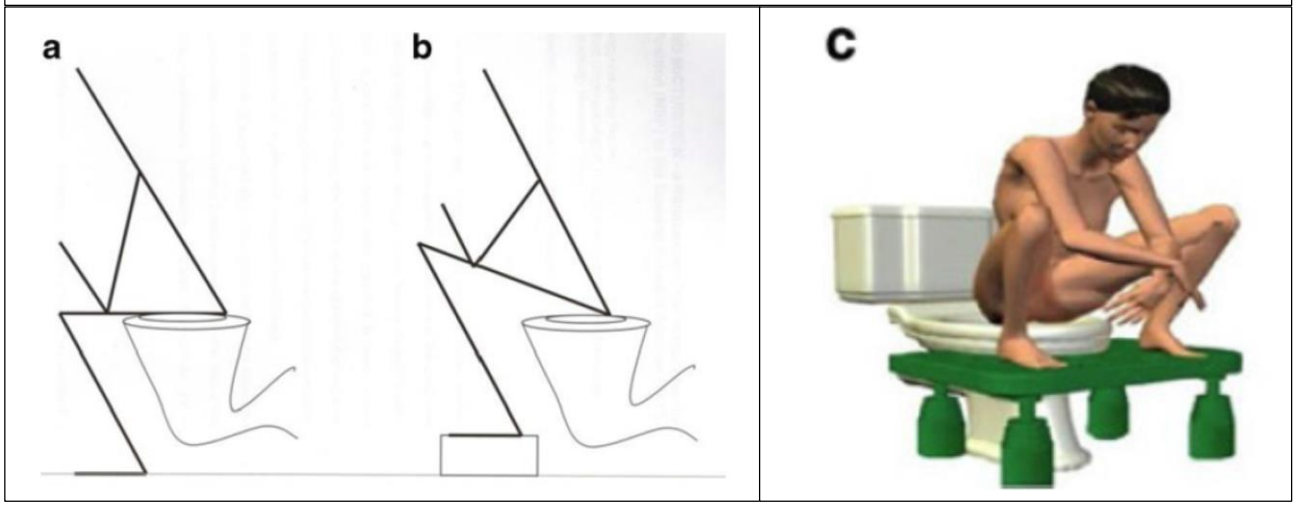
**TESTED VARIOUS HYPOTHESES**

1. Changes in Voiding Function between postures
   - Average and Max Flow Rate
   - Post-Void Residual
2. Ability to Squat
   - In Adults compared to parity and age
   - In Children compared to age and gender
3. Changes in Intra-Abdominal Pressure with Squatting vs Sitting
4. Changes in Levator Hiatus Area with Squatting vs Sitting

**Standard Upright Positioning Compared to:**

**Fig 1 from Rane & Iyer 2013** IUJ e-pub p. 2

a = Lean Forward Position b = Near Squat Position c = Full Squat



## RESULTS - Voiding Ability (normal women)

Volunteers: Mainly Nurses and Medical Students, aged 18 – 70 years
Exclusion Criteria: Genital Prolapse, Significant PF Dysfunction, Mobility Issues

1. **UROFLOWMETRY PARAMETERS:** **UPRIGHT** **vs** **LEAN FORWARD**

| | | Upright Position (control) | vs | Lean Forward Position (A) |
|---|---|---|---|---|
| Results | Average Flow Rate | 16mls/sec | | 20mls/sec |
| | Peak Flow Rate | 32mls/sec | | 33mls/sec |

There was a statistically significant improvement in maximum and average flow rates in the lean forward position.

2. **UROFLOWMETRY PARAMETERS** **LEAN FORWARD** **vs** **NEAR SQUAT**

| | | Lean forward position (A) | vs | Near Squat position (B) |
|---|---|---|---|---|
| Results | Average Flow Rate | 18.95mls/sec | | 20.65mls/sec |
| | Peak Flow Rate | 32.4mls/sec | | 36.05mls/sec |

There was a statistically significant increase in the average and peak flow rate for the near squat position compared to the lean forward position. However *there was a slight trend toward an increased residual in the near squat position.*

3. **UROFLOWMETRY PARAMETERS** **NEAR SQUAT** **vs** **FULL SQUAT**

| | | Near Squat (B) | vs | Full Squat position (C) |
|---|---|---|---|---|
| Results | Average Flow Rate | 19.0mls/sec | | 20.65mls/sec |
| | Peak Flow Rate | 31.5mls/sec | | 34.5mls/sec |

Note:

The mini-study above (near squat vs full squat) was added by the authors at the end of the trial. They had small numbers and therefore they suggest caution in interpreting the data. Because of low numbers, the difference in flow rate between near squat and full squat did not reach statistical significance ($p = 0.25$). In addition, while the residual urine volume was lower in the full squat position, this also did not reach statistical significance due to low numbers ($p = 0.66$)

## RESULTS - Ability to Squat

### 4. ABILITY TO SQUAT IN ADULTS (relative to parity and age)

Methods n = 125 women volunteered. Ability to squat compared to age and parity.

Results Parity Ability to squat was not associated with parity
Age Overall, 43.2% of women tested could not squat.
Ability to squat was significantly related to age

| | Inability to Squat | Could only Squat on Toes | Able to Squat |
|---|---|---|---|
| < 30 years old | 7.1% | 46.4% | 46.4% |
| 30 – 49 years | 13.6% | 36.4% | 50% |
| > 50 years | 36% | 36% | 28% |

### 5. ABILITY TO SQUAT IN CHILDREN

Methods n = 243 children of both genders aged 5 – 17 years.

Results BY AGE

| | Ability to Squat |
|---|---|
| 5-7 year olds | 100% |
| 8 – 11 year olds | 84.3% |
| > 11 year olds | 45.2% |

BY GENDER

| | Boys | Girls |
|---|---|---|
| Could Full Squat | 71.7% | 72.3% |
| Could Squat on Toes | 25.7% | 23.8% |
| Couldn't Squat | 2.7% | 3.8% |

CONCLUSION: In children, ability to squat was significantly associated to age but not gender.

## RESULTS - Intra-Abdominal Pressure and Levator Hiatus Area in Squatting

**6. Relationship between Squatting and Intra-Abdominal / Intra-Vesical Pressures**

Study was completed in Malaysia where urodynamics were available and women had the option of voiding in Western or Asian squat toilets.

| | | |
|---|---|---|
| Participants | 30 – 82 years | 65% were between 51 and 70 years<br>All Women were accustomed to squatting |
| Methods: | Intra-abdominal and Intra-Vesical Pressures were compared<br>○ sitting at rest<br>○ squatting for 30 seconds. | |
| Results: | There was a significant increase in Abdominal Pressure in the squatting position compared to the sitting position, with no increase in detrusor pressure. | |
| Author's Comment | "There appears to be an increase in Abdominal Pressure without an increase in detrusor pressure. A passive increase is better than an increase by straining and performing Valsalva maneuver, which tends to splint the pelvic floor leading to further Anorectal kinking and consequent dysfunctional voiding". | |

*And finally… the part of this paper I find most interesting!*

**7. Comparison of Levator Hiatus Size in the Supine vs Squatting Positions**

Study was completed in Malaysia where urodynamics were available and women had the option of voiding in Western or Asian squat toilets.

| | |
|---|---|
| Participants | Selected 20 women from the part 3 who could perform a full squat |
| Methods: | Compared the 3D Transperineal Ultrasound assessments of Levator Hiatus area:<br>○ In Supine<br>○ On Squatting<br>○ On Squatting plus valsalva (best of three maximal valsalva) |
| Results: | *The levator hiatus area was on average 9.5cm2 larger in squatting than in supine* (range 8 – 10 cm2 larger, $p < 0.001$)<br><br>NOTE!!! The authors did not state whether this increase was at rest or on valsalva |

# Final Statement….

Well, as I always say….. If you have read this far you have done really well. I hope you enjoyed the newsletter and found something useful within it.

Just one last reminder…….

**Important Dates**

| | |
|---|---|
| **31st January** | **2013 Membership Year E-mail List Finishes** |
| **1st February** | **2014 WHTA Member Mail list Begins** |
| **1st – 7th February** | **2014 WHTA Member Test Email sent** |

If by Friday 7th February you have paid for your renewal but have not received this email please email me directly at taryn@jongraham.com.au.

**Member Web-Site ….. or ……New 2014 Drop-Box** **1st February 2014**

If I don't have the new website running, please look for a new Drop-Box invite in the first week of February also. The 2013 Dropbox folder will cease to exist after the 1st Feb.

*Have a lovely day,*

*Taryn*