Overview

- 1: Why the pelvic floor?
- 2: What is pelvic floor dysfunction?
- 3: Impacts of pelvic floor dysfunction
- 4: Risk factors
- 5: Stress Urinary Incontinence
- 6: Pelvic floor exercises – Do they work?
- 7: Post-natal education in New Zealand
- 8: What can you do?
Overview cont.

- 9: Anatomy - pelvic floor & abdominals
- 10: Teaching core & pelvic floor exercises
- 11: Rectus Abdominis Diastasis
- 12: Post-natal advice
- 13: Exercise & the pelvic floor-what might be harmful?
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Overview (3)

- 18: NZCA Pelvic floor screening tool
- 19. Pelvic floor safe exercises
- 20. When should you refer on?
- 21: Where to go for professional help?
- 22: References

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Workshop Objectives

- **By the end of today you should:**

  - Be aware of the prevalence of Incontinence in New Zealand
  - Understand the basic types of pelvic floor dysfunction
  - Recognise several symptoms of pelvic floor dysfunction
  - Have an appreciation of the impacts of pelvic floor dysfunction in the New Zealand population
  - Be familiar with common risk factors of pelvic floor dysfunction
Objectives (2)

- Understand the basic mechanism of stress urinary incontinence
- Understand the basic anatomy & function of the pelvic floor muscles
- Be aware of other special population groups
- Feel more confident teaching post-natal exercises
- Feel confident discussing appropriate post-natal return to activity/exercise with women
- Understand the basic anatomy and functions of the abdominal muscles
Objectives (3)

- Have an appreciation for the variation of training/regulation in the Fitness Industry within New Zealand
- Be aware of exercises detrimental to pelvic floor recovery
- Be able to identify “pelvic floor safe” types of exercise
- Be familiar with the pelvic floor screening tool
- Know when and how to refer on to a specialist or continence practitioner
- Be aware of the NZCA help-line and available resources
Why the Pelvic floor?

- Pelvic floor problems are very common – still a “silent” problem for many.

- **1.1 million (25%)** of people in New Zealand aged 15 years or over are estimated to be suffering either urinary or faecal incontinence.

- **60 %** of pregnant women suffer incontinence and 1 in 3 post birth.
Why the pelvic floor?

- Childbirth is still the biggest risk factor for Pelvic floor dysfunction
- Women affected more than men – ratios vary, from 1:4 to 1:7.
- Up to 2/3rds of affected women believe it is normal and nothing can be done (NZCA training programme)
- But 70-80% can become dry or improve if identified and treated
A hidden problem?

- Only 20% of women with U.I have consulted their GP.
- Pelvic floor dysfunction is under-recognised, under treated & surrounded by myths
- Huge physical, social, economic impacts
Pelvic floor dysfunction?

- Dysfunction: Disturbance or an abnormality in the function of an organ or part
- In the Pelvic floor this can manifest as in many ways: commonly, incontinence of urine or faeces, constipation, vaginal or uterine prolapse, pelvic pain or sexual problems
Pelvic Floor dysfunction: Urinary Incontinence

- Urinary Incontinence: The Involuntary leakage of urine (ICS 2009).
  - **Stress Urinary Incontinence (SUI)** is the complaint involuntary leakage of urine on effort or exertion (e.g.: sporting activities) or sneezing or coughing.
  - **NB:** “Activity Incontinence” might be considered the same!
Urgency Urinary Incontinence

- **Urgency Urinary Incontinence**: Complaint of involuntary loss of urine associated with urgency
  - More common in older women
  - Men are more prone to urge incontinence that SUI
Urinary Incontinence - Mixed

- Mixed Urinary Incontinence: Complaint of involuntary loss of urine associated with urgency and also with effort or physical exertion or on sneezing or coughing.
  - More common with older women.
Voiding dysfunction

- **Voiding Dysfunction:**
  - Symptoms include -
    - Incomplete empty
    - Poor stream
    - Hesitancy
    - Going back straight away
    - Post-void dribble
    - Frequency
Faecal Incontinence

- **Faecal incontinence**: Complaint of involuntary loss of faeces (liquid, solid)
  - Overall prevalence 3-17%.
  - NB: Some women only incontinent of flatus & this comes under the umbrella of ‘anal incontinence’

- 1/3-2/3rd of women with a recognised 3rd degree tear will subsequently suffer FI (Dodding et al 2008)
Faecal incontinence:

- 31% of women with UI may also suffer fecal incontinence. (ICS 2006, De Wachter)
- But, not everyone will tell their doctor about it- Only 1/3rd will do so. (Waiter ICS 2006)
- Other anorectal problems include: faecal urgency, constipation & defecation difficulties.
Pelvic Organ Prolapse

Prolapse of the anterior vaginal wall:
- The bladder (cystocele)
- The urethra (urethrocele)

Prolapse of the posterior vaginal wall:
- The rectum (rectocele)
- The small bowel (enterocele)

Prolapse of the top of the vagina:
- The uterus
- The vaginal vault
Uterine Prolapse

- **Grade I**: most distal portion of prolapse is more than 1cm above the level of hymen
- **Grade 2**: most distal portion 1cm or less proximal to or distal to plane of hymen
- **Grade 3**: Most distal portion is more than 1cm below the plane of the hymen
- **Grade 4**: complete eversion
Cystocele
Rectocele
Prolapse (1):

Symptoms may include:

- Dragging sensation or heaviness into the pelvic floor
- Low back pain/ache
- Difficulty passing a bowel motion
- Difficulty with tampon insertion/use
- Urgency to pass urine
- Vaginal discomfort / dysparenuia
- Anal itching or mucous discharge

General fatigue
Prolapse (2)

- 50% of parous women will have some degree of prolapse. Only 10-20% ever seek help. (Hagen et al 2004, Hansen 2009)
- Is associated with UI and FI
- 10% of women will undergo surgery at some point in their life for POP (Olsen 1997)
- In the US >200,000 surgeries each year for POP & re-operation rates as high as 29% (Gerten et al 2008)
What else is associated with PFD?

- Pelvic Pain
  - Chronic Pelvic pain is complex & prevalence in is around 24% (Zondervan et al 1998)

- Back Pain
  - LBP and UI are related.
  - Women with UI are significantly more likely to report LBP
  - LBP increases the risk of developing incontinence (Hodges et al 2007)

- Sexual Problems (dypareunia, vaginismus)
Common symptoms of PFD –

Common signs of PFD that may be related to **Muscle weakness:**

- Leaking when coughing, laughing, sneezing, lifting or exercising
- Difficulty controlling wind or bowel motions
- Rushing to the toilet for fear of leaking (urgency) or leaking before you can get there
- A bulge of dragging inside or at the entrance to the vagina
- Decreased vaginal sensation and orgasm
Symptoms of PFD -

Common signs that may be related to over-active/high tone pelvic floor:

- Straining to pass urine, feeling like unable to fully empty bladder
- Constipation, straining, haemorrhoids
- Pelvic pain
- Painful intercourse

**NB:** Other factors can be the cause of these symptoms also, so need to be seen by a health care professional.
Impacts of PFD - Physical

- **PHYSICAL:** Leaking, pain, UTIs, odour, skin infections, discomfort, weight-gain.
- **Withdrawal from sports and activity:** Chronic cycle can be hard to break.

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Impacts of PFD - Social

- SOCIAL:
  - embarrassment
  - loss of self-esteem
  - depression
  - sex life
  - ability to work, travel
  - participation in sports and family life
  - social isolation
  - withdrawal from many activities
Impacts of PFD: Depression

- Decreased QOL in women leaking urine. (Chiarelli 1999)
- Women with moderate to severe UI are at increased risk of major depression (Melville 2005)
- 38% of women reported overall dissatisfaction with sexual function after hysterectomy and prolapse surgery (Rogers)
- 30% of women (aged 18-44) with UI suffer from depression, compared to 9.2% of those without UI (Vigod et al 2006)
Economic impacts

- Estimated cost of incontinence is $8.05 billion per annum.
  - Burden of disease $4.68 million
  - TOTAL cost of $12.73 billion per annum (The financial costs of incontinence in NZ, NZCA 2011)

- Approximately 1.08 million live in the community and 25,300 in aged residential care.

- Prevalence expected to rise to 1.27 million in 2030.
RISK FACTORS: Age

- **AGE: Is the most cited factor associated with incontinence**
  - Study (over 40,000 women): Young (18-23 yrs), prevalence 12.8%, mid-age (45-50 yrs) 36.1% and Older (70-75 yrs) 35% (Chiarelli et al 1999)
  - While UI increases with age, the increase occurs earlier for women than men.
  - Younger women are more likely to experience SUI (AIDAD 2006)
  - Age >35 years is significantly associated with UI PP (Wesnes 2009)
RISK: Sex (being Female!)

- Both UI and FI are commonly associated with **pregnancy and childbirth**
- Parous women are much more likely to experience UI than nulliparous women *(Chiarelli 1999, Foldspang et al 1992)*
- UI starting before or during pregnancy has been found to be an independent risk factor for UI post partum *(Wilson et al 1996, Burgio et al 2003 & Eason et al 2004 and Wesnes et al 2009)*

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RISK: Pregnancy, Childbirth or Parity?

- PREGNANCY:
  - Extra weight on the pelvic floor -> weakens
  - Hormonal influences – soften structures
  - Prevalence varies, but UI among pregnant women has been shown to be up to 64% (Chiarelli)
    - Supported by Wesnes (2009), approx 60% incidence - with all of these women being continent (dry) before pregnancy!
Pelvic floor trauma (2)

Risk factors for 3\textsuperscript{rd}/4\textsuperscript{th} degree tears:
- birth weight over 4 kg (up 2%)
- persistent occipitoposterior position (3%)
- nulliparity (4%)
- induction of labour (2%)
- epidural analgesia (2%)
- second stage longer than 1 hour (4%)
- shoulder dystocia (4%)
- midline episiotomy (3%)
- forceps delivery (7%). RCOG Guidelines
RISK: Pelvic floor trauma?

- Between 1/3 & 2/3rds of women who sustain a 3\textsuperscript{rd} degree tear will suffer subsequent faecal incontinence (Dodding et al 2008)
- Incidence of 3\textsuperscript{rd}/4\textsuperscript{th} degree tears from 1\%--11\% (RCOG, Sultan 1997)
  - Increasing to 24.5\% on review (Andrews et al 2006).
  - And 36\% (with endo-anal ultrasound) (Faltin et al 2000)
RISK: Is it the process of Birth?

- **Is it giving birth?**
  - Large variation of pregnant women experience UI post-natally, 3-38% (Dumoulin 2006)
  - Recent Norwegian cohort (12,679 primips), UI reported by 31% of women 6/12 after delivery. (2009 Wesnes et al).

- **Or how many babies?**
  - Some studies have shown evidence that women with multiple pregnancies (four or more) are at an increased risk of PFD.

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RISK: What about Caesareans?

- Less UI with delivery by C/Section – partially protective?
- 3 time more likely to develop UI post SVD
- But around 14% of women undergoing C/section still report PP UI
- Still need pelvic floor muscle training post c/section – they have been pregnant and there core muscles have been cut & sutured
RISK: PFD @ 3 mths post-partum

- UI remaining 3/12 post delivery very high risk of long-term symptoms persisting. (Viktrup 2002)
- 31% reported UI at six months post delivery (12,679 primips, Wesnes 09)
- FI 11-15% PP
- Dyspareunia 15% (Morkved & Bo 99)
RISK: Overweight/Obesity

- More than half of all adult New Zealanders are overweight/obese (NZMJ 2004, NZ health survey 2007-08)
- Association b/w an increased BMI and development of UI
  - Higher maternal pre-pregnant BMI is a risk factor for SUI before pregnancy & for onset during pregnancy
  - Weight reduction was associated with remission of UI (Brown 2009 & Fritel et al 2009)
- Added risk of other chronic morbidities: CVD, HT, IHD NIDDM and many cancers
RISK: Obesity & larger waists

- Increased maternal weight (BMI) in pregnancy is an independent risk factor for SUI (Diez Itza et al 2009 and Wesnes 2009)
- Increased waist measurement (larger waist-hip ratios) may be a more sensitive measure of a higher risk of PFD (Brown et al 1999)
- 12 years post delivery UI was associated with lifestyle factors (over-weight, sports etc) & not obstetrical factors. (Fritel 2009)
RISK: Constipation

- Constipation is associated with:
  - pregnancy & menopause
  - Urinary and Feecal incontinence (Chiarelli & Brown 1999 & Diokno et al 1990)

- Chronic or repeated straining on the toilet may cause PF muscle/ligamentous weakness &/or prolapse

- Treatment of constipation may significantly reduce severity of incontinence (Chassagne et al 2000)

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Men who undergo prostatectomies are particularly susceptible to Urinary Incontinence.

- Risk doubles for every 10 years of age (Catalona et al 1999)

Hysterectomies and prolapse repairs may also increase risk of UI in women (Chiarelli 1999)
RISK: Ethnicity & Genetics

- ↑ risk of UI for Maori (47%), compared with 34% (Lara 1994)
- ↑ risk of UI for Asian & Caucasian women compared to African
- ↓ collagen present in pelvic fascia of women with PFD (Jackson et al 1996, Rechgerger 1993)

Joint hyper-mobility correlates with an increased risk of prolapse
  - 84 % with joint hyper-mobility had severe prolapse (Al-Rawi et al)
Risk – Genetic predisposition?

- Lower Hydroxyprolène (component of collagen synthesis) - 40% lower in women with PFD compared to controls
- Changes in elastin proteins in prolapse patients (Yamamoto 1997)
- Familial risk – RR to siblings of affected patients was 5 times that for general population (Jack et al 2006)
RISK-Coughing, lifting, straining

- Chronic coughing (asthma, bronchitis, smoker’s cough) increases the risk of SUI & prolapse
- Heavy lifting & straining can create a downwards pressure on the pelvic floor
- Occupational risk of certain jobs
  - Midwives & fitness instructors could be at an increased risk due to occupational hazards
RISK: High impact exercise

- Many exercises will place more stress on the pelvic floor: Sit-ups, crunches, curl ups, star jumps, lifting heavy weights, running, skipping, boxing & sports with both running & rapid direction change (netball, basketball, hockey, football etc)

- Most gym equipment & main-stream exercise classes are not designed for PF protection

- Women exercise alongside men, often lifting heavy weights on similar equipment
RISK: Pressure to be thin!

- Un-relenting media pressure
- Even in the sporting world – what makes a good role model?
- Self imposed pressure (type “A” personality)
  - “Stepford Wife” syndrome!
- Where have we gone wrong?
  - *It appears self esteem is more closely linked with being thin rather than healthy*
Urinary Incontinence (The Facts!)

- Very common, women more than men
  - 1/3rd have UI and 1/10th FI after childbirth
- It is common, but it is not “normal”
- It is embarrassing – can lead to withdrawal
- Lots of misinformation – confusion!
- Advertising often misleading – A pad will NOT solve everything
- Women are birthing larger babies, later in life – with increased pressure to be thin...Not a good prognosis for the Pelvic floor!
Pelvic floor exercises – Do they work?

- PFMT is proven by systematic reviews of literature “Strong evidence”
- PFMT should be offered, as first line therapy, to all women with stress, urgency or mixed urinary incontinence
  - Level 1a evidence Grade A recommendation (Abrams et al 4th ICI 2009)
- Multi-centre study in Australia found that 84% of were cured of SUI with Physiotherapy treatment (Neuman 2006)
The evidence for PFMT…

- Many women actually perform exercises incorrectly - 23% ->30 % of women! (Thompson 2007, Bump 1991)
- One study found 43% were bearing down (Thompson 2003)
- Incorrect technique can increase downwards pressure on pelvic floor
- Repetitive practice of incorrect exercises can make SUI worse (Thompson, 2007, Bo & Sherburn 2003)
What about Surgery?

- Comparable to surgery – Colposuspension cure rate at 2 years 51% & TVT at 63% (Hilton 2004)
  - 881 procedures for SUI in NZ in 2007-08 (increasing from only 696 in 2004-05)
  - Price of procedure $5,554.04 & $4.89 million spent annually
  - High re-operation rate: Up to 29% for POP (Gerten 2008)

- Physio. cost average of $302.40 while surgery can cost up to $6124 (Neumann, 2006)
PFM strength & surgical failure rates

N=358, mean age 61y, median follow-up period 5 months. PFM strength correlated most strongly with: recurrent incontinence & additional surgery

Acknowledgment: Vakili et al
AmJO&G 2005

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What post-natal education is available in NZ?

- Most no longer provide post-natal classes

- 20 DHB’s contacted with email/phone survey:
  - Currently only one private hospital (Auckland) offers PN classes – the other 19 hospitals don’t
  - Most cited lack of staff training, resources and funding as the reasons
  - Some have access to private community classes

- 10 hospitals offer ward physio for variable conditions such as C/S, perineal trauma
- Only Timaru has 1 on 1 physio for every woman (on weekdays!)
Evidence is only useful once imparted!

- Strong evidence for effectiveness of PMFT
- Many risk factors are increasing (obesity, larger babies, having babies later in life etc)
- But, is education decreasing?
- Many women don’t have access to post-natal education
- Incorrect information is very common – media, google
- With an increasing, ageing population, our Nursing homes are likely to become very wet places!
What are we teaching?

- Not enough (We know PFMT works)
- It isn’t enough to just ask women if they are doing PFEs
- Need to ask specific questions to ensure understanding:
  - Have you ever had/or are you currently leaking urine?
  - Do you have any concerns about your pelvic floor? Do you know where it is?
  - Are you doing Pelvic floor exercises? How?
Midwives can make a difference!

- Many communities are isolated with limited access to specialist physiotherapy & continence advisors

- Midwives are ideally placed to educate & teach PFExs

- The best time is during pregnancy, ideally before problems start
  - The odds of women being continent at 12 mths PP was highest for those practicing daily PFExs (Chiarelli 2004)

- Anecdotal evidence suggests some midwives may lack confidence/recent training in giving this advice
And so can physiotherapists….

- Most women (2/3rds) won’t talk to a health professional about their problem
- Physiotherapists often spend longer with their patients than GPs
- An opportunity to ask questions about Pelvic floor function during assessment:
  - Educate those at risk
  - Discuss & teach pelvic floor exercises
  - Exercise programming & modification
  - Early referral to a women’s health physiotherapist as necessary
Ante-natal PRMT for prevention?

- **Antenatal preventative PFMT?** - Single blind RCT in 301 primips, doing PFMT b/w 18-36 weeks gestation
  - PFMT: individual instruction, palpation, observation, strength measurement, group training 1/week, 8-12 close to maximal contractions twice a day at home, training diary, 12 weeks
  - Control: individual instruction, palpation, observation, strength measurement, customary information
Ante-natal PRMT for prevention?

- RESULTS:
  - lower rates of incontinence in the PFMT group (33% compared to 47%) at 36 weeks, & at 3 months PP (20% PFMT) compared to 31%
  - Also stronger PFM at both 36 weeks & 3 months PP (Morkved et al 2003)

- Cochrane Review (2009), 15 RCT’s, 6181 women
  - Pregnant women without prior UI randomised to intensive PFMT were 56% less likely to report UI in late pregnancy
  - 30% less likely to report UI by 6 months PP
ANATOMY – basic review!

- **Pelvic Floor muscles** - Group of muscles that together form the floor of the pelvic outlet
- 3 openings in women: Urethra, vagina & anus
- Made up of deep muscles & superficial layers
- Functionally the muscles work as a unit
Pelvic floor - “Base of the core”

- They span the floor of the pelvic outlet – main role is support!
- Are skeletal muscle
  - Fast and slow twitch fibres
- About 1 cm thick
Pelvic floor anatomy…

Pelvic Floor Muscles

Pubic Bone

Urethra

Anus

Vagina

Coccyx (Tailbone)

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The Functions of the Pelvic floor

The main functions of the Pelvic Floor muscles:

1. Support the pelvic organs
2. Assist in maintaining continence via closure of the bladder and bowel outlets
3. Contribute to sexual arousal and function
Function: support for the pelvic organs

THE BOAT THEORY

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Pelvic Floor Exercises - Practical

- Basic pelvic floor practice
  - Cough test
  - Cueing to help isolate the pelvic floor
- More after lunch!
LUNCH BREAK

30 minutes please!
How to teach Pelvic floor exercises

- Isolate first & then train!
- Start with a comfortable position – sitting or side lying ensure **neutral spine**
- Relaxed breathing & abdomen important
- Lift & squeeze inwards & upwards –
  - As if trying to stop a wee. Hold 3-4 seconds & then relax

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Teaching pelvic floor exercises (2)

- Feels like a gentle vaginal, urethral lifting:
  - “like you are trying to stop a wee” “lift & squeeze in and up”, “imagine you are trying to stop wind escaping”
- Mental cues: Imagine drawing a tampon upwards
- Important to feel “relaxation” to allow for recovery
- Post-natally may be bruised, swollen, have decreased sensation & fatigue quickly. May only “flicker” to begin with
- Reassurance to keep practicing!
Pelvic floor motor control - Cortex

- Use it or loose it is true! - If you don’t use a certain part of your body then its representation in the brain (SMA) will be diminished
- Focused attention is important
- Fear is one of the limitations to human performance - Need to decrease anxiety
- Practice is most important element in MC
- Practice must eventually become “functional”
TIPS for pelvic floor success!

- May notice that lower tummy flattens/tenses slightly this is normal
  - Co-contraction of Transversus with PF
- Important to keep breathing
- Spine should stay still
- Everything above navel should stay still
- Thighs and bottom relaxed – no letting the other muscles help out!
Correct vs incorrect pelvic floor

PF CONTRACTION – A

**Correct action**
The pelvic floor lifts, the deep abdominals draw in and there is no change in breathing

**Incorrect action**
Pulling the belly button in towards the backbone and holding your breath can cause bearing-down on pelvic floor

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Pelvic floor - How many? How often?

Research varies as does expert opinion BUT:

- A good **starting point**:
  - Lift & hold 2-5 seconds/relax rest 2-5 seconds
  - Repeat 5-10 times
  - Do this 3-4 times/day
  - Aim for quality not quantity

- Gradually progress by increasing hold time/repetitions

- Also progress positions: lying->sitting->standing->functional positions
What does research tell us?

- Difficult to prescribe accurately without examination of individual muscle strength
- Recommendations for **strength training**:
  - 8-12 slow velocity close to maximum contractions (as strong as possible with good form)
  - 3-(4) sets/day
  - 2-3 (4) days/week \(\rightarrow\) encourage daily
  - 5-6/months
- Specificity: Need to take the effects of gravity into consideration.
Morphological muscle changes

- RCT (n=109), by Braekken et al:
  - Difference between the PFMT group & control
    - ↑ Muscle thickness (1.9mm) 15.6%
    - ↓ Hiatal area (1.8cm²) 6.3%
    - ↓ muscle length (6.1mm) 4.2%
    - ↑ position of the bladder neck (4.3mm)
  (Braekken et al 2010)

Does dec. hiatal area and muscle length with straining indicate automatic function of the pelvic floor?
Pelvic floor – How long?

- Strength training 4-6 months
- To maintain strength gains:
  - Do exercises 3-4 times/week
  - Use the “knack” – to protect & functionally strengthen the Pelvic floor
  - e.g.: every time lift the baby, stroller, nappy bag, groceries, cough, sneeze etc -> lift in & up and hold
- Continue with regular exercise to improve/maintain general fitness
  - Walking, biking etc

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Having problems? Not sure?

- Could offer to have a look at perineal region (should be able to see a drawing inwards of the anus, vagina).
  - Should NOT be any downwards movement

- If no movement/incorrect action after some coaching/visualisation, then refer to a women’s health physiotherapist/continence service for specialist assessment & Rx.
And what about the abdominals?

- The Rectus abdominus is the most superficial
  - From the sternum to the pubic symphysis
- Main action is to flex the trunk i.e. as in a ‘sit-up’ or ‘crunch’
- Large focus on this muscle previously – but changing!

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Abdominals - Obliques

- Beneath lie the obliques muscles
- The External obliques assist with rotation of the trunk
- Cough/constipation muscles – feel them when you cough
Internal Obliques

- Internal obliques lie deep to the EO
- Work with EO to rotate the trunk
- Work with Transversus abdominus also helps to stabilise the spine
The Transversus Abdominus

- Deepest is Transversus Abdominus (TrA)
- Runs horizontally around the abdomen, inserting into connective tissue at the back
- Acts like a “corset” to support the lower back
- Activates prior to movement of the limbs or trunk to increase stability of the spine

Hodges 2007
What is the core?

The “core” has four parts:
- The diaphragm (lid)
- The TrA (front)
- The PF (floor)
- Multifidus (back)

- Acts like a cylinder of stability for the trunk region
- The “Core” is the foundation for further movement
Main factors affecting the Core:

DEEP ABDOMINALS
- Surgery (c/section)
- Pregnancy
- Hernias
- Digestive problems?
- Posture

THE DIAPHRAGM
- Chronically slumped posture
- Lack of CV fitness
- Respiratory illness
- Stress/Anxiety
- Military abdominal holding

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Factors affecting the Core:

**DEEP BACK MUSCLES**
- Poor posture
- Spinal pain or injuries (e.g.: disc bulge)

**PELVIC FLOOR**
- (vaginal birth, menopause, constipation etc)

‘In the presence of back pain and injury, the muscles that help maintain alignment are inhibited and may need specific one-on-one re-training to reactivate these muscles and then integrate them into normal movement.’

(Hides et al 2001 Hodges et al 1996)
What is good posture?

In standing:

- Think tall, shoulders relaxed, chest slightly lifted and open, arms relaxed by side
- **Neutral spine** (natural S curve), even weight through both legs
- Should feel easy and NOT rigid
- Remember: the core & pelvic floor will work best with good spinal posture
Retraining the deep abdominals –
Alignment First!

The benefits of good alignment/posture:
• Spinal joints & ligaments have the minimal strain exerted on them
• Muscles can work from the most effective, efficient position
• Injury, pain and muscle imbalance are minimised
• If correct alignment is maintained throughout movement then your core will automatically be switched on (McGill)

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Let’s look at different postures:
- Standing
- Sitting

How does pregnancy affect posture?
Breathing next

Relaxed breathing is important for teaching activation of the core muscles

1. Sitting on the edge of a chair/swiss ball – ensure **neutral spine**
2. Take a slow breath in “breathe in to your tummy”
3. Repeat 3-4 times
   • Can place the hands on the tummy to feel the movement. Shoulders/upper chest remain relaxed.
Core activation

- With established alignment & relaxed breathing we can now activate the core!
- On the out-breath imagine you are gently drawing your pelvic floor muscles up into the body & gently flattening the lower tummy
- Continue to hold this gentle contraction as you keep breathing for 4-5 breaths
- Relax & repeat several times
Core activation: No tensing or bracing!

- Correct activation of the deep core musculature does not involve bracing, hardening or tensing the abdominal wall.
- Nor is it sucking or pulling in the abdominals or causing the abdominal wall to become rigid or bulge outward.
- If this occurs you are over-using your outer muscles (global) and not the inner (local) muscles.
- It is very subtle and does take practice!
TO REVIEW: A.B.S!

- A= ALIGNMENT - neutral spine or gentle curve in the lower back
- B: BREATHING - slow, controlled – lower ribs expand on in-breath
- S: SUBTLE - pelvic floor lift & lower abdominal flattens towards the spine on the out breath
Rectus Abdominus Diastasis

- A separation of the Rectus Abdominus muscles at the linea alba
- Common during mid-later pregnancy
- Occurs in 35-62% of pregnancies
- May range from 2-3 cm to a large 12-20 cm separation, commonly seen at the level of the umbilicus
- Can also occur in over-weight men
RAD – risk factors

- More common in:
  - multiple births
  - multi-parous
  - higher weight gain/BMI

- Associated with back pain & PFD

- Prolapse, stress and faecal incontinence later in life are associated with RAD
RAD – How to check

- Lie supine with feet on the floor & the knees bent
- Place your two fingers (lengthways) on the stomach just below the navel
- Inhale, exhale and have the client raise her head just off the floor
- Press fingers in to the abdomen.
  - If there is a gap the fingers will sink into the cavity – feel for ridges on either side of the fingers
What is normal?

- 1-2 fingers width soon after the birth is common and should tighten over time with some self help advice & modifications to exercise
  - No sit ups, Gentle TABS, log-rolling
- 3 or more fingers gap means would benefit from referral to a women’s health physiotherapist for management

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Advice for women with RAD

Avoid:

- Any activity that causes an obvious “doming” of the abdominals
- Sit-ups, crunches & double leg lifts
- Pilates exercises with neck/trunk flexion (e.g: 100’s exercise)
- Heavy lifting or housework
Advice for women with RAD (2)

To protect:
- Wear extra abdominal support e.g. tubigrip/boob tube/firm fitting top
- Support the abdomen with sneezing, coughing
- When getting out of bed, roll on to one side, then lift the pelvic floor & pull in the lower tummy (log roll)
- Hold this as you push yourself up to sitting with your hands

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The post-natal woman..

Post-natal women commonly have:

- Weakened abdominals (stretched, +/- RAD)
- Weakening of Pelvic floor
  - SUI up to 38%
  - FI in 11-15%
- Increased fatigue
- Poor posture
- Ongoing increased joint/ligament laxity

- These factors mean an increased injury risk
- EDUCATION is vital & Midwives (& physios) are ideally placed to impart this knowledge
Post-natal advice – Pelvic Floor

- EDUCATE about the RISKS
- The first 3 months are vital for pelvic floor protection
- REMEMBER: ↑ risk with Instrumental delivery, long 2nd stage, perineal trauma
- EARLY PELVIC FLOOR MANAGEMENT:
  - Control swelling & pain first
  - Protect the PF by preventing straining (important not to become constipated)
  - Teach basic pelvic floor & abdominal anatomy
  - Then teach how to locate & strengthen the PF & Core
Discuss common signs of Pelvic floor problems:

- Leaking urine with cough, laugh, sneeze, lifting, exercise
- Difficulty controlling wind or bowel motions.
- Rushing to the toilet for fear of leaking (urgency) or leaking before you can get there (UI)
- A bulge of dragging inside or at the entrance to the vagina (likely prolapse)
- Difficulties emptying the bladder or bowel
- Decreased vaginal sensation or sexual pain/difficulties
Post-natal advice – Safe return to exercise

- Unfortunately no GOLD standard
- Importance of slow, gradual return to sport
- AVOID high impact activities for a minimum of 4-6 months (running, jogging etc).
  - Or until sure the Pelvic floor & core are strong again
- Avoid lifting/pushing more than the pelvic floor can cope with
- Avoid sit ups during pregnancy and after delivery
- If any symptoms of incontinence or prolapse then see a health professional
- Remember in most cases with the correct programme women can expect excellent results!
EXERCISE & the pelvic floor

- Sit-ups can be dangerous – WHY?
- Because an increased IAP can affect the pelvic floor
- It is all in the Physics!
How does IAP affect the pelvic floor?

- The trunk is a sealed pressurised elastic cavity.
  - Pressure is equal throughout (Pascal)
  - Capsule wall tension varies according to the radius of the capsule

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How does IAP affect the pelvic floor?

- **Example: sit up** – the radius changes and the pressure on the PFM increases (PF is overpowered by the abdominals)

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Certain exercises increase the pressure on the pelvic floor.

Doing sit ups or lifting heavy weights puts downward pressure on the pelvic floor.

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Exercises to avoid for at risk clients

- Certain exercises place more stress on the PF, ↑ the IAP which pushes down on the PF.
- As a general rule **high impact/intensity** exercises e.g: star jumps, heavy weighted deep squat, crunches, double-leg lifts.
- Advise patients to monitor their pelvic floor whilst exercising to make sure that it isn’t dropping or pushing down.
Cardio exercises to avoid:

- Running, jumping, star jumps, skipping, boxing, high-impact classes that involve running & jumping, plyometric training
- Classes such as boot camp or cross (X) fit
- Sports which involve stop-start running & rapid direction changes (netball, basketball, hockey, touch, tennis)
- RPM (cycling to music): Avoid heavy resistance or going too hard
- Be careful with rowing machines (in the gym)
Resistance exercises to avoid:

- Traditional abdominal exercises: sit-ups, curl-ups or crunches, double leg lifts, machines, medicine ball rotations
- Deep lunges or side lunges, wide legged or deep squats, jump squats. Especially with heavy weights
- Lifting or pushing heavy weights, lat pull down with heavy weights
- Dead lifts, high bench step ups, exercises with both feet off the ground (chin ups)
- Full push ups
- Reclined, seated double leg press
- Any exercise where there a direct downward pressure on the pelvic floor is felt
What about Pilates?

- Large variation in training/methods
- 26% of Pilates/Yoga instructors report UI (Bo et al 2011)
- Pilates & Yoga exercise without PFM contraction descended bladder neck by 0-17mm (Basseler et al 2010)
- Culligan et al (2010) compared 2 groups (following vaginal palpation and assessment):
  - one hour individual sessions (twice weekly) of pilates
  - with one hour (twice weekly) PMFT (biofeedback, manual therapy, neuromuscular re-education, massage)
  - No difference b/w groups with PFM strength!
What are fitness professionals in NZ taught about the Pelvic Floor?

- Very fragmented industry
- Large industry training variability in NZ
- There is no standardisation over what is taught/covered
- Some courses the PF is covered in basic detail, in others it is not even mentioned
- Thus you cannot assume that a personal trainer or gym instructor will address a women’s pelvic floor concerns
Post-partum return to exercise guidelines

- First few days:
  - Gentle PFEs & deep abdominal exercises. Good posture while feeding. Log roll if RAD or C/Section. Sleep and rest as much as possible. Prone lying is great for a sore perineum

- First week:
  - PFEs & deep abdominals. Avoid lifting more than baby. (For 6 weeks with a c/section) Gentle activity only. Sleep and nutrition very important

- 2-6 weeks:
  - Graduated return to gentle walking with ongoing core/PF exercises. Protection phase ongoing
PP return to exercise (2)

- 6-8 weeks:
  - Continue PFE/core exercises. Post-natal exercise DVD (Gentle) Emphasis still on slow-controlled core retraining. May start swimming following 6 week check & once bleeding stopped

- 10-12 weeks:
  - As above. May be ready for PN class or aqua exercise. Walking

- 4-6 months:
  - Basic Fit ball exercises, walking, gentle pilates, Tai Chi, swimming. Light upper body weights. Continue with core/PFEx. Only progress if no PF symptoms or pain

- NB: If any ongoing symptoms then refer to a women’s health physiotherapist

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6-12 months:
- Return to light gym, Yoga, pilates, squats, low impact class. Be aware of PF control. Gradual return to jogging/previous sports if good core/PF control

12 months and beyond:
- Gradually increase intensity and weights. Focus always on quality & pelvic floor control

EVERY WOMAN is different! Faster is not necessarily better – likely to do more damage

Encourage women to monitor their pelvic floor as they progress any exercise
Special Populations: young women!

- The young woman: Not just childbearing women leak urine!
- Canadian study (n=332) 17% SUI 15% UI
  - 38% occasional minor faecal incontinence
  - 92% loss of flatus, 1% nocturnal enuresis (Alnaif 2001)
- Estimated 20,200 NZ’s (8-17 years) with UI
- Around 10% of seven year olds wet the bed at night, 2-3 % during the day (Von Gontard et al 2001)
The Menopausal woman…

- Onset around 50 years– (wide variation 40-60 years)
- Lower oestrogen can cause mucosal thinning & decreased vascularity in the urethral tissues –> atrophy & reduced urethral closure. (Bernstein 1997)
- SUI may also worsen during the cyclical progesterone phase of HRT
- An increased occurrence of UI and voiding dysfunctions
- Other contributing factors: increased relaxin, decreased muscle firmness, dehydration from hot flushes, weight changes, postural changes, increased UTIs, effects of hysterectomy, prolapse, etc.
But….Age is no barrier!

- Combination of PFMT & lifestyle changes can address many of these problems
- A continence practitioner might look at:
  - decreasing caffeine/alcohol, improving fluid intake, weight & exercise support, constipation, defecation techniques, potential need for vaginal oestrogen/lubrication
- Also, PELVIC FLOOR muscle training
  - Women of any age can learn to locate and strengthen their pelvic floor
Men

Certain men are more at risk:
- Those that have undergone treatment/surgery for prostate cancer eg: TURP
- History of LBP
- Chronic cough
- Overweight/obese
- Frequently lift heavy weights
- Elite athletes.
- And: 11.5% of healthy men were unable to contract their PFM (Scott et al 2010)
What about Athletes?

- Certain competitive sports place increased stress on the PF & are linked with SUI
- 80% elite trampolinists et al (Eliasson K et al 2002)
- 28 % of all athletes reported UI during their sport:
  - 67% of gymnasts
  - 66% of basketball
  - 50% tennis
  - 42% hockey
  - 29% track
  - 10% swimming
  - 9% volleyball
  - 6% softball
  - 0% golf
  (Nygaard et al 1994)
NZCA SCREENING tool

Pelvic Floor Screening Tool

Did you know that bladder and bowel control problems are a common issue, affecting over 4 million Australians? Did you know that women are at higher risk of these problems due to pregnancy, childbirth and menopause – and that certain exercises can cause or worsen these problems?

This survey has been designed to see if you are at risk of pelvic floor problems, and if so, to make sure your exercise program is pelvic floor safe. The survey will take 5 minutes to complete and your answers will be confidential.

Pelvic Floor First

<table>
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<tr>
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If you answered ‘Yes’ to any of these questions it is important to discuss a pelvic floor safe exercise program with your fitness professional. If you experience any of the symptoms outlined in the second part of the survey, it is also important to speak to your doctor or a continence professional – as many of these symptoms can be treated, and in many cases cured.

For further information, including free brochures and the details of local continence professionals, contact 1800 33 85 66.

Protect your pelvic floor and stay in control. Visit www.pelvicfloorfirst.com.au

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Screening tool....

- CFA identified a need for easy to use screening tool
- The tool will help to:
  - Identify those at risk of pelvic floor dysfunction
  - Identify clients that may need pelvic floor safe exercises
  - Identify when to refer on to a health professional
- Brief explanation on incontinence statistics at the top
- To see “If you are at risk of PF problems?”
- To “Make sure your programme is Pelvic Floor SAFE”
- Ask the client to fill it in and then go through it with them
- Ensure confidentiality
PRACTICAL – Using the screening tool!

- Break in to pairs for this activity
- Practice is vital to become confident discussing these issues
What are pelvic floor safe exercises?
Pelvic floor safe exercises - Cardio

- The following cardio exercises should be suggested for clients ‘at risk’ or PFD or those that are symptomatic:
  - Walking, swimming, seated cycling (low resistance), low intensity water aerobics, water walking, low impact exercise classes
- NB: While these exercises are considered “Pelvic floor safe” you also need to consider the time spent exercising & your client’s fatigue level
Pelvic floor safe resistance exercises:

- Seated exercises e.g bicep curls, shoulder press, knee extensions
- Dumbbell exercises on a swiss ball
- Dumbbell tricep exercises (one arm & leg propped on a bench)
- Shallow and narrow leg squats and forward lunges
- Shallow swiss ball wall squats
- Prone leg curls, pec deck, dumbbell row
- Swiss ball press/supine bench press
- Floor bridge and wall push ups
But Remember:

Even with Pelvic floor safe exercises, you still need to consider the number of repetitions, weights lifted, number of sets, length of rest and your client’s fatigue level.

TIP: remind clients to monitor their PF & look for any downwards movement indicating further modification is needed.
Other ways to modify a client’s programme (to keep it safe!)

- Sitting on a swiss ball, bench to support the pelvic floor while using hand weights
- Use seated equipment with adjustable weights
- Using lighter weights
- Reduce the level of the abdominal programme – teach gentle deep core activation instead (try hands & knees, sidelying etc)
Keep it Pelvic floor safe (2)

- Reduce the dept of squats and lunges—only go as deep as they are able to control the pelvic floor
- Keep a relaxed upright posture (neutral spine) and use slow controlled movements
- Exhale (breath out) with effort and engage the Pelvic floor while doing this
- Slow down and focus on what the pelvic floor is doing
When to refer on?

- Any client with a pelvic floor problem (symptoms) should be referred on to their GP or a specialist continence practitioner/women’s health physio

- Symptoms (review):
  - Any leaking of urine
  - Rushing to go to toilet – or not making it in time
  - Constantly needing to go all the time
  - Difficulty emptying the bladder/bowel
  - Accidentally loosing control of bowel or wind
  - Prolapse symptoms
  - Pelvic pain

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Where to get professional help

- For a list of practitioners in your region visit [www.continence.org.nz](http://www.continence.org.nz) or phone the NZCA on: **0800 650 659**
  - You will need a GP referral to access public services

- Physiotherapy New Zealand website: [www.physiotherapy.org.nz](http://www.physiotherapy.org.nz) Click on: Find a Physio and then add your location & select continence & women’s health physiotherapist.
  - You don’t need a GP referral to see a private women’s health physiotherapist.
Other Resources:

- Pelvic floor first website:
  - www.pelvicfloorfirst.com.au
- NZCA has lots of informative flyers:
  - www.continence.org.nz
Useful NZCA information flyers...

- Protect your pelvic floor & stay in control
- Bladder Control Problems in Women
- Good Bladder Habits for Everyone
- Bladder Retraining
- Pelvic Floor Muscle Training in Women
- Pelvic Floor Muscle Training for Men
- Continence & the Prostate - Prostate Surgery
- A Healthy Bowel
- Booklet: '1 in 3 Women Who Ever Had a Baby Wet Themselves'

To order a free copy of the Brochures call 0800 650 659. For larger orders please email zoe@continence.org.nz for a order form.

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