PELVIC FLOOR REHABILITATION IN WOMEN UNDERGOING PELVIC FLOOR RECONSTRUCTIVE SURGERY:
a double-blind randomized controlled clinical trial

DR CORLIA BRANDT
OUTLINE

• Introduction and motivation
• Aim
• Methodology
• Results
• Discussion
• Conclusion

Declaration of interests - none
INTRODUCTION

Local stabiliser

Global mobiliser

Global stabiliser

Controversial evidence
INTRODUCTION

URINARY and FECAL CONTINENCE/PELVIC ORGAN PROLAPSE

Intrinsic urethral closure system/EAS

Motor control factors

Musculoskeletal factors

Lumbo-pelvic stability system

Structural systems

URINARY and FECAL CONTINENCE/PELVIC ORGAN PROLAPSE

BEHAVIOURAL FACTORS

MODIFIABLE FACTORS

INTEGRATED CONTINENCE AND PELVIC SUPPORT SYSTEMS

A NEURO-MUSCULOSKELETAL PERSPECTIVE

Articular

Connective tissue

Myofascial

Neural
PELVIC ORGAN PROLAPSE – A QUALITY OF LIFE DISEASE

POP - a disease of QOL

Symptoms and signs - Aspects of POP affecting lifestyle

A biomechanical (neur- musculoskeletal) rationale for PFD* & POP

PFM* REHABILITATION

ADDRESSING NEUROMUSCULAR DYSFUNCTION

AIMS AND OBJECTIVES

ESTABLISHING NEUROMUSCULAR FUNCTION

INTRODUCTION

PELVIC FLOOR RECONSTRUCTIVE SURGERY

Copyright of Speaker
AIM

To determine the effect of PFM training vs core stability training vs a control group pre- and post-operatively on:

Abdominal muscles
<table>
<thead>
<tr>
<th>INCLUSION CRITERIA</th>
<th>EXCLUSION CRITERIA</th>
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<tbody>
<tr>
<td>Women over eighteen (18) years of age (Norton et al. 2007:4).</td>
<td>Women suffering from neuro-musculoskeletal disorders (Jarvis et al. 2005:301), or</td>
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<tr>
<td>suspension (sacrocolpopexy), anterior and posterior Prolift or Avaulta, total</td>
<td>Pregnant women.</td>
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<td>Prolift or Avaulta, anterior and posterior repair, sacrospinous colpofixation).</td>
<td>African women.</td>
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<tr>
<td>Participants able to execute a home exercise programme based on their educational</td>
<td>Women older than 75 years.</td>
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<td>level and literacy.</td>
<td>Women with stage IV POP (exclusion for phase I).</td>
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<td>Literate patients understanding English and/or Afrikaans.</td>
<td>Women who have had more than two previous operations for correction of POP.</td>
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<td>Caucasian, Asian, and Coloured women.</td>
<td>Women not able to attend frequent follow-up assessments over a period of six (6) months.</td>
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METHODOLOGY

DOUBLE BLIND, RANDOMISED CONTROL TRIAL

- PRE-TEST: VALIDATION OF THE AFRIKAANS VERSION OF THE P-QOL (n=40)
- PILOT STUDY
  - PILOT STUDY
  - Test-retest reliability of the SF-36 (n=21 suitable for testing)
  - 100 PARTICIPANTS GAVE CONSENT FOR BASELINE ASSESSMENT
- ETHICAL APPROVAL
- PRE-TEST: TESTING MEASURING INSTRUMENTS
  - Randomisation (n=81)
  - 81 PARTICIPANTS WILLING TO BE INCLUDED IN RANDOMISED CONTROL TRIAL
- Population and sampling

GROUP ONE:
PFMT programme

GROUP TWO:
PFM AND ABDOMINAL MUSCLE TRAINING

GROUP THREE:
Control

Re-assess at three and six months
METHODOLOGY

Good validity and reliability

Measuring instruments

QOL
- SF-36
- P-QOL

PFM
- PERFECT-scale
- EMG
- Ultrasound

Abdominal muscles
- Sahrmann
- Pressure biofeedback
- EMG

Self-compiled questionnaire

Visual faces scale

Exercise compliance
METHODOLOGY

• Urinary
• Fecal
• Sexual
• Medical and exercise history

• Movement, thickness, levator hiatus, EAS
• Endurance
• Activity
• Strength

• Local and global stability/mobility
• Activity

OUTCOME MEASURES

Social, emotional, physical components

QOL

PFM

ABDOMINAL MUSCLES
### SAMPLE SIZE

#### Stage one (Pre-operative)
- **81 participants (100%)** assessed for QOL, abdominal muscle and PFM function
  - Group 1 = 24
  - Group 2 = 28
  - Group 3 = 29

#### Stage two (Three months)
- **80 participants (98.8%)** assessed for QOL
- **73 participants (90.1%)** assessed for abdominal and PFM function
  - Group 1 = 24
  - Group 2 = 28
  - Group 3 = 29

#### Stage three (Six months)
- **74 participants (91.4%)** assessed for QOL
- **48 participants (59.3%)** assessed for abdominal and PFM function
  - Group 1 = 22
  - Group 2 = 26
  - Group 3 = 26
RESULTS: PFM - ultrasonography

The median levator hiatus at rest at baseline, three and six months (n=81)

- Group 1 had significant less change than Group 2 & 3

Baseline Three months Six months

PFM Motor control Control

Groups at baseline, three and six months
RESULTS: PFM - ultrasonography

The median levator hiatus with Valsalva at baseline, three and six months (n=81)

([-10.3; -1.8]*)
RESULTS: PFM - ultrasonography

The median levator hiatus with contraction at baseline, three and six months (n=81)
RESULTS: PFM - ultrasonography

The median thickness of the perineal body at baseline, three and six months (n=81)

Groups at baseline, three and six months

Baseline Three months Six months

- Group 1: [0.5;2.2]*
- Group 2: [0.1;2.6]*

Thickness of perineal body in mm
RESULTS: PFM - ultrasonography

The median puborectalis muscle thickness (left) at baseline, three and six months (n=81)

Groups at baseline, three and six months

Baseline Three months Six months

Thickness of PR in mm

Group 1 PFM Motor control Control Group 3

Group 2

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RESULTS: PFM – Oxford (PERFECT) scale

The median pelvic floor muscle strength (Oxford) at baseline, three and six months (n=81)
RESULTS: PFM – PERFECT scale

The median pelvic floor muscle endurance at baseline, three and six months (n=81)

Group 2 showed significant more fast contractions at 6 months than group 3 (95% CI [1;6])
RESULTS: PFM - electromyography

The median electromyographic endurance of the pelvic floor muscles at baseline, three and six months (n=81)
RESULTS: PFM - electromyography

The median electromyography of the pelvic floor muscles at baseline, three and six months (n=81)
RESULTS: PFM - ultrasonography

The median anterior movement of puborectalis muscle at baseline, three and six months (n=81)

Groups at baseline, three and six months
RESULTS: abdominal muscles – Sahrmann scale

The median Sahrmann levels at baseline, three and six months (n=81)

Groups at baseline, three and six months
RESULTS: abdominal muscles - electromyography

The median EMG of the TrA/IO muscles at baseline, three and six months (n=81)

Group 2 & 3 had significant higher EMG values than group 1 at 6 months
RESULTS: abdominal muscles - PBU

The median PBU values at baseline, three and six months (n=81)

Group 2 showed significant more change than group 3 from baseline to 6 months.
## Exercise Compliance

<table>
<thead>
<tr>
<th></th>
<th>Group 1 (n=24)</th>
<th>Group 2 (n=28)</th>
<th>Group 3 (n=29)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Compliant</strong></td>
<td>62.5%</td>
<td>60.7%</td>
<td><strong>72.4%</strong></td>
</tr>
<tr>
<td><strong>Non-compliant</strong></td>
<td>33.3%</td>
<td>39.3%</td>
<td>27.6%</td>
</tr>
<tr>
<td><strong>Compliant</strong></td>
<td>75%</td>
<td>57.14%</td>
<td>55%</td>
</tr>
<tr>
<td><strong>Non-compliant</strong></td>
<td>16.7%</td>
<td>35.7%</td>
<td>34.5%</td>
</tr>
</tbody>
</table>
RESULTS: QOL – P-QOL questionnaire

The median Prolapse-specific quality of life at baseline, three and six months (n=81)

Groups at baseline, three and six months

Group 1
Group 2
Group 3
RESULTS: QOL – P-QOL questionnaire

The median general health domain at baseline, three and six months (n=81)

Percentage participants with "very good health"

Groups at baseline, three and six months

Groups at baseline, three and six months

[Bar chart showing the percentage of participants with "very good health" across three groups at baseline, three months, and six months.]
The median pelvic pain from baseline to three and six months (n=81)

Groups at baseline, three and six months
RESULTS: lower back pain - VFS

The median lower back pain at baseline, three and six months (n=81)
DISCUSSION

- Patients/adult learners
- Learning theories
- ↑Adherence

QOL
- Group 2 significant improvement

PFM
- Group 1 significant effect on changes in LH (mobility function)
- Group 2 significant improvement in low load activities

Abdominal muscles
- Group 2 significant improvement in high and low load
DISCUSSION

URINARY and FECAL CONTINENCE/PELVIC ORGAN PROLAPSE

Intrinsic urethral closure system/EAS

Motor control factors

Urethral and pelvic support system

Musculoskeletal factors

Lumbo-pelvic stability system

Structural systems

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MODIFIABLE FACTORS

INTEGRATED CONTINENCE AND PELVIC SUPPORT SYSTEMS

Nerves

Endocrine

Pulmonary

Cardiovascular

Muscle

Skeletal

SURGERY
The reason I exercise is for the quality of life I enjoy.

Kenneth H. Cooper
RECOMMENDATIONS

Screening
P-QOL, general QOL, VFS, POP-Q, PERFECT scale, manometry, US, EMG, PBU, Sahrmann scale, timing of muscle contractions, neurological assessment, screening of uro-genitourinary region

Assessment of QOL and lifestyle factors (medical, physical, environmental, social, emotional, cognitive, behavioral, legal)

Management

UPPH & lifestyle changes

Up depressive symptoms

Down comorbidities & risk factors

Prevention of POP/recurrence and lifestyle diseases

Motor control and training

Treat active, passive, & neural subsystems

Up QOL

PATIENT SPECIFIC: Home-based exercise programmes, patient education, interdisciplinary approach, patient compliance (e.g. diaries and reminders, follow-up visits), adult learning

POPULATION SPECIFIC
- Adaptations in primary health care:
  - Promotive: control over and improved health b.m.e., adult learning strategies
  - Preventative: education, screening, diagnosis and treatment
  - Curative: promote healing, motor control, NMS therapy
  - Rehabilitative: functional rehabilitation
  - Research: identify research problems

PATIENT SPECIFIC: Progressive exercises for PFM and abdominal muscle local/global mobility/stability function as applicable

ICF

RE-ASSESSMENT

Articular

Connective tissue and physiological systems

Muscle

Neural
LIMITATIONS

Prior measurement of all the muscles (PFM and abdominal muscles) might have led to a learning effect.

The improvement in participants due to the surgical intervention, might have been of such magnitude that it could obscure improvement in symptoms and signs due to physiotherapeutic intervention.

The magnitude of change in symptom severity (QOL) from pre-operative to three months post-operative due to surgery might have obscured the detection of further significant changes due to conservative intervention.
Thank You
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