Olavi Airaksinen, MD PhD
Professor of PRM, Clinical Director.
Department of Physical and Rehabilitation Medicine, Kuopio University Hospital Kuopio, Finland

Sidonnaisuudet

- **KYS fysiatrian klinikan ylilääkäri (1986), kuntoutustoiminnan vastaava ylilääkäri. kuntoutustoiminnan tulosyksikön johtaja.**

- Fysiatrian Dosentti KYO (1993)
- Yksityislääkäri Oma Lääkäri (1990) Oy/Terveystalo Oyj.
- Joukkueen vastuulääkäri Kalpa Hockey Oy.(1982-).
- Toimitusjohtaja Medsaco Oy ja Forto Oy.

- **Asiantuntija tehtäviä**, luentoja, kongressimatkoja ja kliinistä lääketutkimusta mm seuraavien terveydenhuoltoalan yritysten kanssa (viimeisen kahden vuoden aikana): Suomen MSD, Leiras, Pfizer, GSK, Algol, Meda, Mundipharma, Boehringer, Lilly, Pierre Fabre Laboratories, Ferrosan, Orion, Parexell, Secret Files, Chiltern, TFS trials, St Jude Medical, Respecta, Foot Center, Mega Electronics, HDL, Fysioline, jne..

Is exercise of pelvic floor muscles effective for urinary incontinence ? - critical point of view

Olavi Airaksinen

Content:

- Treatment methods for incontinence and pelvic floor muscles.
- Cochrane- review of effectiveness 2006.
- Biofeedback assisted exercise.
- Principles of muscle exercise
- Mobile biofeedback assisted exercise.
- Conclusions

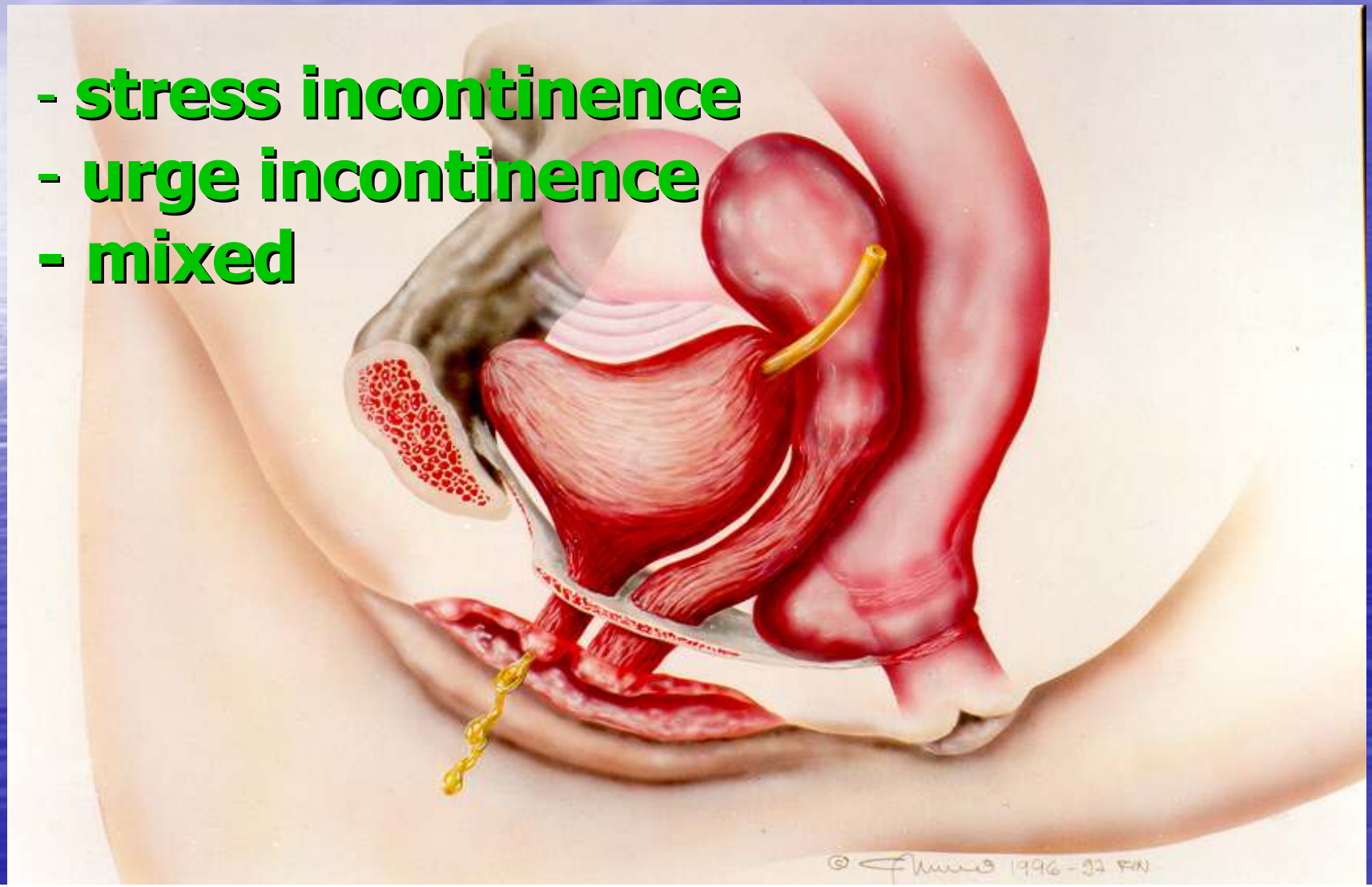
Hunskaar 2008: A systematic review of overweight and obesity as risk factors

- CONCLUSIONS: Epidemiological studies document **overweight and obesity as an important risk factor** for urinary incontinence.

- There is now valid documentation for **weight reduction as a treatment for urinary incontinence in women.**

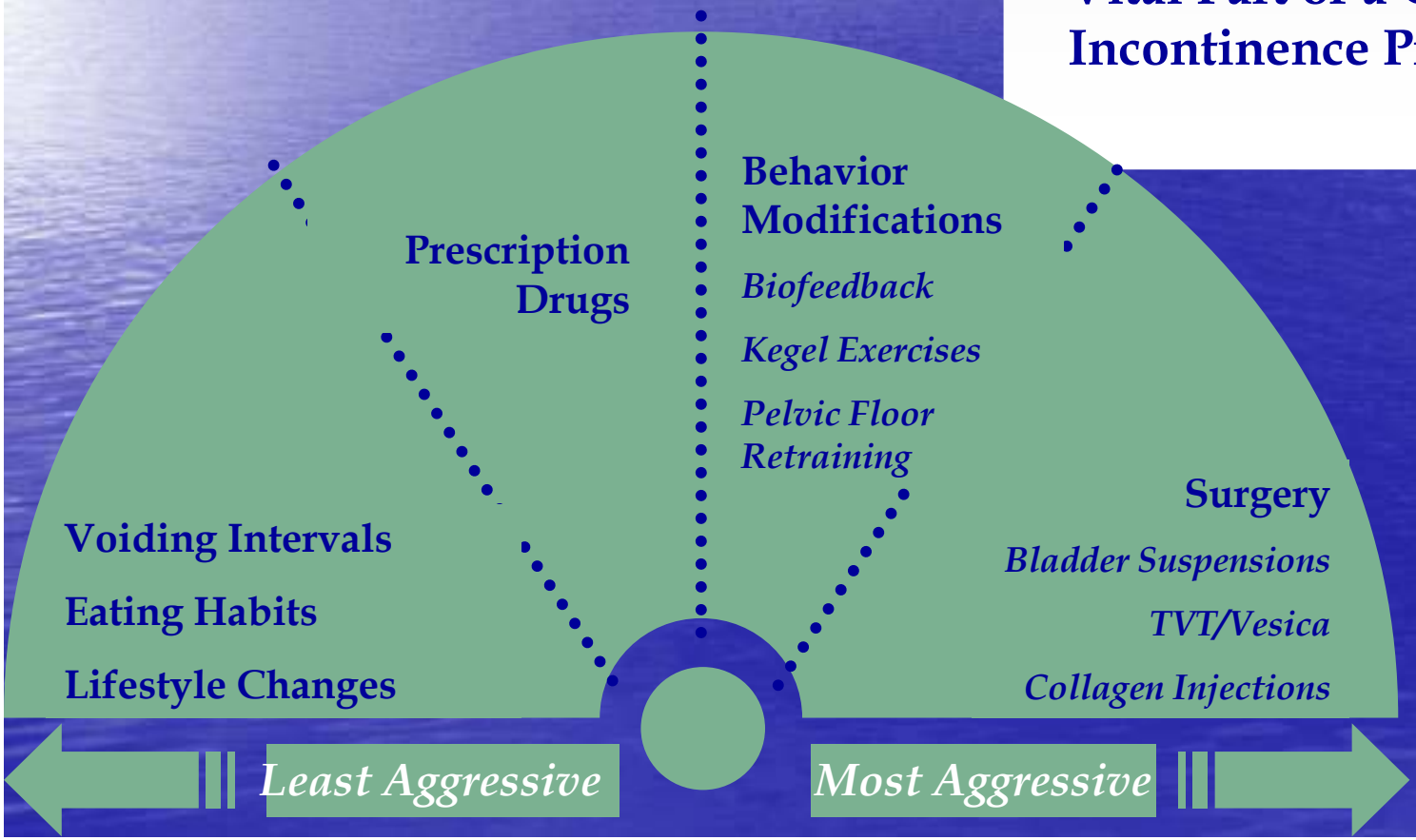
Urinary incontinence

- stress incontinence
- urge incontinence
- mixed



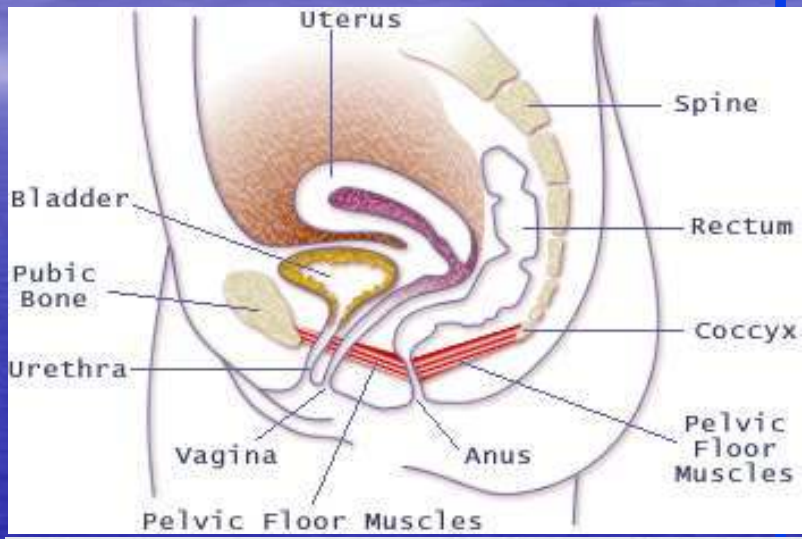
The Treatment Spectrum

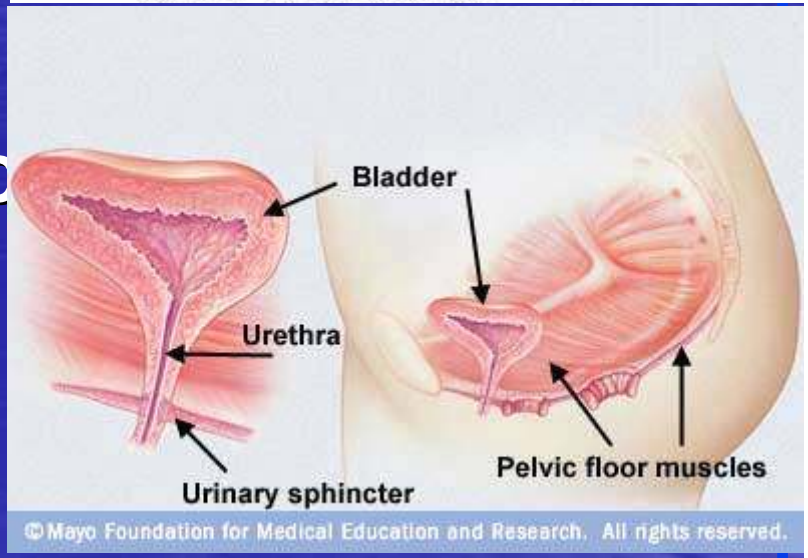
- **Diagnosis Is Critical**
  - *Surgical vs. Non-surgical Candidate*
  - *Complete Evaluation Necessary to Be Accurate*
- **Biofeedback Becomes a Vital Part of a Complete Incontinence Program**



GOALS FOR PELVIC FLOOR MUSCLE EXERCISES

- IMPROVE URETHRAL RESISTANCE
- EXERTS A CLOSING FORCE ON THE URETHRA
- INCREASES MUSCLE SUPPORT
- BETTER AWARENESS OF PELVIC MUSCLE FUNCTION
- ALSO CALLED KEGEL EXERCISES





SUI

PFM TRAINING IS RECOMMENTED → 10% WON´T TRAIN

90% START TO EXERCISE → 20% DROP OUT AFTER 2 WEEKS

70% WILL TRAIN 3 MONTHS → 20% DON´T IMPROVE

50% WILL CURE

DR. JOAN LEYCOCK

Soft and Safe Continence Care

Muscle exercise and stress incontinence (=SUI).

- UP TO 80% OF WOMEN WITH SUI COULD BE CURED IF PFM EXERCISES ARE PROPERLY CARRIED OUT.

TOTAL CURING RATE IS ABOUT 50%.

VAGINAL CONES

- SET OF CONES THAT ARE IDENTICAL SHAPE AND VOLUME BUT OF INCREASING WEIGHT
- WEIGHTED CONE IS PLACED INTRAVAGINALLY
- TWICE DAILY TRAINING (15 MIN)

BIOFEEDBACK

- A TYPE OF BEHAVIORAL TRAINING PROCEDURE
- VISUAL OR AUDITORY FEEDBACK OF A BODILY FUNCTION
- LEARN TO IMPROVE CONTROL

ELECTRICAL STIMULATION

- STIMULATION OF THE PELVIC MUSCLES
- STIMULATION OF THE NERVES SUPPLYING PELVIC STRUCTURES
- BENEFICAL BOTH URETHRAL AND BLADDER DYSFUNCTIONS

Pelvic Floor Muscle Training for Urinary Incontinence

- 5 systematic reviews of effectiveness, (Fedorkow 1993 (meta-analysis), Bo 1996, de Kruif 1996, Berghmans 1998 ja Wilson 1999 (4 of these qualitative analyses).

- Conclusion: patients will have benefit from exercise.

PFMT ja Biofeedback

- De Kruif et al: EMG biofeedback added the effectiveness of PFMT.
- Berghmans et al ja Wilson et al did not found additional benefit.
- Wheatherall et all 1999: a pooled data analysis: The use a EMG biofeedback in addition of PFMT give better results for urinary incontinece patients.

Dannecker C, Wolf V, Raab R, Hepp H, Anthuber C : EMG-biofeedback assisted pelvic floor muscle training is an effective therapy of stress urinary or mixed incontinence: a 7-year experience with 390 patients. Arch Gynecol Obstet. 2005: 273:93-7.

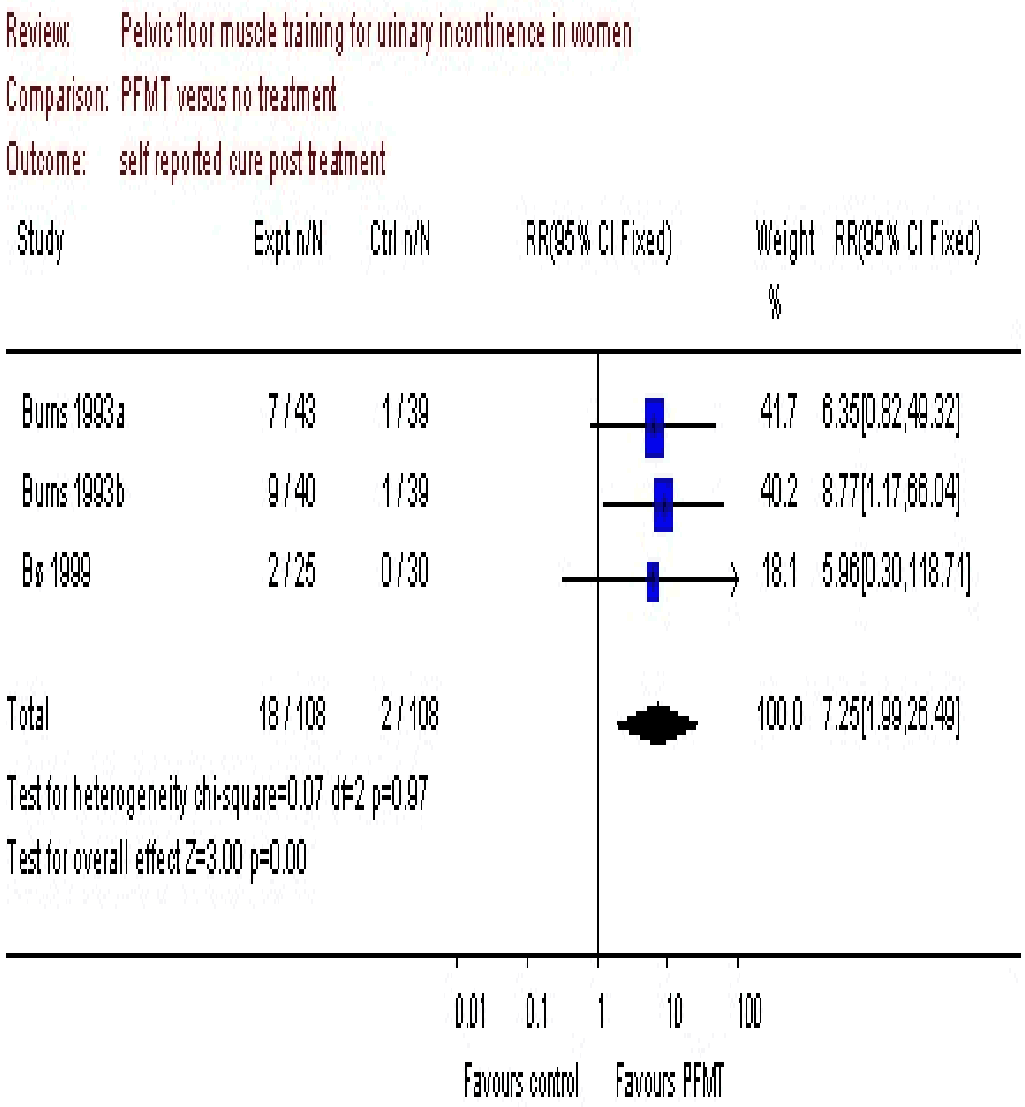
- **CONCLUSIONS: An intensive and EMG-biofeedback assisted PFMT is very effective. Often, avoidance of surgery is possible**

Pelvic floor muscle training for urinary incontinence in women

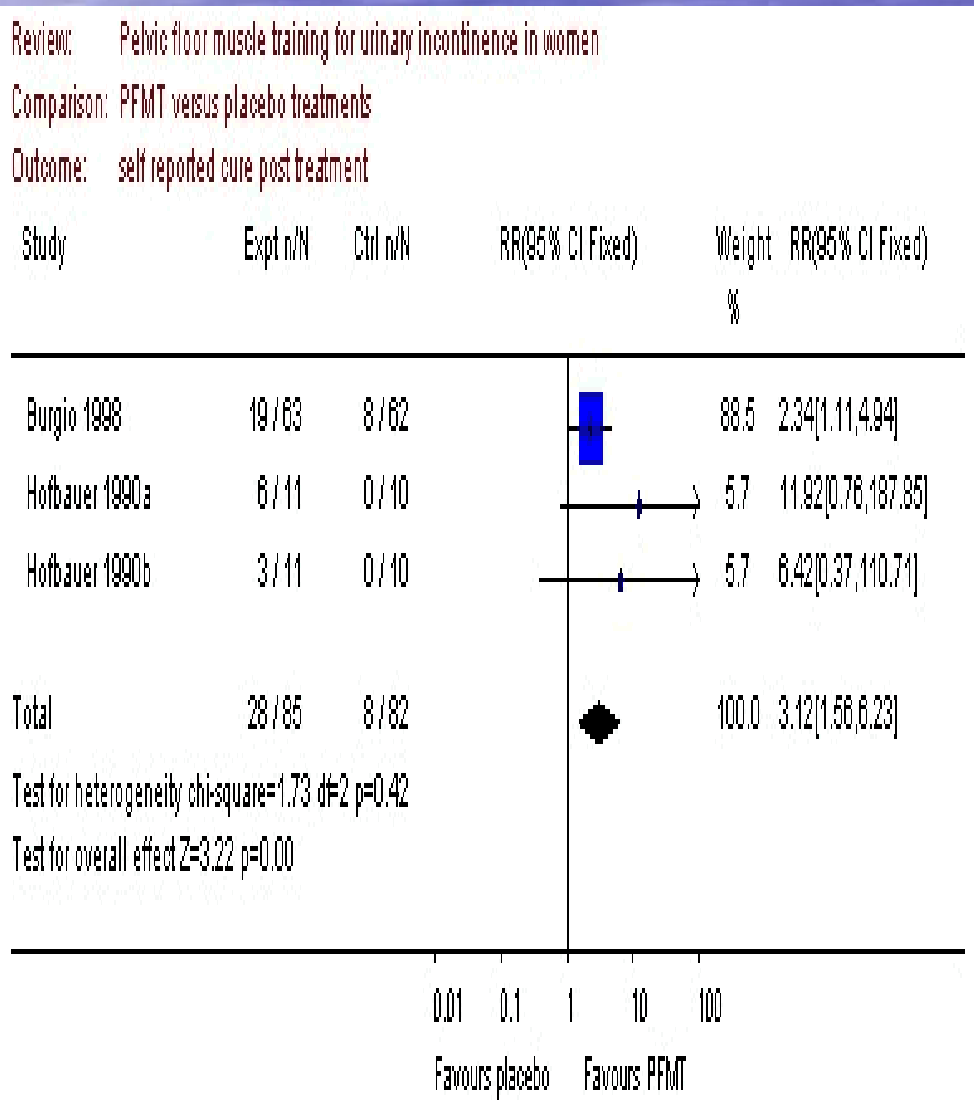
Hay-Smith EJC, Bø K et al…., Cochrane review 2007

- 43 original studies, from which 15 was congress presentations only.
- Many of these studies have small patient groups.
- Pelvic floor muscle training (PFMT) was compared to placebo or other therapy, some has used electrical stimulation or/and biofeedback equipments.

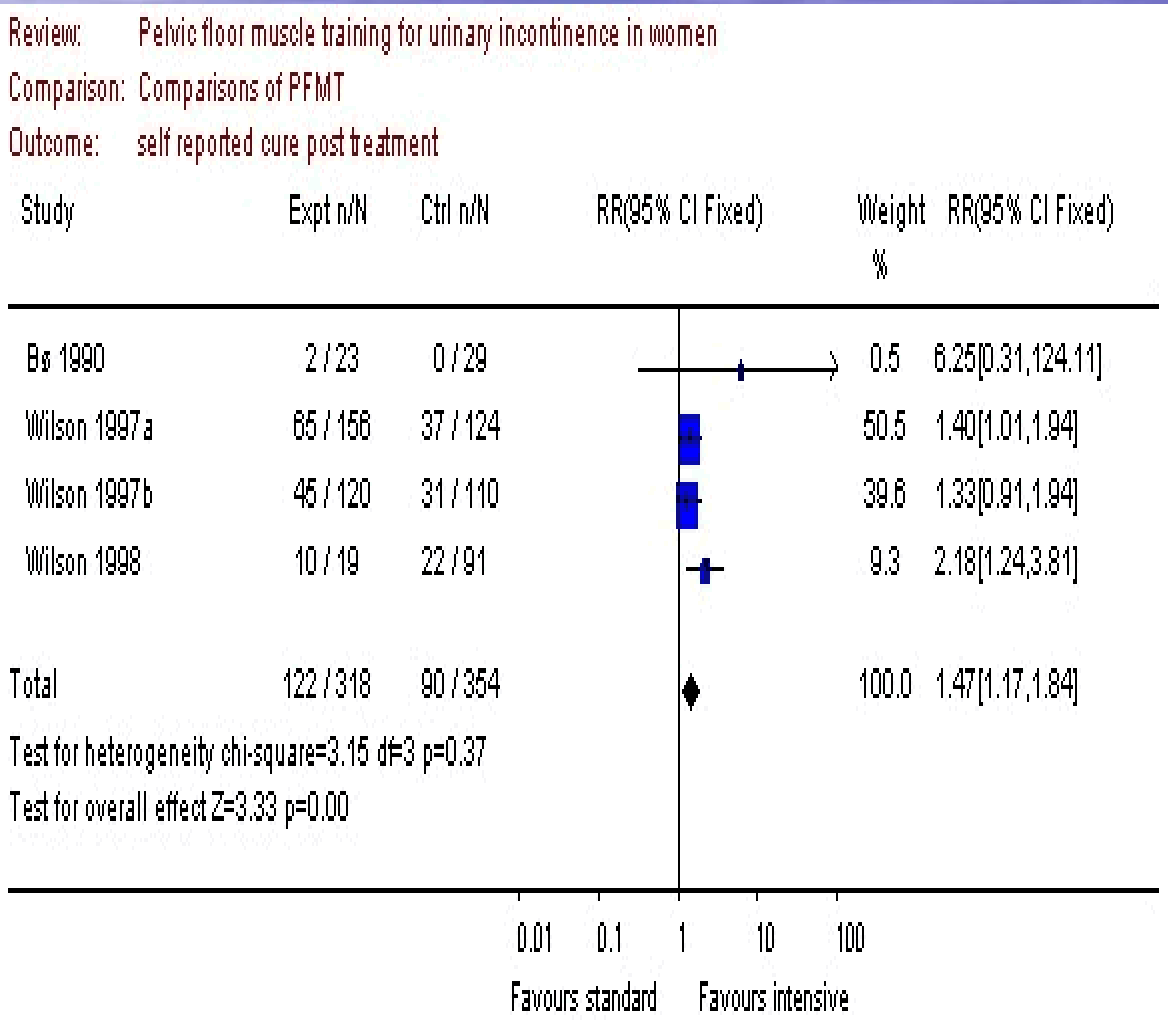
PFMT versus no treatment



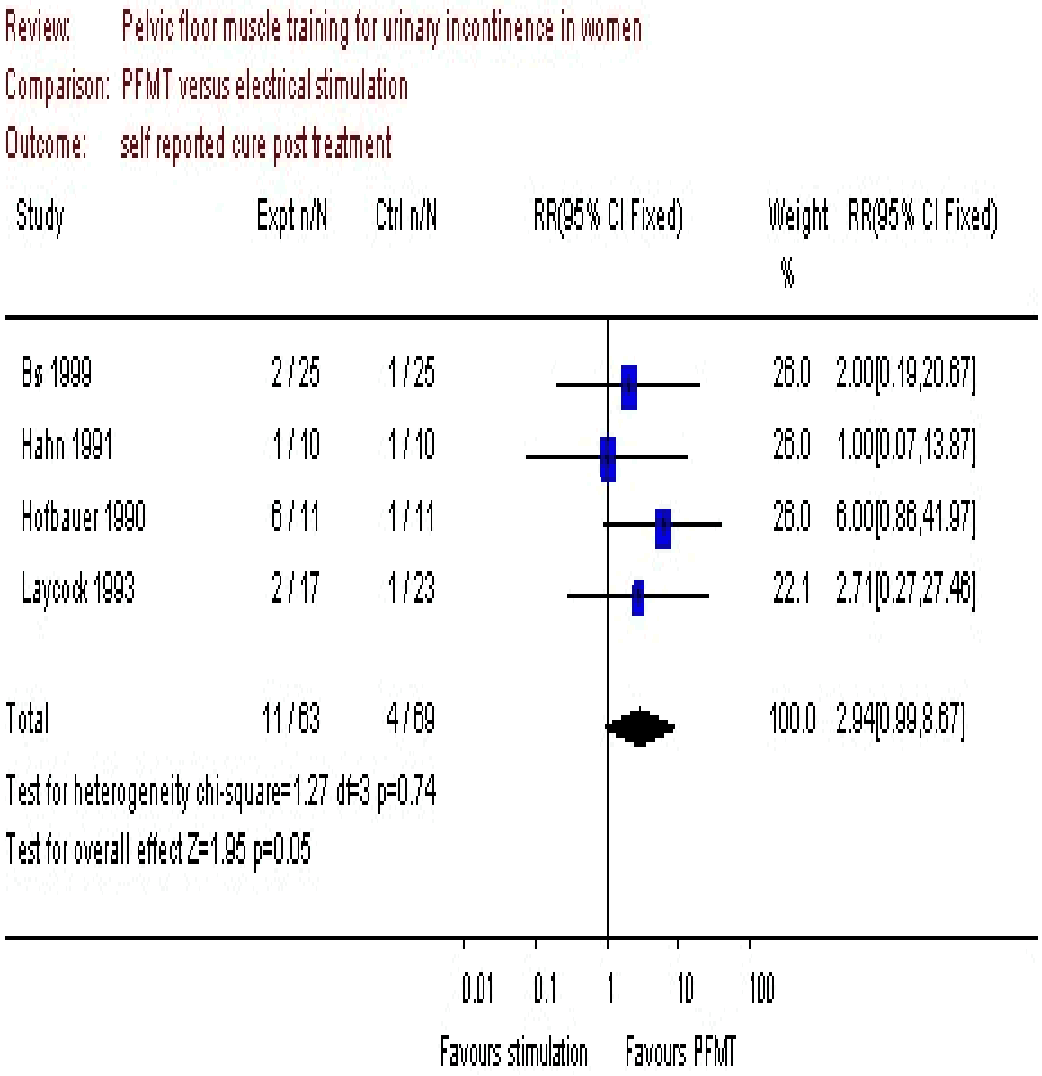
PFMT vs placebo



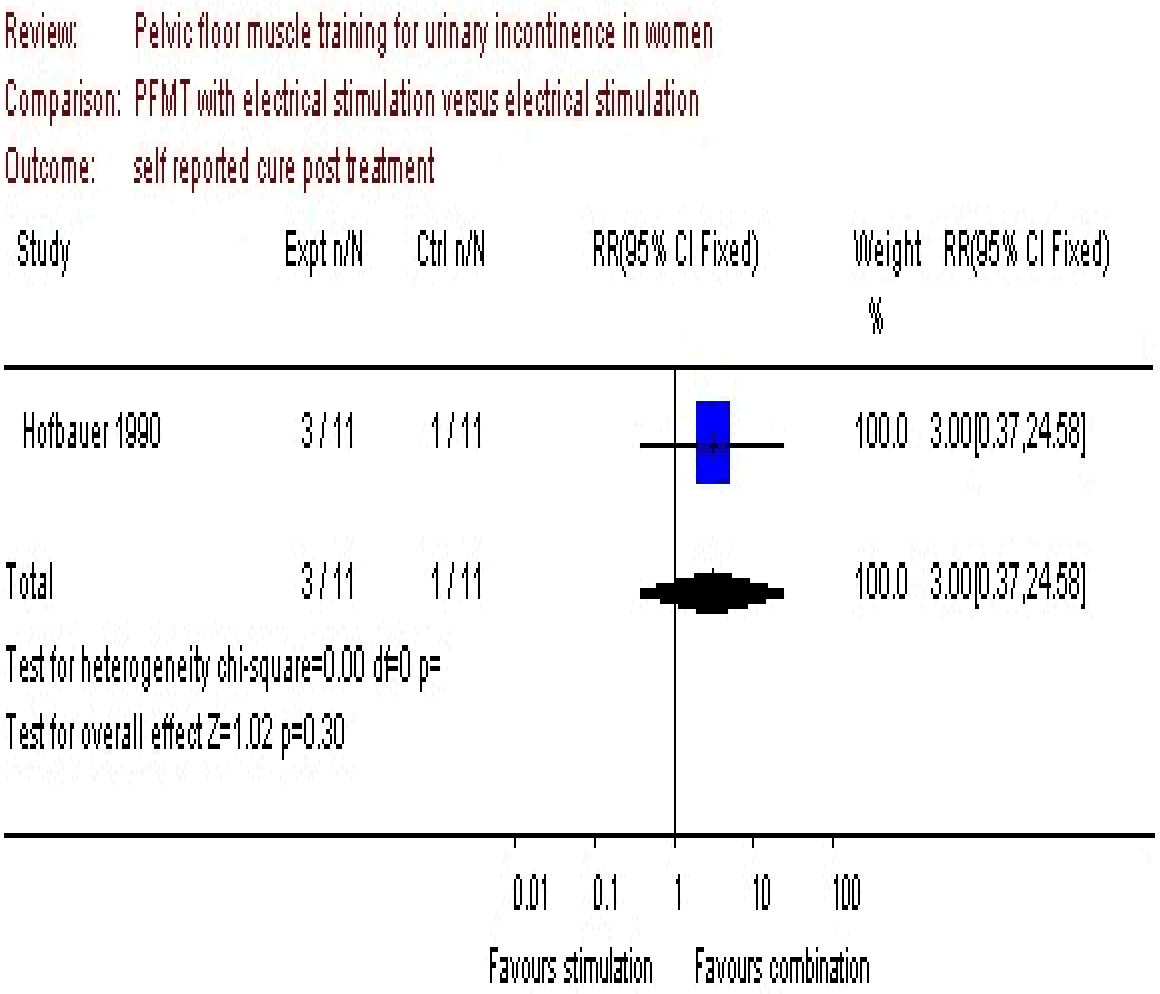
Comparison of standard and intensive PFMT methods



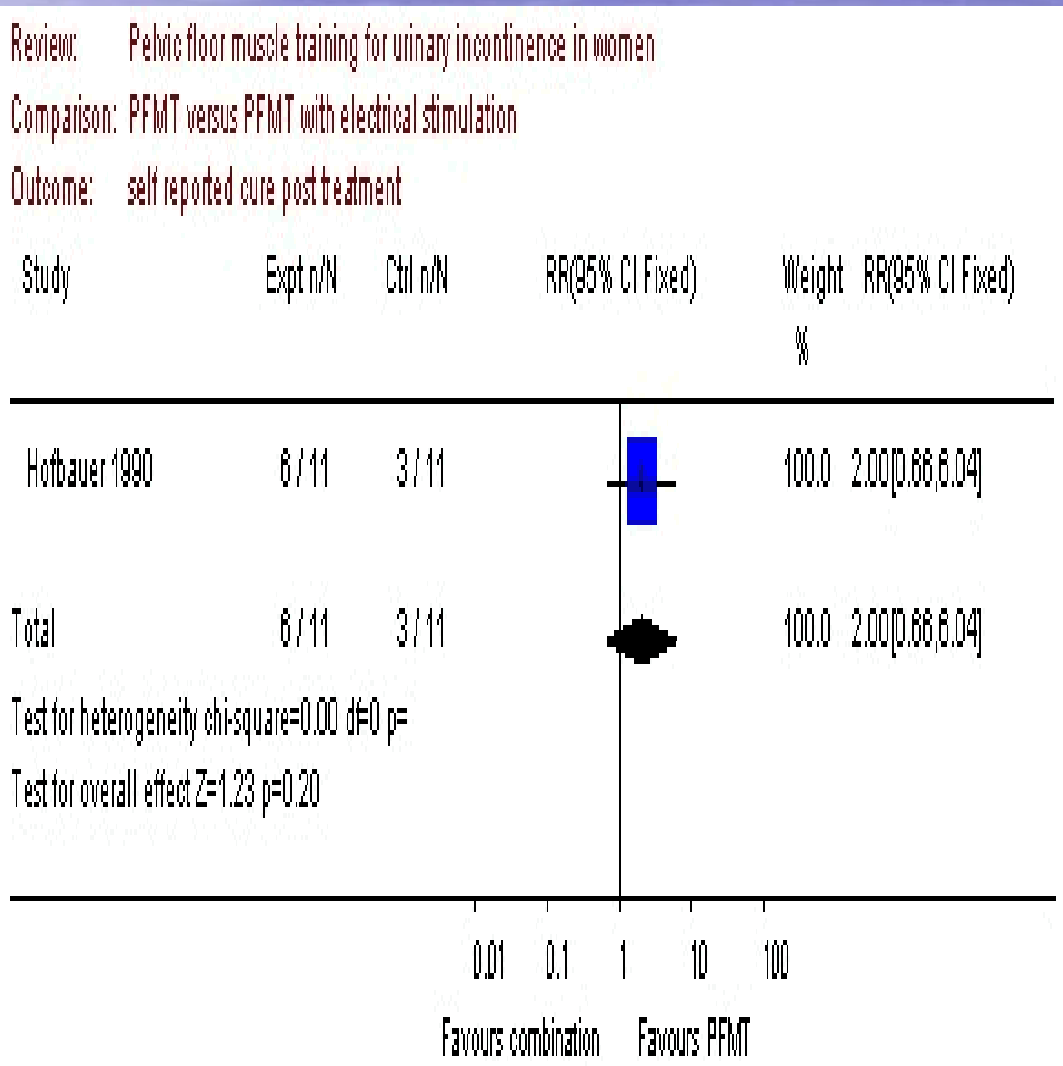
PFMT vs electrical stimulation



PFMT + Electrical Stimulation vs stimulation only.



PFMT + Electrical Stimulation vs PFMT only.

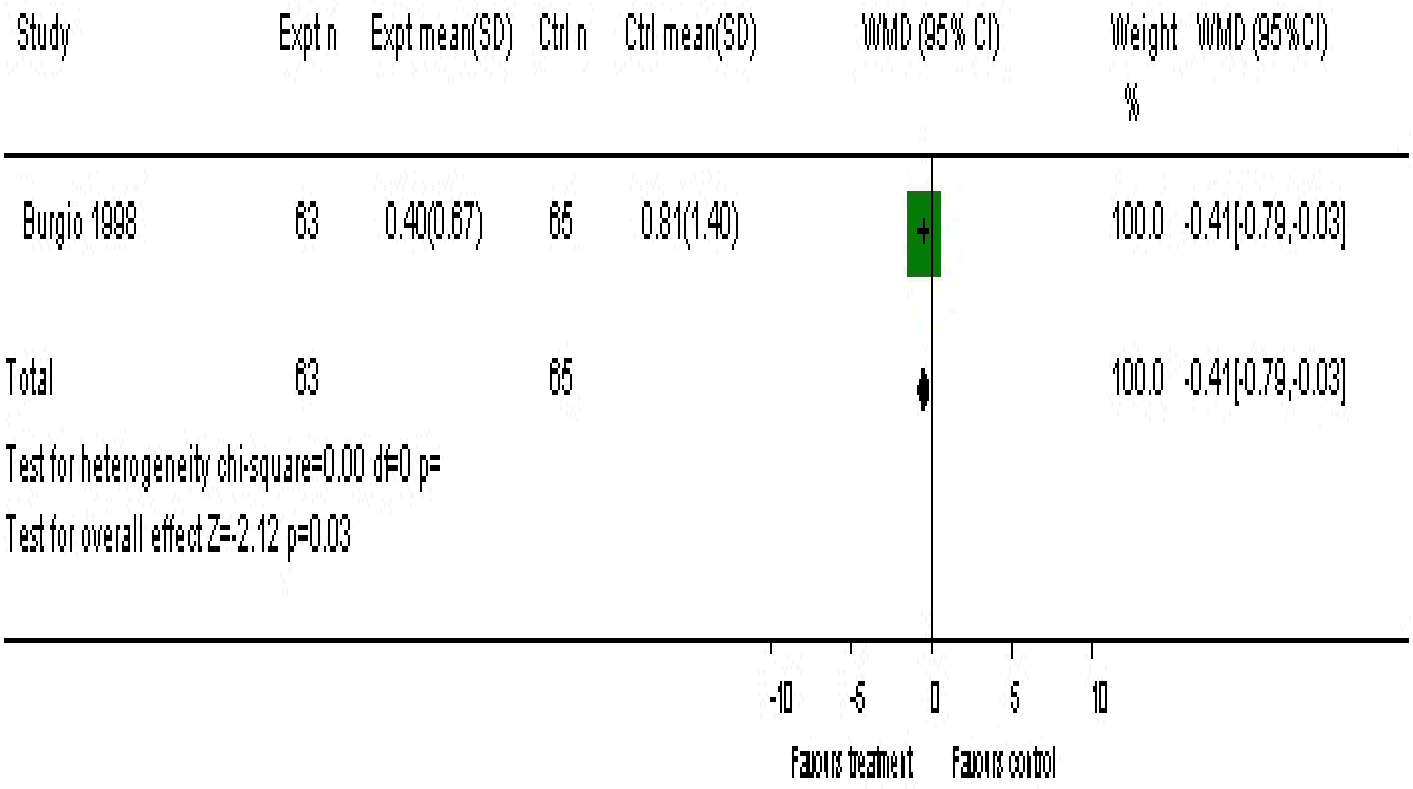


PFMT vs anticolinergic medication

Review: Pelvic floor muscle training for urinary incontinence in women

Comparison: PFMT versus medication (anticholinergic)

Outcome: number of leakage episodes in 24 hours

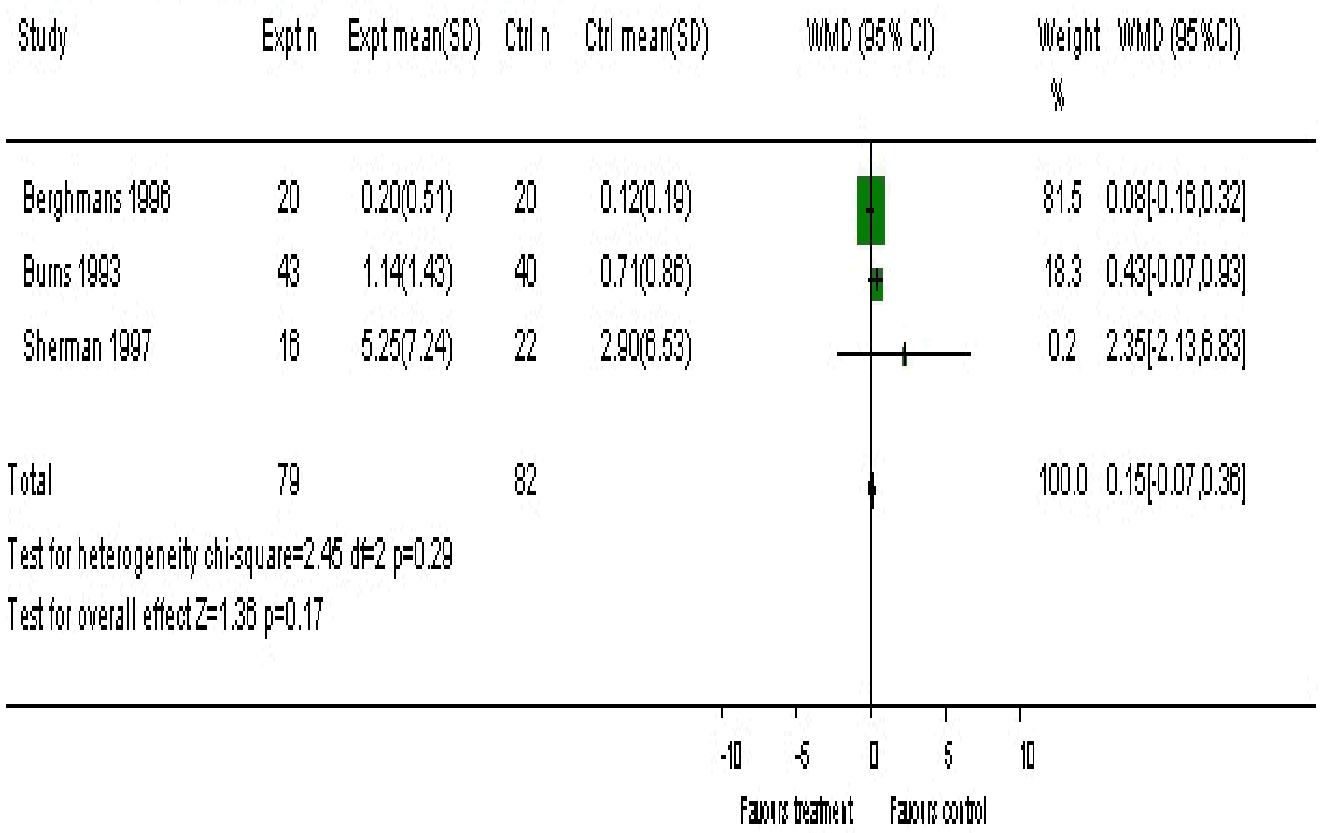


PFMT vs PFMT+ biofeedback

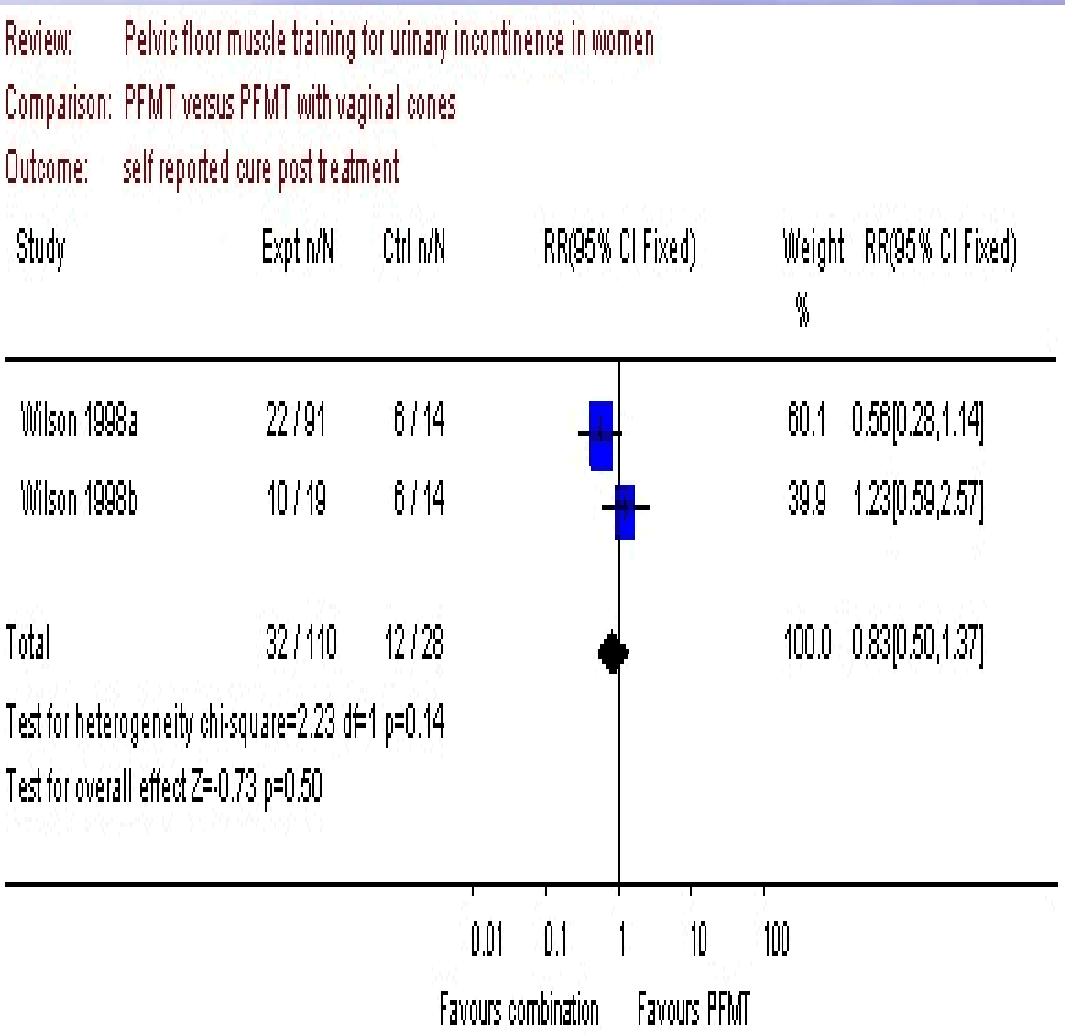
Review: Pelvic floor muscle training for urinary incontinence in women

Comparison: PFMT versus PFMT with biofeedback

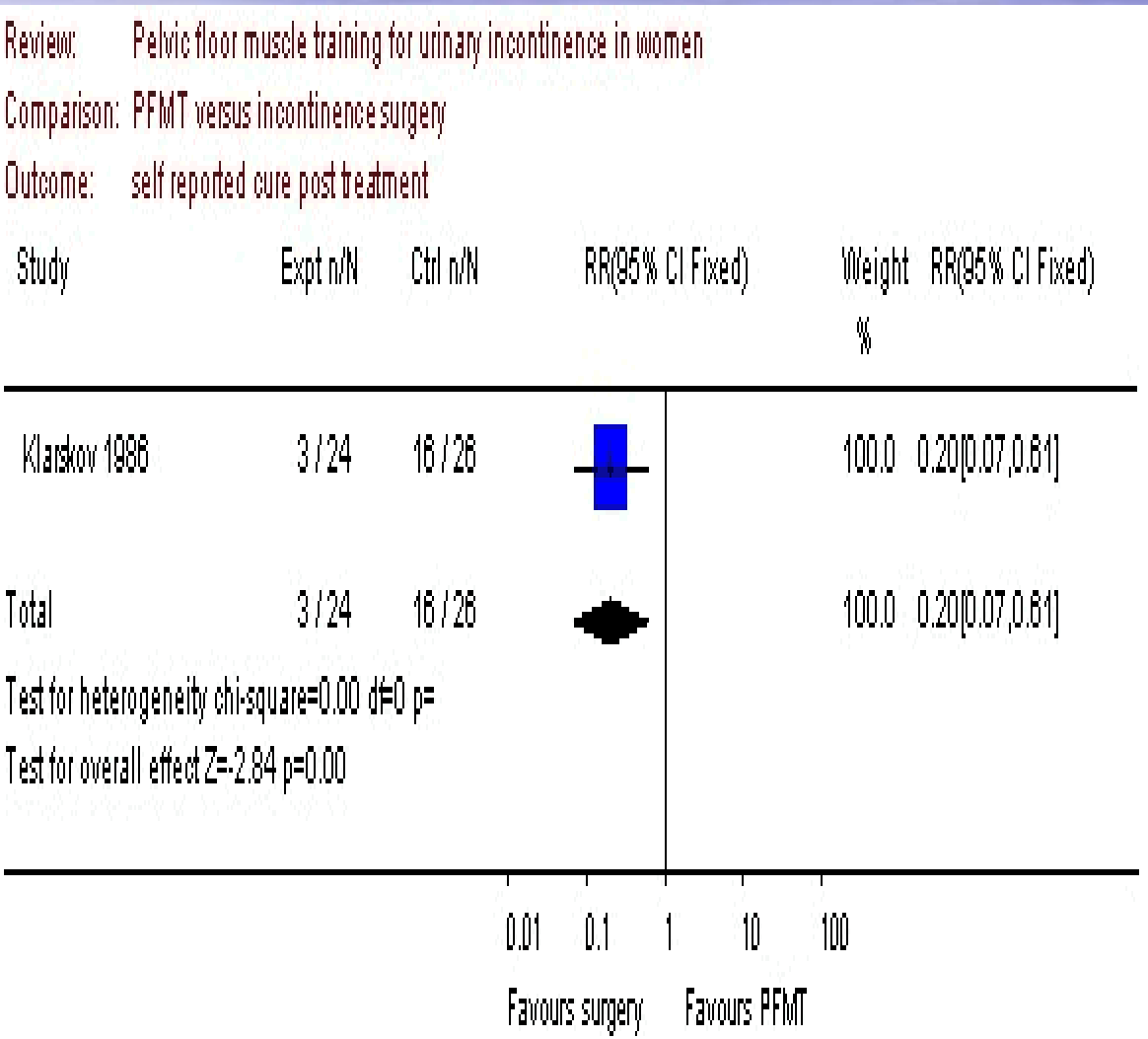
Outcome: number of leakage episodes in 24 hours



PFMT vs PFMT with cones



PFMT vs surgery



Conclusions of litterature:

- Quided/controlled pelvic floor exercise therapy is effective for urinary incontinence (for all types) and prevention.
- Continued self-exercise is very importat to maintain the good outcome.
- Biofeedback (emg) will help the patient to perform the exercise, it will also inrease the patient compilance and motivation for exercise.

Transversus abdominis exercise

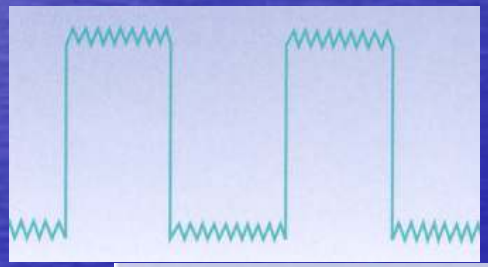
- Evidence for benefit of transversus abdominis training alone or in combination with pelvic floor muscle training to treat female urinary incontinence: A systematic review. K. Bo et al (2009)

- There is insufficient evidence for the use of TrA training instead of or in addition to PFMT for women with UI.

What kind of exercise and How to carry out that??

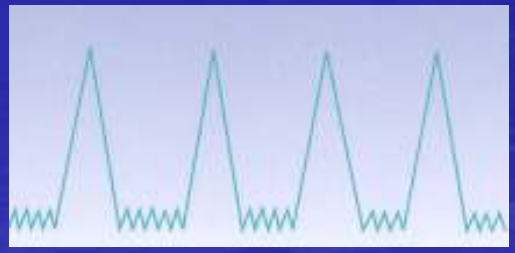
- To maintain the performance of muscle condition it needs exercise 2 – 3 times a week for each type of muscle exercise.

- Strength



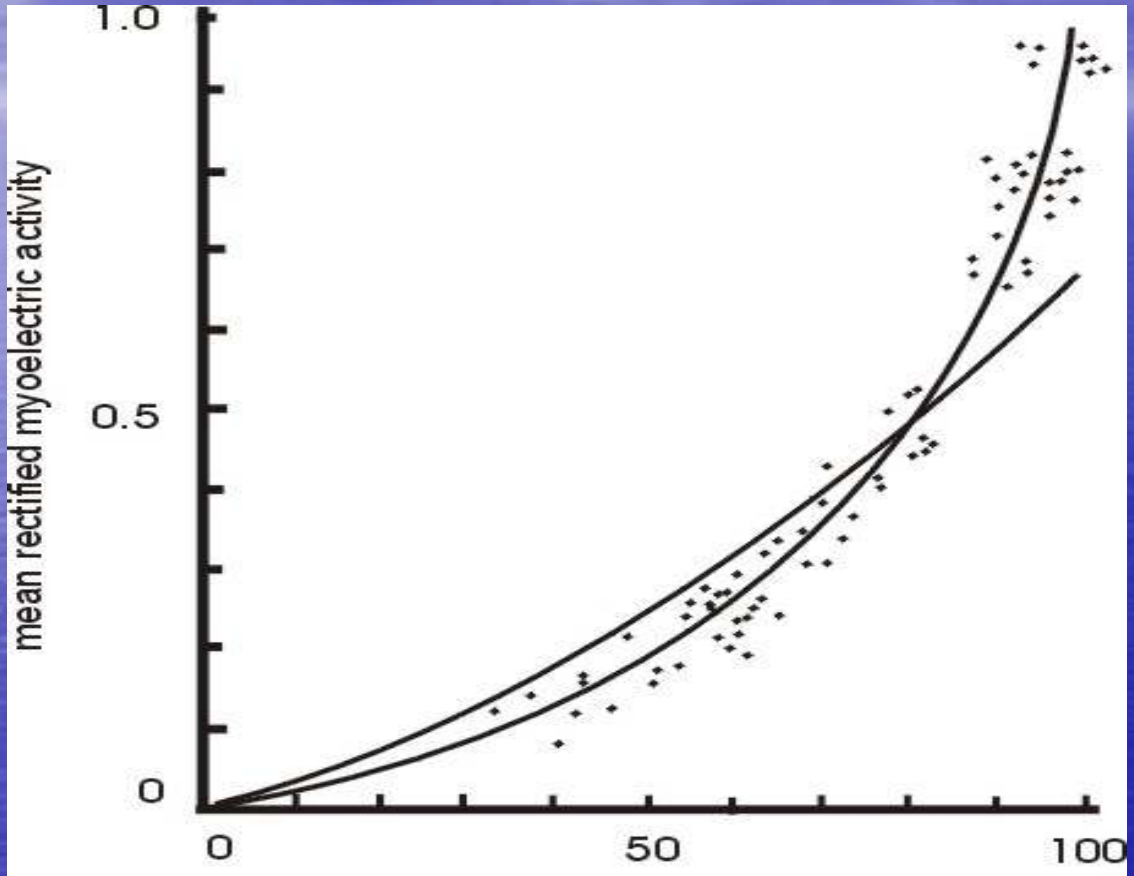
- Endurance

- Rapid Stength



EMG-biofeedback - Pelvic Floor Muscle Rehabilitation

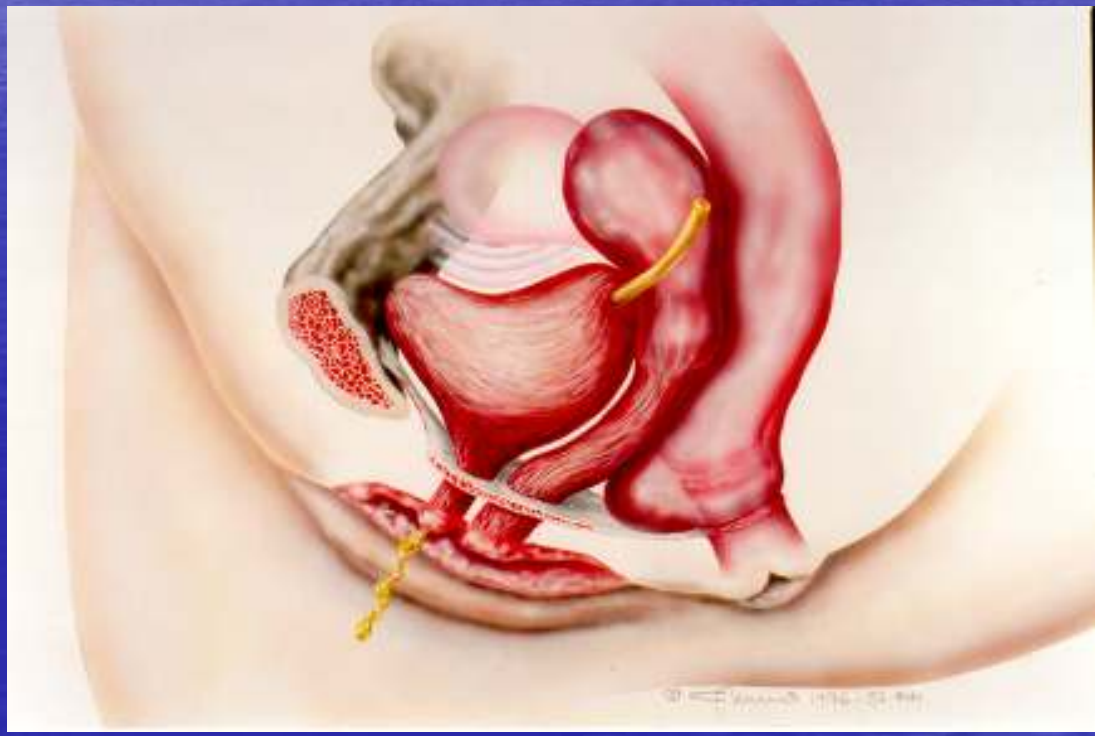
EMG - Force relationship



Relationship between force production and EMG-activity in biceps brachii muscle during isometric contraction (Vredenbregt and Rau 1973)

EMG QUIDED BIOFEEDBACK:INDICATIONS

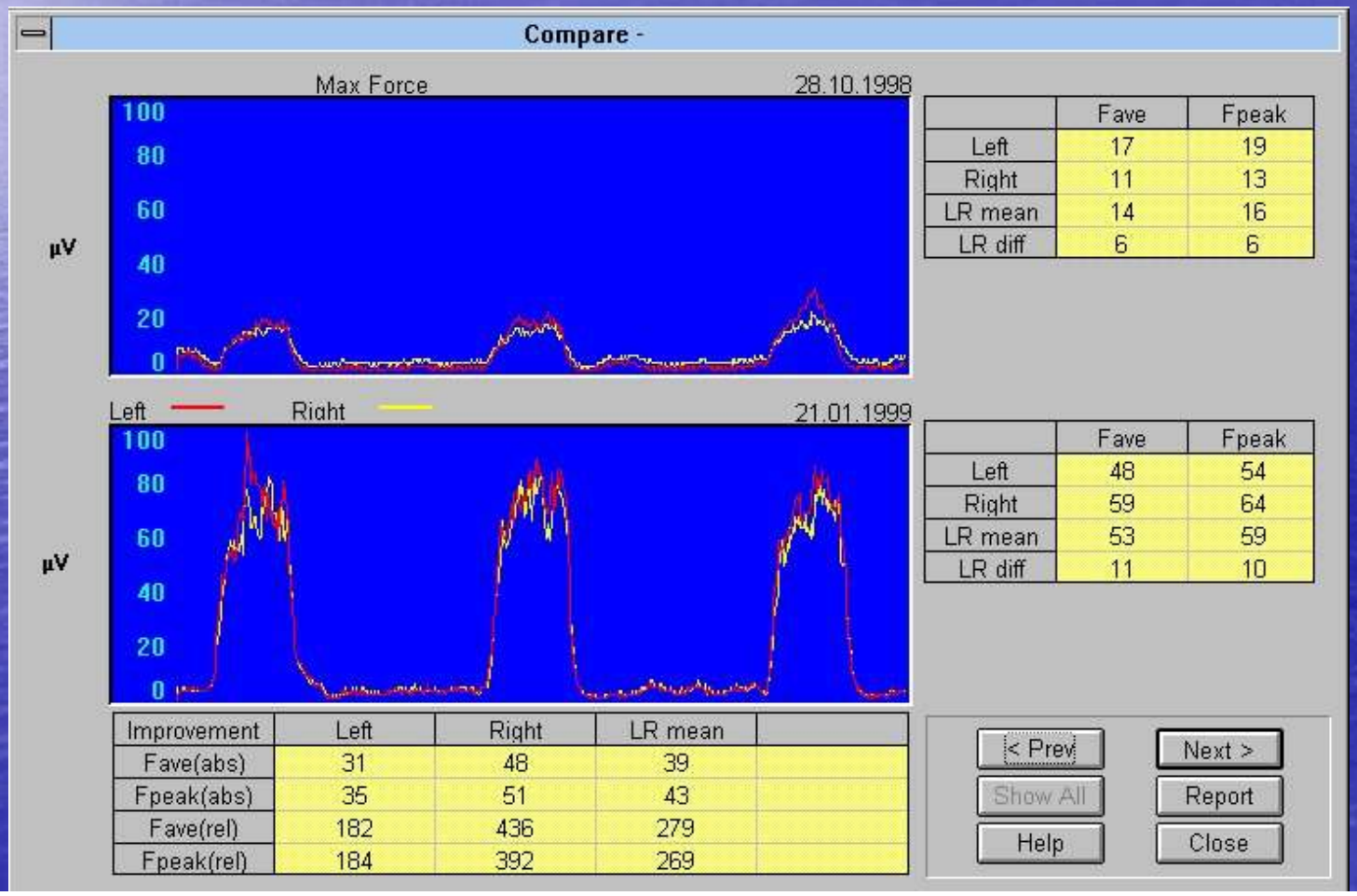
- Stress incontinence
- Pelvic floor rehabilitation
- Pelvic pain
- Sexual disability



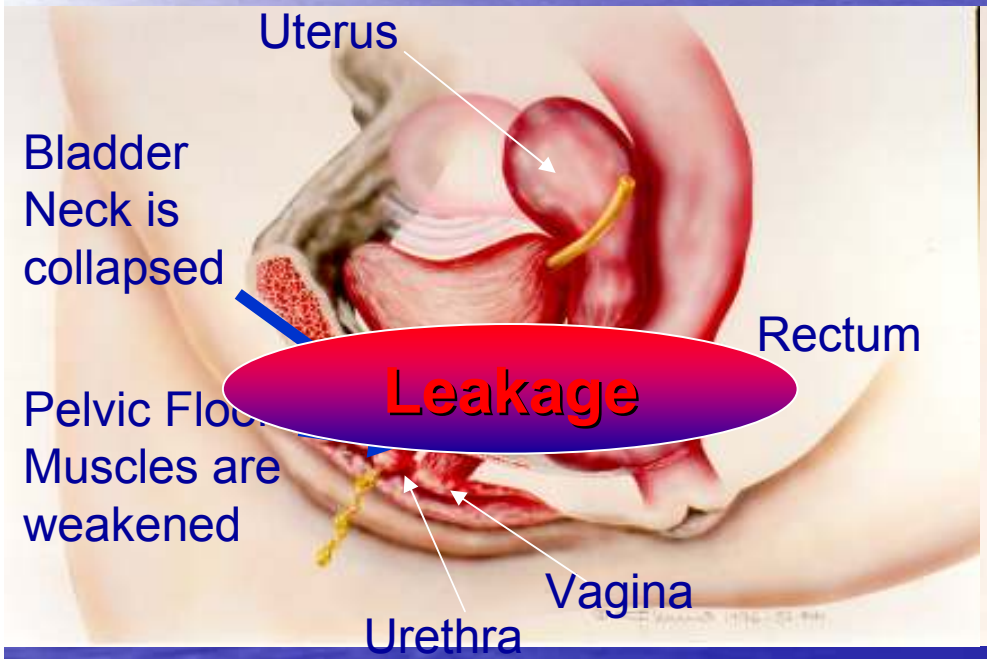
Biofeedback training

- Documentation

- Complete reports



FemiScan Therapy Outcome - ANATOMICAL RECOVERING



Before treatment

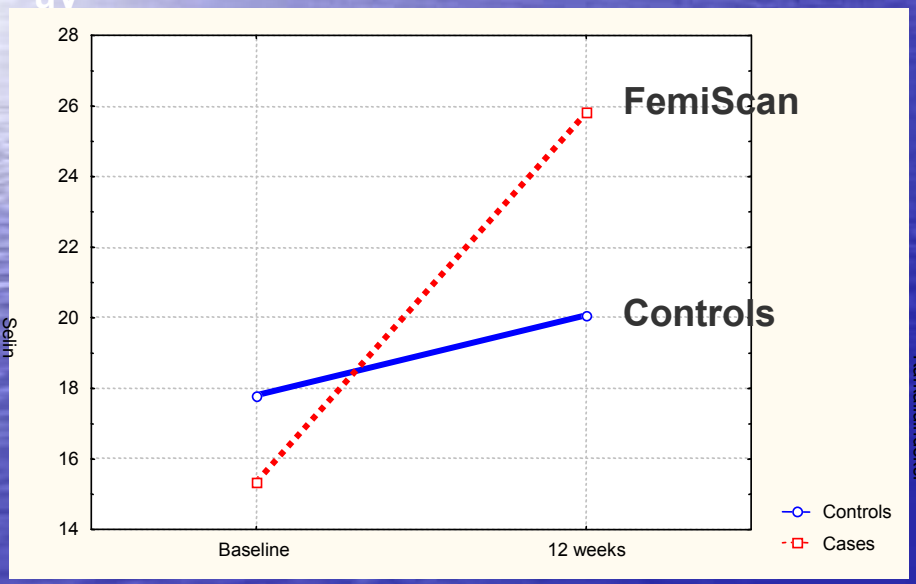
After 8 to 12 weeks of training

www.femiscan.com

Clinical data

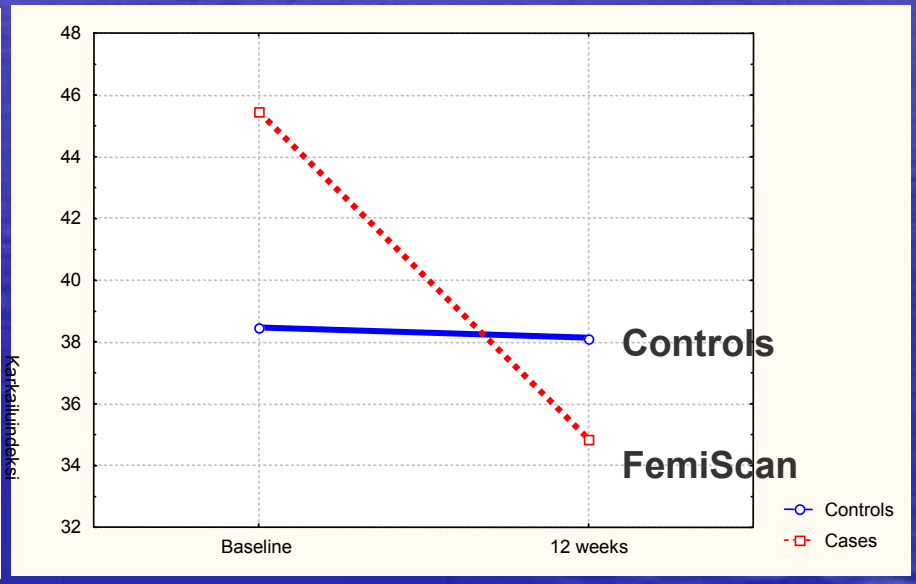
Aukee p, Immonen P, Penttinen J, Laippala P, Airaksinen O,
”Increase in Pelvic Floor Muscle Activity After 12 Weeks Training; A randomised prospective pilot study”, Urology, 2002, Dec; 60(6)

Mean pelvic floor muscle activity



Changes of pelvic floor muscle activity (uV) measured in supine position

Leakage index



Changes in leakage index among cases and controls

www.femiscan.com

Biofeedback: ANATOMICAL RECOVERING

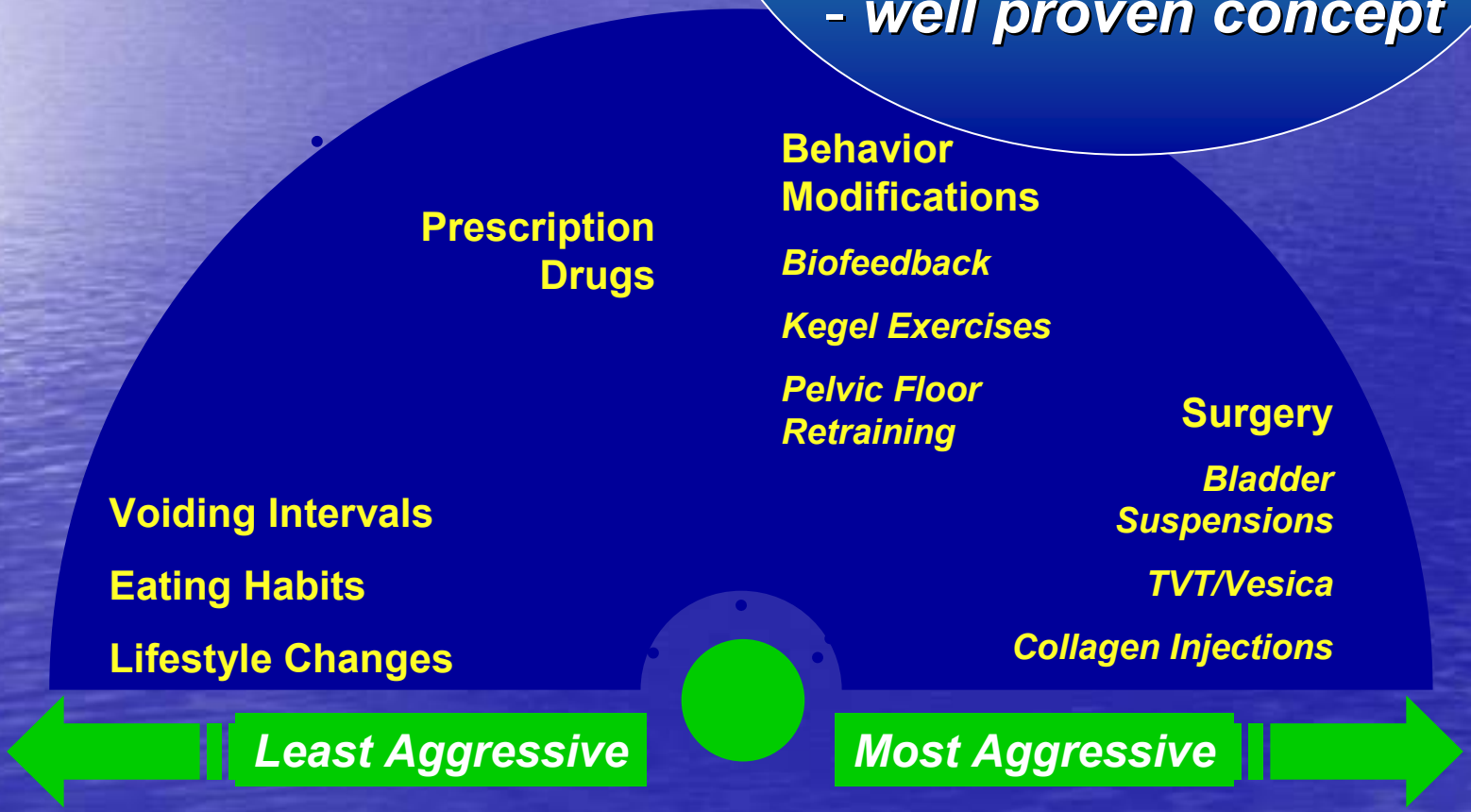
Treatment begins

After 8 to 12 weeks training

The Treatment Spectrum

FemiScan

- Natural method
- No risks, no side effects
- 80% will be cured
- high compliance
- well proven concept



www.femiscan.com

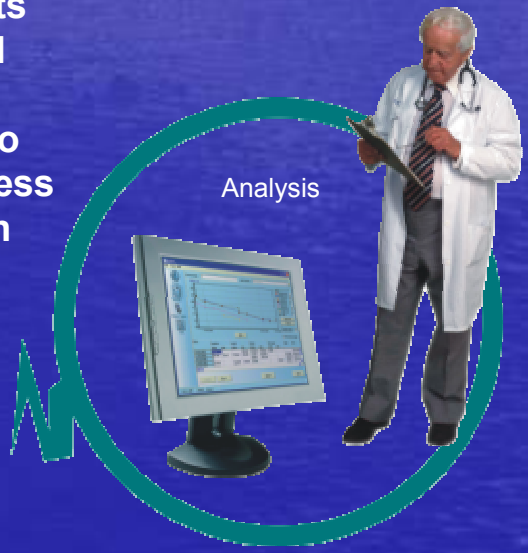
Mobile Health Gateway - *FemiScan management*

Bluetooth

Measured results are transferred securely from mobile device to clinic using wireless communication

GSM/GPRS

Secure communication



- **Mobile device collects data directly from training device**
- **Training program can be updated to FemiScan™ device using mobile device for the best possible incontinence treatment**

www.femiscan.com

Feedback directly to patient mobile device or by letter

Regular following and changes to patients' treatment to fulfill patients' needs

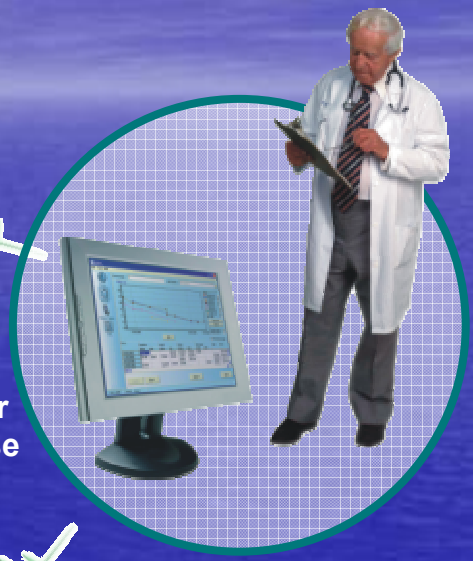
Health Gateway - Kuopio University Hospital incontinence treatment and diabetes treatment

The patient regularly performs her training exercises at home

EMG
Pelvic floor muscle

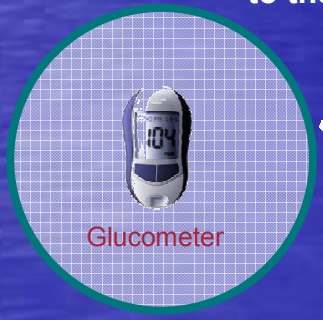
The mobile phone of the patient collect the data and sent it to the health centre

At the clinic, information are made available for the physician/nurse



Feedback including changes to the treatment or diet or modification of the training program can be immediately sent to the patient

The patient regularly measures the glucose values at home



Glucometer

The mobile phone of the patient collect the data and sent it to the health centre

Femiscan clinic (=outpatient visits) vs mobile (=controlled by mobile phone) – clinical study.

- 51 urinary stress incontinent women.
- Mean age 49 years
- Mean of deliveries 2,1.
- Mean length 164 cm, mean weigth 67 kg.
- mean of Menopause 49 years.

Health Gateway

CASE: Kuopio University Hospital

Mega Electronics Ltd
FemiScanTM
Incontinence treatment

Communication between mobile phone and measurement/ treatment device using infrared or Bluetooth

BLUETOOTH

INFRARED

Roche
Accu-Chek AVIVA
Blood glucose

Nokia Series60
smart phone

Mega Electronics Ltd
eFemiScan –
Incontinence monitoring

EHIT Ltd
eGluco – Blood glucose
monitoring

Measured data is transferred from mobile device to clinic using GPRS connection

EHIT Ltd
Health Gateway
server

Data is analysed with Health Gateway clinic platform

Mega Electronics Ltd
FemiScan™
clinic software

EHIT Ltd
eGluco
clinic software

Regular following patients treatment and changes to patient treatment to fulfil patients needs

Feedback to patient mobile device or by letter

Femiscan clinic vs mobile – clinical study.

Marked improvement in both groups

- Disability points
- Incontinece Impact Questionaire – II Q72.
- Urogenital Distress Inventory – UDI63.
- Patients and Doctors Global assessment.

Femiscan clinic vs mobile – clinical study.

- 78 per cent had benefit of programme.
- no significant differences between the mobile and clinic groups.

the similar results can be reach by mobile phone quided PFMT programmes.

Finnish Clinical Practice Quidelines 2007.

- Quided Pelvic Floor Muscle Exercise is **the First line therapy** for Urinary Incontinence.

- Every patient suffering from Urinary Incontinence should be treated by PFME/PFMT 3 months before evaluation for Surgery (if needed).

Conclusions

- PFMT is effective for stress and mixed urinary incontinence.
- The effectiveness is better to placebo or no treatment.
- PFMT requires continous exercise of strength, endurance and rapid strength
- EMG biofeedback is good way for quidance the PFMT – to increase patient compliance.


04. 10. 2005