

Start	End	Topic	Speakers
14:00	14:10	Introduction to the Workshop	Margaret Sherburn
14:10	14:30	Definitions, Signs and Symptoms of Pelvic Floor Dysfunctions and Physiotherapy Role in Conservative Management of UI and POP	Chantale Dumoulin
14:30	14:45	Functional Anatomy of the Pelvic Floor, Manual and Visual Assessment of the PFM	Margaret Sherburn
14:45	14:55	Clinical Reasoning and Treatment Planning	Gabrielle Russo
14:55	15:15	Principles of Teaching PFMT and Training Regimes: Evidence Base, Clinical Application and Training Progression	Margaret Sherburn
15:15	15:30	Discussion	All
15:30	16:00	Break	None
16:00	16:20	Pelvic Floor Dysfunction in Older Adults, Assessment and Management	Chantale Dumoulin
16:20	16:45	Adjunctive Treatments for Pelvic Floor Dysfunction – E-stim, EMG & US Biofeedback	Doreen McClurg
16:45	17:00	Questions, Discussion and Wrap-up	All

Speaker Powerpoint Slides

Please note that where authorised by the speaker all PowerPoint slides presented at the workshop will be made available after the meeting via the ICS website www.ics.org/2017/programme Please do not film or photograph the slides during the workshop as this is distracting for the speakers.

Aims of Workshop

The aims of this workshop are to provide:

1. An understanding of physiotherapy assessment of UI and POP and the clinical reasoning to diagnose and plan the conservative management of UI & POP.
2. An opportunity to revise functional anatomy of the pelvis and PFM.
3. Principles of clinical assessment of pelvic floor dysfunction including PFM assessment.
4. A forum to discuss the principles of teaching PFM exercise for motor control, strength training and functional training, including; rationale, evidence base, clinical application and progression.
5. A basic understanding of the pelvic floor management in a special population - older age.
6. Evidence for the use of electrical stimulation and biofeedback in pelvic floor dysfunction

Learning Objectives

Learning Objectives:

1. To understand the evidence for physiotherapy in the management of urinary incontinence and pelvic organ prolapse.
2. To be able to teach an effective pelvic floor muscle exercise.
3. To understand how to alter assessment and management strategies for effective treatment of older adults.
4. To know when to apply electrical stimulation and biofeedback in a management program for pelvic floor dysfunction.

Learning Outcomes

After the course, the participant will be able to:

1. Describe the function of the pelvic floor muscles and their role in the management of UI and POP.
2. Teach effective pelvic floor muscle exercises and be able to progress this training.
3. Know when to use electrical stimulation and biofeedback to enhance PF muscle training.
4. Adapt pelvic floor muscle training for an elderly population.

Target Audience

This workshop is aimed at local practitioners, specifically physiotherapists and others interested in physiotherapy management. The course will be presented in both Italian and English to encourage local clinicians/physiotherapists to attend.

Advanced/Basic

Basic

Conditions for Learning

This is a lecture based course with time for discussion and questions at the end of each section of the course.

Suggested Learning before Workshop Attendance

See suggested reading below

Suggested Reading

Aksac B, Aki S, Karan A, Yalcin O, Isikoglu M, Eskiyurt N. Biofeedback and pelvic floor exercises for the rehabilitation of urinary stress incontinence. *Gynecologic & Obstetric Investigation* 2003;56(1):23–7.

Bo K, Frawley HC, Haylen BT, Abramov Y, Almeida FG, Berghmans B, Bortolini M, Dumoulin C, Gomes M, McClurg D, Meijlink J, Shelly E, Trabuco E, Walker C, Wells A. 2017. An International Urogynecological Association (IUGA)/International Continence Society (ICS) joint report on the terminology for the conservative and nonpharmacological management of female pelvic floor dysfunction. *Neurourol Urodynam* 2017 Feb; Vol. 36 (2), pp. 221-244 DOI:10.1002/nau.23107

Bo, K., Berghmans, B., Morkved, S., Van Kampen, M., (2015) Female pelvic floor dysfunctions and evidence based physical therapy. Evidence based physical therapy for the Pelvic Floor (2nd Edition), (153-226) Churchill Livingstone, Edinburgh.

Bø K, Sherburn M. (2005) Evaluation of Female Pelvic-Floor Muscle Function and Strength. *Physical Therapy* 85(3):269-282

Dumoulin C, Glazener C, Jenkinson D. (2011) Determining the optimal pelvic floor muscle training regimen for women with stress urinary incontinence. *Neurourology and Urodynamics*; 30(5):746-753.

Fraser S, Elliott V, DeBruin E, Bherer L, Dumoulin C. (2014) The effects of combined video game dancing and pelvic floor training to improve dual-task gait and cognition in women with mixed-urinary incontinence. *Games for Health Journal*; published online, 3(3): 172-178.

Haylen BT, de Ridder D, Freeman RM, Swift SE, Berghmans B, Lee J, Monga A, Petri E, Rizk DE, Sand PK. 2010 An International Urogynecological Association (IUGA)/International Continence Society (ICS) joint report on the terminology for female pelvic floor dysfunction *Neurourol Urodyn.* 2010;29(1):4-20. DOI: 10.1002/nau.20798.

Sapsford RR, Hodges PW, Richardson CA, Cooper DH, Markwell SJ and Jull GA (2001): Co-activation of the abdominal and pelvic floor muscles during voluntary exercises. *Neurology and Urodynamics* 20: 31–42.

Sherburn M, Bird M, Carey M, Bø K, Galea MP (2011) Incontinence improves in older women after intensive pelvic floor muscle training: An assessor-blinded randomized controlled trial. *Neurourology & Urodynamics* 30:317–324

Other Supporting Documents, Teaching Tools: Presentation summaries as follows:

Prof. Chantale Dumoulin, Physiotherapist, Canadian Research Chair on *Urogynecological Health and Aging* at the Research Center of the Institut Universitaire de Gériatrie de Montréal, Professor and post-graduate PFM rehabilitation program Director, School of rehabilitation, Faculty of medicine, Université de Montréal

Definitions, Signs and Symptoms of Pelvic Floor Dysfunctions and Physiotherapy Role in Conservative Management of UI and POP

As an international organisation devoted to the advancement of pelvic floor function, the ICS has led the way in producing standardisation documents so that the world's clinicians are able to use the same clinical language. The papers by Haylen et al (2010) and Bo et al (2017) provide us with internationally consistent language for us to use for pelvic floor dysfunction signs and symptoms, and physiotherapy assessment, diagnosis and management. This presentation aims to provide participants with a summary of the conditions physiotherapists commonly encounter clinically, their definitions, signs and symptoms and the role physiotherapists play in the conservative management of these conditions.

Dr Margaret Sherburn, Physiotherapist, Head of Women's health programs, Physiotherapy Department, The University of Melbourne

Gabrielle Russo, Physiotherapist, Yoga teacher

- 1. Functional Anatomy of the Pelvic Floor, Manual and Visual Assessment of the PFM**
- 2. Clinical Reasoning and Treatment Planning**
- 3. Principles of Teaching PFMT and Training Regimes: Evidence Base, Clinical Application and Training Progression**

The aim of these three sections of the workshop are to:

- 1. Give the participants an opportunity to revise the anatomy and functional anatomy of the pelvic floor*
- 2. Provide a learning opportunity to assess the pelvic floor muscles using visual and tactile feedback*
- 3. Use assessment findings and clinical reasoning to move from assessment to treatment planning*
- 4. Teach the principles of muscle training to progress pelvic floor muscle rehabilitation*
- 5. Apply these principles, using case studies*

An understanding of the anatomy and function of the pelvic floor (PF) is essential to understand how PF dysfunctions occur, and then how to manage these dysfunctions. The PF comprises a muscular and fascial sling that forms the base of the pelvis, and attaches to a firm bony ring. All these structures of the PF act together dynamically and provide support for the pelvic organs which they support. When there is failure of any element of this integrated system, a dysfunction can occur. The active elements of the pelvis are the muscles of the PF, the Levator Ani (LA). This complex of muscles is made up of the Puborectalis,

Pubococcygeus and Iliococcygeus muscles. There is a hiatus (called the levator hiatus) in the midline through which pass the pelvic outlets; the urethra, vagina and anus.

The LA muscles acts as a whole in a mass contraction which has three main functions: to close the pelvic outlets, to lift the pelvic organs, and to resist the downward pressure of the abdomen. The PF muscles have constant resting activity ('tone') to provide constant support in the upright position. Muscular weakness then leads to a situation where the pelvic organs sit lower within the pelvis (called prolapse) or even sit within the levator hiatus. Weakness also reduces the sphincter function of the LA muscle and the result is urinary and/or faecal incontinence. If on the other hand, the PF muscles cannot relax, this can lead to pelvic floor pain.

Assessment of the LA muscles is best undertaken by a vaginal examination – the 'gold standard'. A vaginal assessment can also assess the size of the levator hiatus, the ability of the muscle to fully relax, to grade the muscle strength, assess any strictures, pain or other pathophysiology. If a vaginal assessment is not possible, imaging via ultrasound or external visual assessment can be used to assess and then train the muscles.

There is the highest level of evidence for pelvic floor muscle training (PFMT) and PFMT should be the first line of treatment for PF dysfunction. Clinicians therefore should be able to assess and train the PF muscles effectively. Effective muscle training relies mainly on the principle of muscle overload. In practical terms, this is muscle strengthening. The methods of muscle strengthening differ from other areas of the body as the PF muscles are diaphragmatic, and comprise mostly slow twitch muscle fibres. Overload is gained by altering patient position, varying the length of contraction, using repeated muscles contractions while always maintaining correct motor control and full relaxation of the muscles between contractions.

PFMT is not the only form of conservative management for PF dysfunction. Clinical reasoning is required to determine which treatment strategy is best used for any PF dysfunction. Case studies will be used to allow participants to discuss treatment strategies during the workshop.

Prof. Chantale Dumoulin, Physiotherapist, Canadian Research Chair on Urogynecological Health and Aging at the Research Center of the Institut Universitaire de Gériatrie de Montréal, Professor and post-graduate PFM rehabilitation program Director, School of rehabilitation, Faculty of medicine, Université de Montréal
Urinary incontinence and other pelvic floor dysfunctions in older women, assessment and management

Urinary incontinence (UI) afflicts some 1 in 3 women 15 years and over and approximately 1 in 2 after the age of 50. It engenders significant social problems, embarrassment, and negative self-perception, reducing social interactions and physical activities and, in older women, increasing risk of falls and nursing-home admissions. In short, it impedes a healthy lifestyle and healthy aging; untreated, it can lead to surgery.

In this presentation, we will discuss:

- 1) Innovation in the understanding of the pathophysiology of UI and other PFM dysfunction in aging women; from pelvic floor morphometry and function, lower limb strength and balance, to cognition.
- 2) Innovation in the development of cost-effective, pathology specific group physiotherapy treatments for elderly UI-afflicted women.
- 3) Innovation in the identification of potential beneficiaries of such treatments to better prioritize first line intervention delivery.

Prof. Doreen McClurg, Physiotherapist, Pelvic Floor Dysfunction Lead, Chair of ICS Physiotherapy Committee
Adjunctive treatments for pelvic floor dysfunction – electrical stimulation, biofeedback & ultrasound biofeedback.

The aim of this part of the workshop is to provide an overview of adjuncts commonly used in pelvic floor therapy. Correct contraction of the pelvic floor muscles is sometimes difficult for the patient to perceive, especially if they are weak. Biofeedback (BF) can be defined as being augmented, concurrent or terminal feedback of biological signals that enables a person to identify and modify a bodily function of which they are usually unaware. (Sandweiss 1985). Biofeedback studies are those that use an instrument or device to record the biological signals (e.g. squeeze pressure, electrical activity) during a voluntary pelvic floor muscle contraction and present this information back to the woman in auditory or visual form (for example, a louder sound with a stronger squeeze or an increasing number of lights on a visual display as the strength of the squeeze increased). BF devices vary considerably. They can be inserted into the rectum or vagina or placed on the perineum. Devices include air or water filled balloons inserted into the rectum or vagina to measure pressure. Depending on the number and placement of the balloon catheters it is possible to measure vaginal, anal and intra-abdominal pressure (Aksac 2003). The other main group of BF devices measure electrical activity (that is, electromyography) via surface metal electrodes on vaginal or anal probes (e.g. Berghmans 1996). Another BF option is to show movement, such as lifting the bladder neck, which is possible with real time images from ultrasound (e.g. Galea 2006).

Thus BF typically gives the user an auditory or visual record of the contraction or both. Some devices can only be used in clinic settings because they require a health professional to set up and use the equipment whereas some are very simple and portable and are designed for home use.

Electrical stimulation of the pelvic floor may aim to stimulate motor efferent fibres of the pudendal nerve which may elicit a direct response from the effector organ, for instance a contraction of the PFM (Eriksen 1989). Facilitating such a contraction can help prevent stress urinary leakage, or may inhibit a detrusor muscle contraction thus helping to control urgency/urge urinary incontinence.

Neuromodulation using tibial nerve stimulation will be discussed. The evidence and practicalities will be reviewed.

At the end of this session the attendee should have an overview of adjunctive therapy to facilitate pelvic floor rehabilitation.

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Step 3, scroll to find evaluation button

Step 4, complete survey

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Definitions, signs and symptoms of pelvic floor dysfunctions

Definizioni, segni e sintomi delle disfunzioni del pavimento pelvico

Chantale Dumoulin, PT, PhD,
Professor, School of Rehabilitation, Faculty of Medicine,
University of Montreal
Canadian Research Chair in Urogynecological Health & Aging,
Research Center Montreal Geriatric Institute, Canada

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Pelvic floor dysfunction standardisation of terminology

Disfunzione del pavimento pelvico – standardizzazione della terminologia

Haylen et al. (2010) An International Urogynecological Association (IUGA)/International Continence Society (ICS) Joint Report on the Terminology for Female Pelvic Floor Dysfunction. *Neurology and Urodynamics* 29:4–20

Neurology and Urodynamics 29:4–20 (2010)

REVIEW ARTICLE

An International Urogynecological Association (IUGA)/International Continence Society (ICS) Joint Report on the Terminology for Female Pelvic Floor Dysfunction

Bernard T. Haylen,^{1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19,20,21,22,23,24,25,26,27,28,29,30,31,32,33,34,35,36,37,38,39,40,41,42,43,44,45,46,47,48,49,50,51,52,53,54,55,56,57,58,59,60,61,62,63,64,65,66,67,68,69,70,71,72,73,74,75,76,77,78,79,80,81,82,83,84,85,86,87,88,89,90,91,92,93,94,95,96,97,98,99,100,101,102,103,104,105,106,107,108,109,110,111,112,113,114,115,116,117,118,119,120,121,122,123,124,125,126,127,128,129,130,131,132,133,134,135,136,137,138,139,140,141,142,143,144,145,146,147,148,149,150,151,152,153,154,155,156,157,158,159,160,161,162,163,164,165,166,167,168,169,170,171,172,173,174,175,176,177,178,179,180,181,182,183,184,185,186,187,188,189,190,191,192,193,194,195,196,197,198,199,200,201,202,203,204,205,206,207,208,209,210,211,212,213,214,215,216,217,218,219,220,221,222,223,224,225,226,227,228,229,230,231,232,233,234,235,236,237,238,239,240,241,242,243,244,245,246,247,248,249,250,251,252,253,254,255,256,257,258,259,260,261,262,263,264,265,266,267,268,269,270,271,272,273,274,275,276,277,278,279,280,281,282,283,284,285,286,287,288,289,290,291,292,293,294,295,296,297,298,299,300,301,302,303,304,305,306,307,308,309,310,311,312,313,314,315,316,317,318,319,320,321,322,323,324,325,326,327,328,329,330,331,332,333,334,335,336,337,338,339,340,341,342,343,344,345,346,347,348,349,350,351,352,353,354,355,356,357,358,359,360,361,362,363,364,365,366,367,368,369,370,371,372,373,374,375,376,377,378,379,380,381,382,383,384,385,386,387,388,389,390,391,392,393,394,395,396,397,398,399,400,401,402,403,404,405,406,407,408,409,410,411,412,413,414,415,416,417,418,419,420,421,422,423,424,425,426,427,428,429,430,431,432,433,434,435,436,437,438,439,440,441,442,443,444,445,446,447,448,449,450,451,452,453,454,455,456,457,458,459,460,461,462,463,464,465,466,467,468,469,470,471,472,473,474,475,476,477,478,479,480,481,482,483,484,485,486,487,488,489,490,491,492,493,494,495,496,497,498,499,500,501,502,503,504,505,506,507,508,509,510,511,512,513,514,515,516,517,518,519,520,521,522,523,524,525,526,527,528,529,530,531,532,533,534,535,536,537,538,539,540,541,542,543,544,545,546,547,548,549,550,551,552,553,554,555,556,557,558,559,560,561,562,563,564,565,566,567,568,569,570,571,572,573,574,575,576,577,578,579,580,581,582,583,584,585,586,587,588,589,590,591,592,593,594,595,596,597,598,599,600,601,602,603,604,605,606,607,608,609,610,611,612,613,614,615,616,617,618,619,620,621,622,623,624,625,626,627,628,629,630,631,632,633,634,635,636,637,638,639,640,641,642,643,644,645,646,647,648,649,650,651,652,653,654,655,656,657,658,659,660,661,662,663,664,665,666,667,668,669,670,671,672,673,674,675,676,677,678,679,680,681,682,683,684,685,686,687,688,689,690,691,692,693,694,695,696,697,698,699,700,701,702,703,704,705,706,707,708,709,710,711,712,713,714,715,716,717,718,719,720,721,722,723,724,725,726,727,728,729,730,731,732,733,734,735,736,737,738,739,740,741,742,743,744,745,746,747,748,749,750,751,752,753,754,755,756,757,758,759,760,761,762,763,764,765,766,767,768,769,770,771,772,773,774,775,776,777,778,779,780,781,782,783,784,785,786,787,788,789,790,791,792,793,794,795,796,797,798,799,800,801,802,803,804,805,806,807,808,809,810,811,812,813,814,815,816,817,818,819,820,821,822,823,824,825,826,827,828,829,830,831,832,833,834,835,836,837,838,839,840,841,842,843,844,845,846,847,848,849,850,851,852,853,854,855,856,857,858,859,860,861,862,863,864,865,866,867,868,869,870,871,872,873,874,875,876,877,878,879,880,881,882,883,884,885,886,887,888,889,890,891,892,893,894,895,896,897,898,899,900,901,902,903,904,905,906,907,908,909,910,911,912,913,914,915,916,917,918,919,920,921,922,923,924,925,926,927,928,929,930,931,932,933,934,935,936,937,938,939,940,941,942,943,944,945,946,947,948,949,950,951,952,953,954,955,956,957,958,959,960,961,962,963,964,965,966,967,968,969,970,971,972,973,974,975,976,977,978,979,980,981,982,983,984,985,986,987,988,989,990,991,992,993,994,995,996,997,998,999,1000}

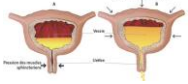
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Urinary incontinence

Incontinenza urinaria

Definition:
Complaint of involuntary loss of urine (symptom)
Until diagnosis is made (clinical observation or urodynamic)

Definizione:
Il disturbo della perdita involontaria di urine (sintomo)
prima che venga posta diagnosi (mediante osservazione clinica o urodinamica)



Haylen et al. 2010

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Stress urinary incontinence

Incontinenza urinaria da stress

Definition:
Complaint of involuntary loss of urine on effort or physical exertion (e.g. sporting activities), or on sneezing or coughing.

N.B.: “activity-related incontinence” might be preferred in some languages to avoid confusion with psychological stress.

Observation of involuntary leakage from the urethra synchronous with effort or physical exertion, or on sneezing or coughing (Abrams et al. 2002).



Definizione:
Il disturbo della perdita involontaria di urine con lo sforzo o attività fisica (ad es. attività sportiva), o con gli starnuti o la tosse. N.B.: “incontinenza attività-correlata” dovrebbe essere preferito in alcune lingue per evitare confusione con lo stress psicologico. L'osservazione di qualsiasi perdita dall'uretra sincrona con gli sforzi o l'attività fisica, gli starnuti o la tosse.

Haylen et al. 2010

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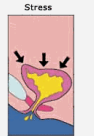
Stress urinary incontinence

Incontinenza urinaria da stress

Mechanism:
Increased intra-abdominal pressure and low closure pressure in urethra cause SUI

Pathophysiology:

- urethral sphincter insufficiency
- Endopelvic fascial stretch or tear
- Levator ani weakness
- Pudendal neuropathy



Meccanismo:
L'incontinenza urinaria da stress (IUS) è causata da un aumento della pressione addominale e da una ridotta pressione di chiusura uretrale

Fisiopatologia:

- Ridotta competenza dello sfintere urinario
- Distensione anomala o lacerazione della fascia endopelvica
- Debolezza dell'elevatore dell'ano
- Neuropatia del n. pudendo

Haylen et al. 2010

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Urgency urinary incontinence

Incontinenza urinaria da urgenza

Definition:
Complaint of involuntary loss of urine associated with urgency

Observation of involuntary leakage from the urethra synchronous with the sensation of a sudden, compelling desire to void that is difficult to defer.

Definizione:
Il disturbo della perdita di urine involontaria associata ad urgenza



Observazione di perdita involontaria dall'uretra sincrona con un desiderio di urinare urgente, impellente e difficile da differire

Haylen et al. 2010

Urgency urinary incontinence:



Mechanism:

Uncontrolled detrusor contraction causes UI

Pathophysiology:

- Increased bladder sensation
- Urinary infection
- Poorly compliant bladder wall
- Idiopathic



Meccanismo:

L'incontinenza urinaria da urgenza è causata da contrazioni detrusoriali involontarie

Fisiopatologia:

- Aumentata sensibilità vescicale
- Infezione delle vie urinarie
- Ridotta compliance vescicale
- Idiopatica

Haylen et al. 2010

Mixed urinary incontinence



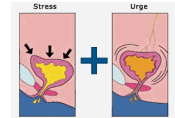
Incontinenza urinaria mista

Definition:

Complaint of involuntary loss of urine associated with urgency and also with effort or physical exertion or on sneezing or coughing

Definizione:

Il disturbo della perdita involontaria di urine associata ad urgenza minzionale ed anche agli sforzi, all'attività fisica, agli starnuti o colpi di tosse



Haylen et al. 2010

Other types of urinary incontinence



Altri tipi di incontinenza urinaria

- **Postural urinary incontinence:** urine loss associated with change of body position
- **Nocturnal enuresis:** Complaint of involuntary loss of urine which occurs during sleep
- **Continuous urinary incontinence:** Complaint of continuous involuntary loss of urine
- **Incontinenza urinaria posturale:** perdita di urine associata col cambiamento della posizione del corpo
- **Enuresi notturna:** Il disturbo della perdita di urine involontaria che si verifica nel sonno
- **Incontinenza urinaria continua:** Il disturbo della perdita di urine involontaria continua

Haylen et al. 2010

Other types of urinary incontinence



Altri tipi di incontinenza urinaria

- **Insensible urinary incontinence:** Complaint of urinary incontinence where the person has been unaware of how it occurred
- **Coital incontinence:** Complaint of involuntary loss of urine with coitus
- **Incontinenza urinaria 'insensibile':** Il disturbo relativo all'impossibilità della persona di definire il come si verifichi l'incontinenza urinaria
- **Incontinenza coitale:** Il disturbo della perdita di urine involontaria che si verifica con il coito

Haylen et al. 2010

Bladder storage symptoms



Sintomi della fase di riempimento vescicale

Increased daytime urinary frequency: frequent micturition occurring during waking hour

Nocturia: interruption of sleep because of need to urinate

Pollachiuria: aumento della frequenza minzionale nelle ore diurne

Nicturia: interruzione del sonno causata dalla necessità di urinare

Haylen et al. 2010

Bladder storage symptoms



Sintomi della fase di riempimento vescicale

Urgency: sudden, compelling desire to pass urine which is difficult to defer

Overactive bladder (OAB, Urgency) syndrome: Urinary urgency, usually accompanied by frequency and nocturia, with or without urgency urinary incontinence, in the absence of urinary tract infection (UTI) or other obvious pathology

Urgenza: stomolo minzionale urgente, impellente e difficile da differire

Sindrome della vescica iperattiva (OAB): urgenza minzionale, di solito accompagnata a pollachiuria e nicturia, con o senza incontinenza urinaria da urgenza, in assenza di infezioni urinarie o altre patologie evidenti

Haylen et al. 2010

Sensory symptoms

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Sintomi sensitivi

Sensory symptoms: A departure from normal sensation or function, experienced by the woman during bladder filling.

- increased bladder sensation
- reduced bladder sensation
- absent bladder sensation

Sintomi sensitivi: Una qualsiasi deviazione dalla normale sensibilità o funzione vescicale avvertita dalla donna durante la fase di riempimento vescicale.

- Aumentata sensibilità vescicale
- Ridotta sensibilità vescicale
- Sensibilità vescicale assente

Haylen et al. 2010

Voiding and post-micturition symptoms

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Sintomi della fase di svuotamento vescicale e sintomi post-minzionali

Voiding and post-micturition symptoms: A departure from normal sensation or function, experienced by the woman during or following the act of micturition (Stedman 2006)

- hesitancy
- slow stream
- intermittency
- straining to void
- spraying
- feeling of incomplete (bladder) emptying
- need to immediately re-void
- post-micturition leakage
- position-dependent micturition
- dysuria
- retention

Sintomi della fase di svuotamento e sintomi post-minzionali: qualsiasi deviazione dalla normale sensazione o funzione vescicale, avvertita dalla donna durante o dopo l'atto della minzione (Stedman 2006).

- Esitazione minzionale
- Mitto ipovalido
- Flusso intermittente
- Sforzo minzionale
- Getto bifido
- Sensazione di incompleto svuotamento
- Necessità di urinare di nuovo immediatamente
- Sgocciolamento post-minzionale
- Minzione dipendente dalla posizione
- Disuria
- Ritenzione urinaria


Haylen et al. 2010

Pelvic organ prolaps

ICS 2017 FLORENCE

Prolasso degli organi pelvici

Definition (symptom):
A departure from normal sensation, structure, or function, experienced by the woman in reference to the position of her pelvic organs



Definizione (sintomo):
Qualsiasi deviazione dalla normale sensazione, struttura o funzione, avvertita dalla donna in relazione alla posizione degli organi pelvici

Haylen et al. 2010

Pelvic organ prolaps


ICS 2017 FLORENCE

Prolasso degli organi pelvici

Definition (signs):
The descent of one or more of the following:

- anterior vaginal wall;
- posterior vaginal wall;
- uterus (cervix);
- apex of the vagina (vaginal vault or cuff scar after hysterectomy)

The presence of any such sign should be correlated with relevant POP symptoms



Definizione (signs):
Il prolasso o discesa di una delle seguenti porzioni:

- Parete vaginale anteriore;
- Parete vaginale posteriore;
- Utero (cervice);
- Apice della vagina (volta della vagina dopo isterectomia)

La presenza di uno di questi segni può essere correlata con i sintomi di prolasso


Haylen et al. 2010

Pelvic organ prolaps


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By compartments:
In base al compartimento:


Central prolapse: Uterine/cervical prolapse or vaginal vault (cuff scar) prolapse
Prolasso centrale: prolasso uterino/cervicale o di volta vaginale



Anterior vaginal wall prolapse: (bladder or cystocele)
Prolasso di parete vaginale anteriore: vescicale o cistocele



Posterior vaginal wall prolapse: (rectocele, enterocele or perineum)
Prolasso di parete vaginale posteriore: rettocele, enterocele o perineo



Haylen et al. 2010

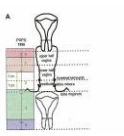
Pelvic organ prolaps (POPQ Staging)

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Prolasso degli organi pelvici (stadiazione POPQ)

Stage 0: No prolapse is demonstrated
Stage I: Most distal portion of the prolapse is more than 1 cm above the level of the hymen

Stadio 0: Non è dimostrabile prolasso
Stadio I: Il limite inferiore del prolasso è > 1cm sopra l'imene



Haylen et al. 2010

Pelvic organ prolaps (POPQ Staging)

Stage II: Most distal portion of the prolapse is 1 cm or less proximal to or distal to the plane of the hymen

Stage III: The most distal portion of the prolapse is more than 1 cm below the plane of the hymen

Stadio II: La porzione più distale del prollasso si estende da > 1 cm sopra a 1 cm oltre l'imene

Stadio III: La porzione più distale del prollasso si estende > 1 cm oltre l'imene

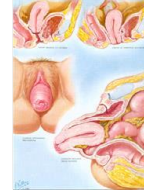


Haylen et al. 2010

Pelvic organ prolaps (POPQ Staging)

Stage IV: Complete eversion of the total length of the lower genital tract is demonstrated

Stadio IV: Completa eversione del tratto genitale inferiore nella sua interezza



Haylen et al. 2010

Symptoms of sexual dysfunction

Sintomi di disfunzione sessuale

Symptoms of sexual dysfunction: A departure from normal sensation and/or function experienced by a woman during sexual activity

- **Dyspareunia (superficial or deep):** complaint of persistent or recurrent pain or discomfort associated with attempted or complete vaginal penetration
- **Obstructed intercourse:** complaint that vaginal penetration is not possible because of obstruction
- **Vaginal laxity:** complaint of excessive vaginal laxity

Sintomi di disfunzione sessuale: qualsiasi deviazione dalla normale

- sensazione e/o funzione avvertita dalla donna durante l'attività sessuale
- **Dispareunia (superficiale o profonda):** il disturbo dato dal dolore persistente o ricorrente o dal discomfort associati col tentativo di penetrazione o con la penetrazione vaginale completa
- **Ostacolo al rapporto:** la sensazione che la penetrazione vaginale non sia possibile a causa dell'ostruzione
- **Lassità vaginale:** sensazione di eccessiva lassità vaginale

Symptoms of anorectal dysfunction

Sintomi di disfunzione anorettale

Anal incontinence: complaint of involuntary loss of faeces or flatus

Faecal incontinence: complaint of involuntary loss of faeces: (a) solid (b) liquid

Passive faecal incontinence: such as soiling without sensation or warning, or difficulty wiping clean

Coital faecal incontinence: occurring with vaginal intercourse

Flatal incontinence: complaint of involuntary loss of flatus

Incontinenza anale: perdita involontaria di feci o gas

Incontinenza fecale: perdita involontaria di feci: (a) solide (b) liquide

Incontinenza fecale passiva: come lo sporcarsi senza sensazioni o allerta

Incontinenza fecale coitale: incontinenza fecale che si verifica durante i rapporti sessuali

Incontinenza di gas: perdita di gas involontaria

Symptoms of anorectal dysfunction

Sintomi di disfunzione anorettale

- **Faecal (rectal) urgency:** sudden, compelling desire to defecate that is difficult to defer.
- **Faecal (flatal) urgency incontinence:** involuntary loss of faeces (flatus) associated with urgency.
- **Straining to defecate:** complaint of the need to make an intensive effort (by abdominal straining or Valsalva) to either initiate, maintain or improve defecation.
- **Urgenza fecale (rettale):** urgente ed impellente stimolo a defecare che è difficile da differire
- **Incontinenza da urgenza fecale (gas):** involontaria perdita di feci (gas) associata ad urgenza
- **Sforzo nel defecare:** necessità di sforzarsi (mediante ponzamento addominale o Valsalva) per iniziare, mantenere o migliorare la defecazione

Symptoms of anorectal dysfunction

Sintomi di disfunzione anorettale

Feeling of incomplete (bowel) evacuation: complaint that the rectum does not feel empty after defecation.

Diminished rectal sensation: complaint of diminished or absent sensation in the rectum

Constipation: complaint that bowel movements are infrequent and/or incomplete, and/or there is a need for frequent straining or manual assistance to defecate. (Rome II Criteria)

Rectal prolapse: complaint of external protrusion of the rectum.

Rectal bleeding/mucus: complaint of the loss of blood or mucus per rectum.

Sensazione di incompleto svuotamento (intestinale): la sensazione che il retto non sia vuoto alla fine della defecazione

Ridotta sensibilità rettale: sensibilità rettale ridotta o assente

Costipazione: la sensazione che i movimenti intestinali siano rari e/o incompleti, e/o la necessità di sforzarsi frequentemente o di assistenza manuale per defecare (Criteri Roma II)

Prolasso rettale: protrusione esterna del retto

Sanguinamento rettale/mucorrea: perdita di sangue o muco dal retto

Lower urinary tract pain and/or other pelvic pain ICS 2017 FLORENCE

Dolore del tratto urinario inferiore/altro dolore pelvico

Bladder pain: complaint of suprapubic or retropubic pain, pressure or discomfort, related to the bladder, and usually increasing with bladder filling; it may persist or be relieved after voiding (Abrams et al. 2002).

Other pain: Urethral, vulvar, vaginal, perineal, pelvic, cyclical, pudendal, chronic lower urinary tract pain syndrome

Dolore vescicale: sensazione di dolore, pressione o discomfort sovrapubici o retropubici, riferiti alla vescica, che usualmente aumenta col riempimento vescicale; può persistere o scomparire dopo la minzione (Abrams et al. 2002).

Altre forme di dolore: Sindrome del dolore del tratto urinario inferiore cronico uretrale, vulvare, vaginale, perineale, pelvico, ciclico, pudendo

ICS 2017 FLORENCE

Role of physiotherapy in conservative management of UI and POP

Ruolo della fisioterapia nel trattamento conservativo dell'Incontinenza urinaria e del Prolasso degli organi pelvici

Chantale Dumoulin, PT, PhD,
Professor, School of Rehabilitation, Faculty of Medicine,
University of Montreal
Canadian Research Chair in Urogynecological Health & Aging,
Research Center Montreal Geriatric Institute, Canada

Role of physiotherapy in conservative management of UI and POP ICS 2017 FLORENCE

Ruolo della fisioterapia nel trattamento conservativo dell'Incontinenza urinaria da urgenza e del Prolasso degli organi pelvici

Bo et al. *An International Urogynecological Association (IUGA) / International Continence Society (ICS) joint report on the terminology for the conservative and non-pharmacological management of female pelvic floor dysfunction.* (In press 2016)



Bo et al. 2016

ICS 2017 FLORENCE

Physiotherapy

Fisioterapia

Physiotherapy involves “using knowledge and skills unique to physiotherapists” and, “is the service only provided by, or under the direction and supervision of, a physiotherapist”

La fisioterapia implica “l'uso di conoscenze e abilità proprie dei fisioterapisti” ed, “è il servizio fornito esclusivamente da, o eseguito sotto la direzione e supervisione di, un fisioterapista”

Bo et al. 2016

Physiotherapy ICS 2017 FLORENCE

Fisioterapia

When doing pelvic floor physiotherapy, it is recommend that the specific treatment is described, e.g. “pelvic floor muscle training, electrical stimulation”, rather than the unspecific term “physiotherapy” as the latter simply refers to a specific profession

Nella fisioterapia del pavimento pelvico viene raccomandato di descrivere lo specifico trattamento, per esempio “attività di rinforzo muscolare del pavimento pelvico, stimolazione elettrica, piuttosto che il termine generico di “fisioterapia” poiché quest’ultimo indica una professione

Bo et al. 2016

ICS 2017 FLORENCE

Lifestyle interventions

Modifiche nello stile di vita

The application of interventions in management of lifestyle-related health problems:

- change to healthy diet (fluid consumption/restriction, diet modification)

Modifiche nelle abitudini comportamentali per il trattamento dei problemi di salute correlati ad un non corretto stile di vita:

- Dieta salutare (consumo/restrizione di liquidi, modifiche nella dieta)



Bo et al. 2016

Lifestyle interventions

Modifiche nello stile di vita

The application of interventions in management of lifestyle-related health problems:

- restriction of high impact physical activity
- weight reduction
- Constipation



Modifiche nelle abitudini comportamentali per il trattamento dei problemi di salute correlati ad un non corretto stile di vita:

- Riduzione di attività fisica impegnativa
- Riduzione di peso
- Stipsi




Bo et al. 2016

Education

Educazione

Providing patients with knowledge and understanding of their condition thereby empowering them to play an active role in its management

Fornire ai pazienti le conoscenze e la coscienza riguardo la propria condizione in modo da consentirne un ruolo attivo nel trattamento

- Lower urinary tract anatomy
- Continence mechanism
- Pathophysiology
- Coping strategies
- Self-care, self efficacy
- Urgency suppression techniques
- Knack

- Anatomia del basso apparato urinario
- Meccanismo della continenza
- Fisiopatologia
- Strategie di reazione
- Cura di sé
- Strategie di soppressione dell'urgenza
- Capacità

Bo et al. 2016

Scheduled voiding regimes

Minzione programmata

Toileting on a fixed schedule around the patient's normal voiding pattern, which includes a progressive voiding schedule using relaxation and distraction techniques for urgency suppression

Scheduled voiding regimes have been categorised as:

- bladder training
- timed voiding
- habit training
- prompted voiding

Andare in bagno con una cadenza fissa rispettando più o meno le normali tempistiche di svuotamento del paziente, includendo un programma di svuotamento progressivo ed usando tecniche di rilassamento e distrazione per la soppressione dell'urgenza

Regimi di minzione programmata:

- Addestramento vescicale
- Minzione ad intervalli regolari
- habit training
- Minzione posposta

Bo et al. 2016

Example

Example 1: Patient has urinary urge but does not respond well to the Knack technique and needs to void frequently.

Example 2: Patient has urinary urgency and needs to void frequently.

Example 3: Patient has urinary urgency and needs to void frequently.

Example 4: Patient has urinary urgency and needs to void frequently.

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Example 100: Patient has urinary urgency and needs to void frequently.

Pelvic floor muscle training

Allenamento dei muscoli del pavimento pelvico

Exercise to improve PFM strength, endurance, power, relaxation or a combination of these parameters

Can be done:

- Individually/group
- Supervised/non-supervised
- Home/clinic
- Assisted with (Estim or biofeedback)
- Active/resisted with (cones or other resistance)

Esercizio fisico che migliora la forza, la durata di contrazione, la potenza, il rilassamento o una combinazione di questi parametri

Può essere eseguito:

- Da soli/in gruppo
- Supervisionato/non-supervisionato
- A casa/struttura
- Associato a (Estim o biofeedback)
- Attivo o con resistenze (coni o altro)

Bo et al. 2016





Level of evidences for interventions for women

Livelli di evidenza per il trattamento nella donna

Condition	Intervention	Level of evidence	Grade of recommendation
Urinary incontinence	PFMT	1	A
	Scheduled voiding regimes	1	A
	Lifestyle modifications (weight loss, caffeine)	2	A-C
POP	PFMT	1	B

Condizione	Trattamento	Livello di evidenza	Grado di raccomandazione
Incontinenza urinaria	PFMT	1	A
	Regimi minzionali programmati	1	A
	Modifiche comportamentali e nello stile di vita (perdita di peso, caffeina)	2	A-C
Prolasso organi pelvici	PFMT	1	B

Dumoulin, 2016

Recommendations

Raccomandazioni

Conservative management therapy such as pelvic floor muscle training should be offered as **first line therapy** to all women with urinary incontinence (stress, mixed and urgency).

Il trattamento conservativo, come l'allenamento muscolare del piano perineale, dovrebbe essere offerto come **terapia di prima linea** a tutte le donne con incontinenza urinaria (stress, mista e urgenza)

Conservative management therapy such as pelvic floor muscle training should be offered as **first line therapy** to all women with POP.

Il trattamento conservativo, come l'allenamento muscolare del piano perineale, dovrebbe essere offerto come **terapia di prima linea** a tutte le donne con prolasso degli organi pelvici

Although the level of evidence is lower, pelvic floor physiotherapy appears to be effective and should be offered before more costly and invasive treatment for fecal incontinence and pelvipereineal pain.

Sebbene con un inferiore livello di evidenza, la fisioterapia del pavimento pelvico sembra essere efficace e dovrebbe essere offerta prima di trattamenti più costosi ed invasivi per l'incontinenza fecale ed il dolore pelvipereineale

Dumoulin, 2016

ICS 2017
FLORENCE



Pelvic floor dysfunction, assessment and management: Adaptation in older women

Disfunzione del pavimento pelvico, valutazione e trattamento: Adattamento nella donna anziana


Chantale Dumoulin, PT, PhD,
Professor, School of Rehabilitation,
Faculty of Medicine, University of Montreal
Canadian Research Chair in Urogynecological Health & Aging,
Research Center Montreal Geriatric Institute, Canada

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Context

Contesto
In women 60 and over:

- 40-55% suffer from UI
 - MUI > SUI > UIUI
 - 20 to 25% suffer from severe symptoms (>10 episodes/week)
- 63% suffer from vulvo-vaginal atrophy
- 36% suffer from POP
- 66% avoid intimacy because of these problems



Nelle donne >60aa:

- 40-55% soffrono di Incontinenza urinaria
 - Incontinenza mista > Incontinenza da sforzo> incontinenza da urgenza
 - 20 - 25% presentano sintomi severi (>10 episodi/settimana)
- 63% presentano atrofia vulvo-vaginale
- 36% presentano Prolasso degli organi pelvici
- 66% evitano rapporti intimi per questi problemi


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Context

Contesto

PF dysfunctions can:

- Be onerously expensive
- Negatively impact QoL
- Result in isolation, decline in ADL
- Increase the risk of falls and nursing home admissions



Le disfunzioni del pavimento pelvico possono:

- Essere responsabili di spese onerose
- Impattare negativamente sulla qualità di vita
- Determinare isolamento e declino nell'ADL
- Aumentare il rischio di cadute e di assistenza infermieristica domiciliare

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Changes in pelvic floor function with age

Cambiamenti nella funzione del pavimento pelvico con l'età

- Menopausal oestrogen deficiency (perineal, vulvar and vaginal and urethral changes)
- Deficit estrogenico post-menopausale (cambiamenti perineali, vulvari ed uretrali)
- PFM force and power reduction, increased fatigability, sarcopenia
- Riduzione di forza e potenza del pavimento pelvico con aumento dell'affaticabilità, sarcopenia
- Reduction in urethral closing pressure
- Riduzione della pressione di chiusura uretrale
- Bladder changes: reduction in bladder compliance, bladder sensation and contractility
- Cambiamenti vescicali: riduzione della compliance, della sensibilità e della contrattilità vescicale

Chen, 2007

ICS 2017
FLORENCE

Changes in pelvic floor function with age

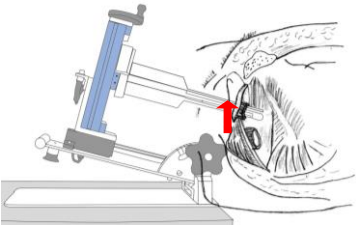
Cambiamenti nella funzione del pavimento pelvico con l'età

- Higher body mass index
- Aumento del body mass index
- Constipation
- Costipazione
- Previous pelvic surgery
- Pregressa chirurgia pelvica
- Comorbidities (ie: diabetes mellitus)
- Comorbilità (diabete mellito)
- Fragility (cognitive decline, lower limb dysfunction)
- Fragilità (declino cognitivo, disfunzione degli arti inferiori)

Chen, 2007


ICS 2017
FLORENCE

PFM function in aging women





Force (N)


Temps (s)

PFM function in continent and SUI aging women 

Funzione del PFM in donne anziane continenti e con SUI
Aim: To identify PFM dysfunction in SUI older women compared to continent women NeuroUrol. Uroldynam. 23:668-674, 2004
Scopo: identificare una disfunzione del PFM in donne anziane con incontinenza da sforzo in confronto a donne continenti



Subjects: 30 continent, 59 SUI postmenopausal women
Method: Passive and active PFM function assessment; ANCOVA, controlling for age and parity

Parameters			P values
Passive force (N)	2.3 ± 1.0	1.6 ± 0.7	0.011*
Maximal strength (N)	4.5 ± 2.3	3.7 ± 1.8	0.229
Rate of force (N/s)	8.7 ± 4.5	5.6 ± 3.9	0.012*
Number of contractions	10.3 ± 3.9	8.5 ± 3.0	0.011*
Absolute endurance (N*s)	129.1 ± 75.3	81.3 ± 52.8	0.001*

PFM function in continent and SUI aging women 


Funzione del PFM in donne anziane continenti e con SUI
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Method: Passive and active PFM function assessment; ANCOVA, controlling for age and parity

Parameters			P values
Passive force (N)	2.3 ± 1.0	1.6 ± 0.7	0.011*

Physiotherapist should consider these findings in treating UI in aging women

I fisioterapisti dovrebbero considerare questi dati nel trattamento dell'incontinenza urinaria nella donna anziana.

Lower limb dysfunction and UI 

Morin M, poster presentation, ICS Barcelona 2013
Disfunzione degli arti inferiori ed incontinenza urinaria

Population: 20 MUI/UUI and 20 continent women ≥ 65 years
Popolazione del campione: 20 donne con Incontinenza urinaria mista/da urgenza e 20 donne continenti ≥ 65 anni

Method: Cohort study evaluating
 • Cognitive function (MMSE)
 • Severity of UI (ICIQ-UI Short Form)
 • General health status (SF-12 Health Survey)
 • Lower limb muscle strength (Biodex)
 • Balance (Unipodal Stance Test)
 • Balance confidence (ABC scale)
 • Mobility (mean gait speed on a 10 meter distance)


Metodi: Studio di coorte che ha valutato
 • Funzione cognitiva (MMSE)
 • Severità dell'incontinenza (ICIQ-UI Short Form)
 • Stato di salute generale (SF-12 Health Survey)
 • Forza muscolare degli arti inferiori (Biodex)
 • Bilanciamento (Unipodal Stance Test)
 • Balance confidence (ABC scale)
 • Mobilità (velocità media su distanza di 10 metri)


Results: Older women with MUI/UUI had a generally lower physical health status than continent women

Risultati: Donne anziane con Incontinenza urinaria mista/da urgenza hanno peggiori condizioni fisiche generali rispetto alle donne continenti

Older women with MUI/UUI presented a significantly lower gait speed, balance performance and balance confidence as compared to continent women

Nelle donne con incontinenza è stata riscontrata una ridotta velocità di deambulazione, minore bilanciamento e balance confidence rispetto a donne continenti



Conclusion 


Disfunzione degli arti inferiori ed incontinenza urinaria

This study suggests balance and mobility deficits in older women suffering from urge/mixed UI

Questo studio evidenzia i deficit di bilanciamento e mobilità nella donna anziana affetta da incontinenza urinaria da urgenza/mista

Physiotherapist should consider these findings in treating UI in aging women

I fisioterapisti dovrebbero considerare questi dati nel trattamento dell'incontinenza urinaria nella donna anziana.

UI and impaired execution function in aging women 


Journal of Clinical and Experimental Neuropsychology, May 2013


Population: 32 continent / 83 MUI

Method: Cohort study where women were asked to complete the UDI, the IIQ, and a battery of cognitive tests

Campione: 32 donne continenti/83 con incontinenza urinaria mista

Metodi: Studio di coorte nel quale è stato chiesto di completare UDI, IIQ, ed una serie di test cognitivi



UI and impaired execution function in aging women 


Journal of Clinical and Experimental Neuropsychology, May 2013

Results: MUI women demonstrated poorer cognitive performance on executive-function tests and divided-attention tests

Results: Donne con incontinenza urinaria mista hanno mostrato una ridotta performance cognitiva ai test

Conclusion: Aging women with MUI have difficulties disengaging attention from one task to perform another and coping with interference


Conclusioni: Donne anziane con incontinenza urinaria mista hanno maggiore difficoltà nel passare da un task ad un altro e nella reazione ad interferenze

PFM dysfunctions related to aging 

Disfunzione dei muscoli del pavimento pelvico in relazione all'età

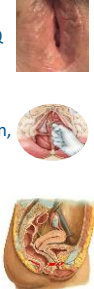
- OAB syndrome
- Urgency symptoms
- Urinary frequency
- Nocturia
- Reduced bladder sensation
- Slow and incomplete micturition
- Symptomatic POP
- Mixed urinary incontinence
- Vulvovaginal atrophy
- **Sindrome della vescica iperattiva**
- **Urgenza minzionale**
- **Pollachiuria**
- **Nicturia**
- **Ridotta sensibilità vescicale**
- **Slow and incomplete micturition**
- **POP sintomatico**
- **Incontinenza urinaria mista**
- **Atrofia vulvovaginale**

Chen, 2007

Evaluation 

Valutazione

- Bladder function (bladder diary, questionnaire (ICI-Q modules))
- Perineal evaluation (atrophy, loss of elasticity, pain)
- PFM function (observation, palpation, measurement)
- Assessment of comorbidities
- Lower limb function (gait, balance, transfer)
- Cognitive function (dual tasking, memory)
- **Funzione vescicale (diario minzionale, questionari (ICI-Q modules))**
- **Valutazione perineale (atrofia perdita di elasticità, dolore)**
- **Pavimento pelvico (osservazione, palpazione, misure)**
- **Valutazione di comorbidità**
- **Funzione degli arti inferiori (andatura, bilanciamento, trasferimento)**
- **Funzione cognitiva (attività contemporanee, memoria)**




Virtual reality as a treatment approach for older women with mixed urinary incontinence: a feasibility study 

Elliott V. N&U2012 31(6): 940-41; N&U2014 Janv. 10

Realtà virtuale come approccio terapeutico nella donna anziana con incontinenza urinaria mista: studio di fattibilità

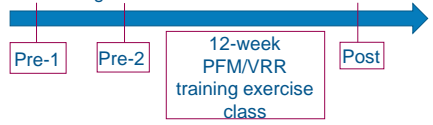




Methods 

Metodi

- **Study Design:** quasi-experimental, pre-test, post-test design.
- **Intervention**

Disegno dello studio: quasi-sperimentale, pre-test, post-test

Intervention: PFM/VRR training program 

Fase interventistica: programma di allenamento muscoli del pavimento pelvico/realtà virtuale

12 consecutive 60-minute weekly exercise classes; each class session comprised:

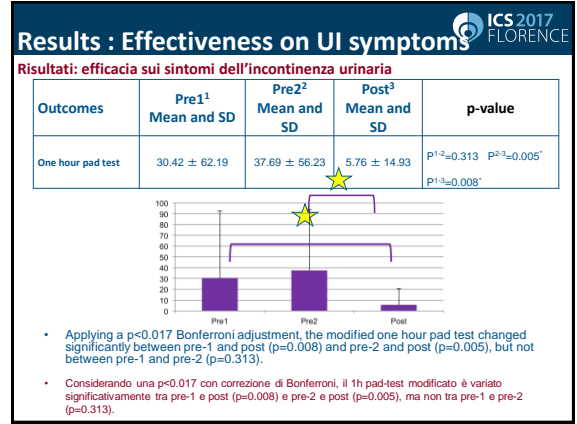
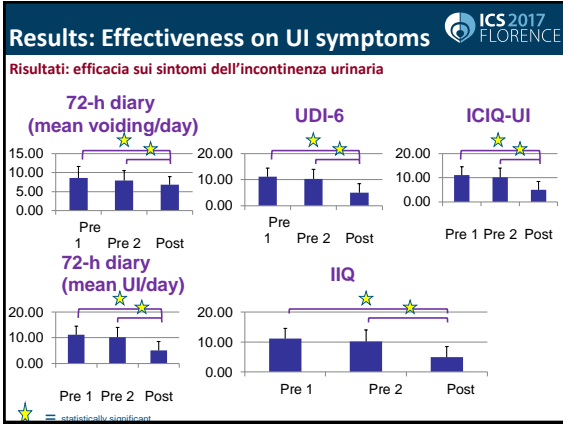
- 10-minute education period on UI
- 30-minute session of static PFM training in different positions
- 20-minute VRR training session using a free open-source software dance game, StepMania.



12 sedute settimanali consecutive di esercizi di classe della durata di 60 min;

Ciascuna sessione di classe ha compreso:

- Periodo di 10 minuti di educazione sulla incontinenza urinaria
- Sessione di 30 minuti di allenamento statico del pavimento pelvico in posizioni differenti
- Sessione di 20 minuti di allenamento utilizzando un gioco di danza open-source, StepMania.



Results: gait parameters

Risultati: parametri di andatura

Gait parameters	Pre Mean ± SD	Post Mean ± SD	p-value
Velocity (m/s)	1.45 ± 0.14	1.46 ± 0.15	P = 0.929
Cadence (step/minute)	124.20 ± 17.09	125.50 ± 12.14	P = 0.840
Stride time (s)	0.97 ± 0.02	0.95 ± 0.02	P = 0.047*
Step time (s)	0.49 ± 0.02	0.48 ± 0.02	P = 0.029*
Standard deviation of stride time (s)	0.05 ± 0.03	0.01 ± 0.02	P = 0.024*
SD of step time (s)	0.03 ± 0.02	0.02 ± 0.01	P = 0.320

Results: cognition parameters

Risultati: parametri cognitivi
The means and standard deviations (SD) of the 2-back DTCs, prior to and after the PFM/VRR programme

Medie e deviazioni standard dei 2-back DTCs, prima e dopo il programma PFM/VRR

	Pre 1 Mean ± SD	Pre 2 Mean ± SD	Post Mean ± SD	P-value
2-back error DTC	-0.62 ± 1.64	-1.07 ± 1.22	0.30 ± 1.88	P ¹⁻² =0.14 P ²⁻³ =0.022*

**Note: A negative DTC indicates that more errors were made in the dual task than in the single task. Un DTC negativo indica che erano compiuti più errori nei task duali piuttosto che nei task singoli*

The 2-back error DTC diminished significantly over time for the entire sample [F(2, 21) = 3.667; p = 0.034; η² = 0.14].
PFMT improve cognitive performance while walking in older women with mixed UI.

Il 2-back error DTC si è significativamente ridotto nel tempo per l'intero campione [F(2, 21) = 3.667; p = 0.034; η² = 0.14].
Il training del pavimento pelvico migliora le performance cognitive durante la camminata in donne anziane con incontinenza urinaria mista.

Conclusion

This feasibility study demonstrated that the PFM/VRR programme was effective in reducing UI symptoms, and improving gait and cognition, while enhancing QoL

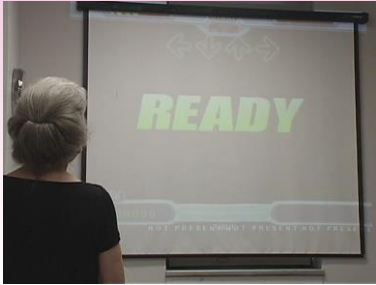
Questo studio di fattibilità ha dimostrato che il programma PFM/VRR è stato efficace nel ridurre i sintomi dell'incontinenza urinaria e migliora la camminata e i parametri cognitivi, migliorando la QoL.

A combined PFM/VRR is an effective functional training approach for older women with mixed UI

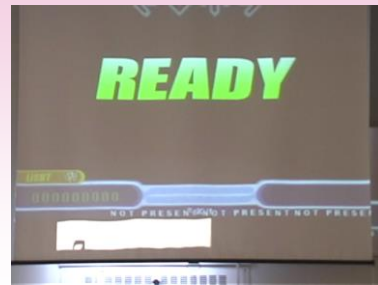
Un approccio combinato PFM/VRR è un allenamento efficace per donne anziane con Incontinenza urinaria mista

Let's dance....

Let's dance ...



Let's dance ...Beginners



Let's dance ...Advanced



Case 1: Alice



Alice loves to spend time with her friends at the community center, knitting and doing aquagym.

But she is going less and less since she had that big cough this winter.

It's embarrassing, but lately Alice has had difficulty walking to the bathroom without losing her urine.

Can physiotherapy help Alice?

Alice ama trascorrere del tempo con i suoi amici al centro ricreativo, lavorare a maglia e fare aquagym.

Ma lui ha iniziato ad andarci di meno da quando ha avuto una forte tosse questo inverno.

È imbarazzante, ma ultimamente Alice ha avuto difficoltà a camminare fino al bagno senza perdere le urine.

La fisioterapia può aiutare Alice?

Workshop 30

Manual and visual assessment of the PFM, clinical reasoning and treatment planning**Valutazione manuale e visiva del PFM, ragionamento clinico e pianificazione del trattamento**

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e
Gabrielle Russo
Fisioterapista, Firenze

Margaret Sherburn

Affiliations to disclose[†]:

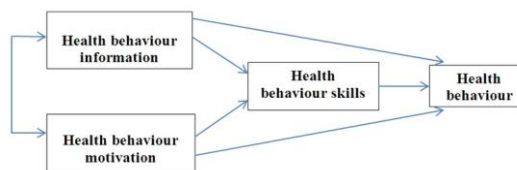
Nessuna

Funding for speaker to attend:

- Self-funded
 Institution (non-industry) funded
 Sponsored by: *Inserisci il nome della società*

Rationale for PFM assessment
Motivi per la valutazione PFM

- To teach correct motor skill
- To prescribe a structured exercise program based on sound biological rationale
- To educate and motivate for adherence to this program
 - to create a change in health behaviour
- Per insegnare una corretta tecnica motoria
- Per prescrivere un programma di esercizi strutturato basato su logiche biologiche corrette
- Per educare e motivare l'adesione a questo programma
 - Per creare un cambiamento nei comportamenti salutary

Rationale for PFM assessment
Motivi per la valutazione PFMPFM Assessment
Valutazione PFM**Requirements for per vaginum examination:**

- Informed consent / choice
- Psychological readiness / awareness
- The process will be informative and therapeutic
- The therapist is capable

Requisiti per l'esame vaginale:

- Consenso/scelta informato
- Preparazione e consapevolezza psicologica
- Il processo sarà informativo e terapeutico
- Il terapeuta dovrà essere capace

PFM Assessment
Valutazione PFM**Metodi di valutazione:**

1. Verbale
2. Valutazione esterna
 - Pants on: visive, tattili
 - Pants off: visive
 - Ultrasuoni
3. Valutazione interna
 1. Esame vaginale
 2. Esplorazione rettale

Assessment methods:

1. Verbal
2. External assessment
 - Pants on: visual, tactile
 - Pants off: visual
 - Ultrasound imaging
3. Internal assessment
 1. Per vaginum examination
 2. Per rectum examination

PFM vaginal digital assessment
Valutazione PFM vaginale digitale

Vaginal assessment is the 'gold standard' for PFM assessment
 La valutazione vaginale è il "gold standard" per la valutazione PFM

Digital Muscle Testing: **quantitative** tool to assess:
 PFM strength, endurance & fatigue

Digital Muscle Testing: strumento **quantitativo** per valutare:
 Forza PFM, resistenza e affaticamento

and ...
 E...

PFM vaginal digital assessment
Valutazione PFM vaginale digitale

muscle tone	speed of contraction
lift	coordination
symmetry	ability to relax
scarring	adhesions
pain	urogenital /levator hiatus dimensions
prolapse	perineal movement
extra-pelvic muscle activity	
tono muscolare	velocità delle contrazioni
sollevamento	coordinazione
simmetria	capacità di rilassamento
cicatrici	aderenze
dolore	dimensioni iato urogenitale
prolass	movimento perineale
Attività muscolare extra-pelvica	

Contra-indications for per vaginum examination
Contro-indicazioni per l'esame vaginale

Controindicazioni:	Contraindications:
<ul style="list-style-type: none"> • Nessun consenso • Non psicologicamente pronta o consapevole • Bambino / adolescente • Gravidanza < 12 settimane – se la gravidanza è instabile • Sanguinamento vaginale non-menstruale • Infezione vaginale/pelvica acuta e locale • Fistola / ferite aperte/ lesioni cutanee • Mancanza di sensazione completa? 	<ul style="list-style-type: none"> • No consent • Not psychologically ready or aware • Child / adolescent • Pregnancy < 12 weeks - if pregnancy is unstable • Non-menstrual vaginal bleeding • Acute local vaginal/pelvic infection • Fistula / open wounds / broken skin • Complete lack of sensation?

Precautions for per vaginum examination
Precauzioni per l'esame vaginale

Precauzioni:	Precautions:
<ul style="list-style-type: none"> • Mestruazioni • Allergia ai guanti/lubrificante • Assenza di attività sessuale • Infezione locale cronica • Abuso sessuale passato/recente o dolore pelvico/vulvare 	<ul style="list-style-type: none"> • Menstruating • Allergy to gloves/lubricant • Absence of sexual activity • Chronic local infection • History/current sexual abuse or pelvic/vulval pain

Problems with vaginal assessment
Problemi della valutazione vaginale

<p>Gli incrementi delle scale non sono uguali</p> <p>Nessun valore di cut-off per le condizioni patologiche</p> <p>Non è possibile confrontare i risultati tra scale quali grandi variazioni in:</p> <ul style="list-style-type: none"> – Affidabilità – Scoperta della 'validità' – Popolazione testata – Metodi di test – Vaginale vs anale 	<p>Increments in scales are not equal</p> <p>No cut-off values for pathological conditions</p> <p>Can't compare findings between scales as large variations in:</p> <ul style="list-style-type: none"> –Reliability –Findings of 'validity' –Population tested on –Methods of testing –Vaginal vs anal
--	--

Problems with vaginal assessment
Problemi con la valutazione vaginale

<p>Obiettivare la misura attraverso l'uso di scale</p> <p>Misurare diversi aspetti (MVC, resistenza, compressione, portanza)</p> <p>I risultati della valutazione aiutano il trattamento</p>	<p>✓</p> <p>Attempt at objectivity through use of measurement scales</p> <p>Can measure several aspects (MVC, endurance, squeeze, lift)</p> <p>Assessment findings assist treatment</p>
--	---

ICS Scala (Messelink et al 2005)

PFM strength scale: 4 point scale for voluntary contraction ('tightening, lifting and squeezing'):

- 0 = no contraction palpable
- 1 = weak
- 2 = normal [?? = moderate]
- 3 = strong

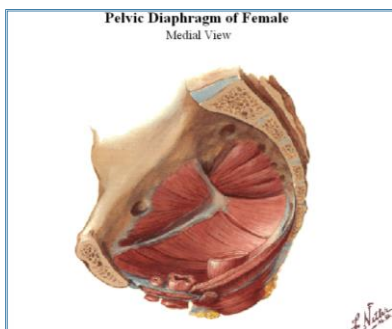
Scala di resistenza PFM: scala a 4 punti per la contrazione volontaria ("serraggio, sollevamento e compressione"):

- 0 = nessuna contrazione palpabile
- 1 = lieve
- 2 = normal / ??moderata
- 3 = forte

ICS Scala (Messelink et al 2005)

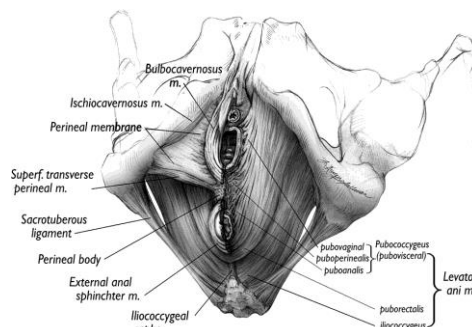
- 'should be tested in both supine and standing position to see if contraction against gravity is possible'
- if tested with lying knees bent, knees should be supported
- Single digit [2 may sometimes be appropriate?]
- 'Deve essere sottoposto a test sia in posizione supina che in posizione ortostatica per vedere se è possibile la contrazione contro gravità'
- Se testato con ginocchia piegate, le ginocchia devono essere supportate
- Singolo dito [2 può essere appropriata?]

Pelvic floor muscles Muscoli del pavimento pelvico



Netter, F.H. Interactive Atlas of Human Anatomy, 3rd ed. New Jersey, Icon Learning Systems, 2003, ISBN: 1-929007-15-9, Plate # 337B

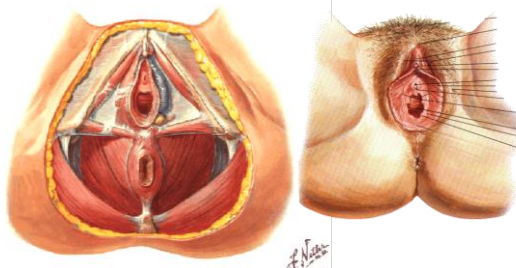
Pelvic floor muscles – inferior view Muscoli del pavimento pelvico - vista inferiore



Corton: Clin Obstet Gynecol. 2005 48(3):611-626

Perineum / Vulva Perineo / Vulva

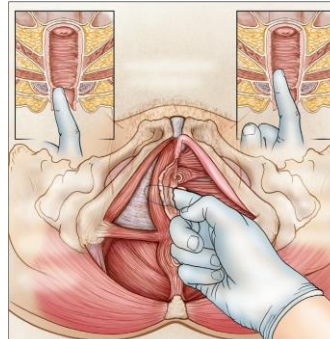
Perineum and Urogenital Diaphragm of Female



Netter, F.H. Interactive Atlas of Human Anatomy, 3rd ed. New Jersey, Icon Learning Systems, 2003, ISBN: 1-929007-15-9, Plate # 356A

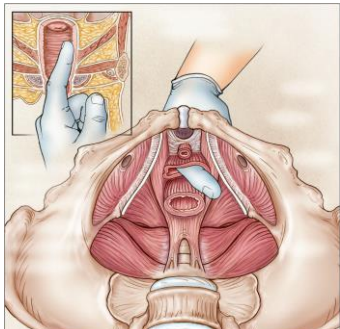
PFM assessment: superficial layer Valutazione PFM: strato superficiale

(Sarton 2010, J Sex Med 2010;7:3526-3529)



PFM assessment: deeper layer Valutazione PFM: livello più profondo

Sarton 2010, J Sex Med 2010;7:3526–3529)



Visual assessment of PFM activity Valutazione visiva dell'attività PFM

- Gives first impression of ability to contract & relax the PFM:
- Correct movement (inward movement of perineum)
- No contraction (no movement of perineum)
- Straining (outward movement of perineum)

La prima impressione della capacità di contrarre e rilassare il PFM è data da:

- Movimento corretto (movimento verso l'interno del perineo)
- Nessuna contrazione (nessun movimento del perineo)
- Sforzo (movimento verso l'esterno del perineo)

Position: Crook lying, sitting Posizione: Piegato, seduto

Visual assessment of PFM activity Valutazione visiva dell'attività PFM

Problems:

The inward movement cannot be measured with validity
Il movimento verso l'interno non può essere misurato con validità

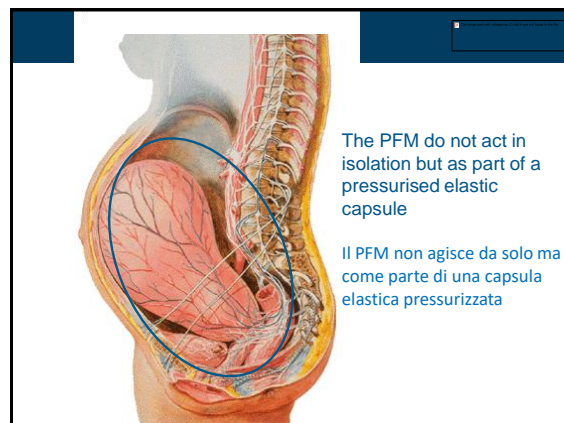
May be only the perineal muscles contracting

Potrebbero essere contratti solo i muscoli perineali

Difficult to observe movement in obese women

Difficoltà di osservare il movimento nelle donne obese

*Now let's practice this
Ora facciamo pratica*



The PFM do not act in isolation but as part of a pressurised elastic capsule

Il PFM non agisce da solo ma come parte di una capsula elastica pressurizzata

Pelvic floor function as part of the abdominal capsule

Funzione del pavimento pelvico come parte della capsula addominale

The pelvic floor muscle (PFM) contracts synergistically with transversus abdominis (Sapsford, 2001, Neumann, 2002)

Specifically the lower 1/3 of TrA (Urquhart, 2003)

This is commonly disrupted in PFD, in 43% of subjects (Thompson et al 2003)

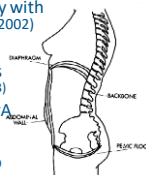
30% depressed pelvic floor when asked to perform TrA contraction alone (Bo et al 2002)

I muscoli del pavimento pelvico (PFM) si contraggono sinergicamente con l'addominale trasverso (Sapsford, 2001, Neumann, 2002)

Nello specifico l'1/3 inferiore del TrA (Urquhart, 2003)

Questo è comunemente distrutto nel caso di PFD, nel 43% dei soggetti (Thompson et al 2003)

Il 30% di depressione del pavimento pelvico è necessaria per eseguire la sola contrazione del TRA (Bo et al 2002)



Pelvic floor function as part of the abdominal capsule

Funzione del pavimento pelvico come parte della capsula addominale

Urethral pressure rises before a rise in IAP: S234 reflex arc causing a PFM contraction (Sapsford, 2001)

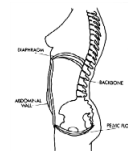
A maximal PFM contraction recruits all abdominal muscles (Bo, 1995)

PFM are more effective with normal lumbar curve (Sapsford, 2001)

La pressione uretrale aumenta prima di un aumento in IAP: l'arco riflesso S234 causa una contrazione del PFM (Sapsford, 2001)

Una contrazione massima del PFM richiede tutti i muscoli addominali (Bo, 1995)

I PFM sono più efficaci con una normale curva lombare (Sapsford, 2001)



PFM and TrA synergy

- Aim of study:** To compare the effectiveness of PFM activity on instruction to contract PFM, TrA and combined contraction (Bo, Sherburn et al NAU 2003)
- PF imaged on ultrasound; all participants could contract their PFM
- Significant difference ($p < 0.05$) in PF displacement with PFM instruction, TrA and combined contraction

Scopo dello studio: confrontare l'efficacia dell'attività del PFM nel dirigere la contrazione del PFM, del TrA e in maniera combinata (Bo, Sherburn et al NAU 2003)

- Immagini del PF con ultrasuoni; Tutti i partecipanti potrebbero contrarre il PFM
- Differenza significativa ($p < 0,05$) nello spostamento del PF con PFM, TrA e contrazione combinata

Muscoli	Medio Displ mm(95% CI)
PFM	11.2 (7.2 – 15.3)*
TrA	4.3 (-0.2 – 8.8)**
PFM + TrA	8.5 (5.2 – 12.0)***

*PFM vs TrA; $p = 0.002$
 **TrA+PFM vs TrA; $p = 0.003$
 ***TrA+PFM vs PFM; $p = 0.038$

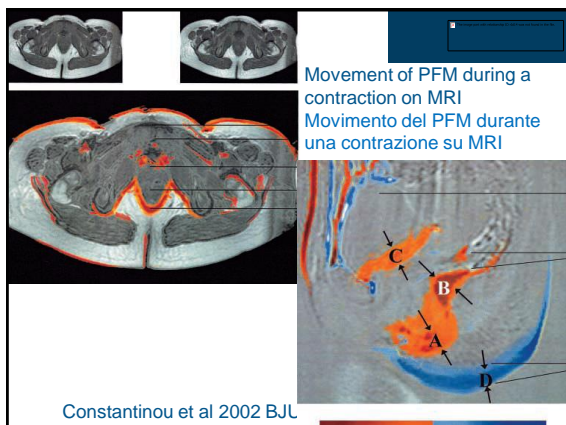
How strong is this synergy?

30% depressed pelvic floor when asked to perform TrA contraction alone

- 33% of these could not counteract this depression with voluntary PFM contraction
- Implications for practitioners, esp Pilates and similar who do not visualise the perineum

Il 30% di depressione del pavimento pelvico è necessario per eseguire la sola contrazione del TrA

- Il 33% di questi non poteva contrastare questa depressione con la contrazione volontaria del PFM
- Implicazioni per i professionisti del Pilates che non visualizzano il perineo



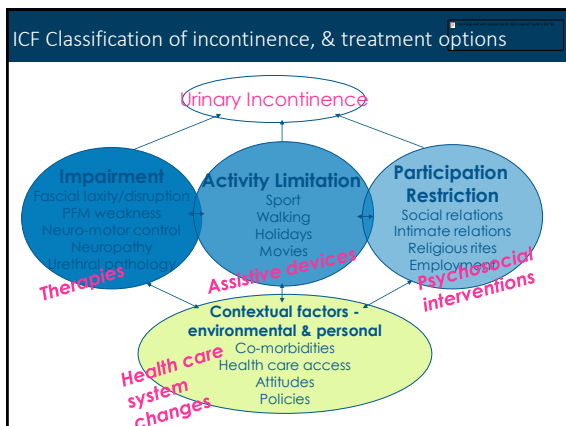
Formulating Treatment / Formulazione del trattamento

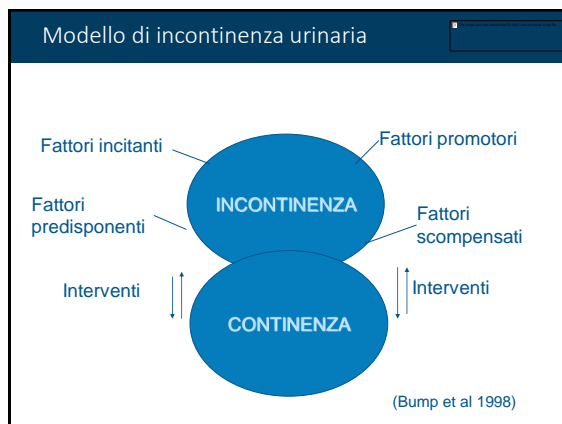
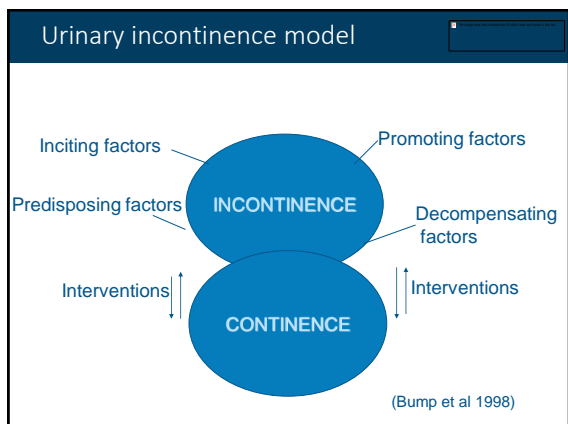
Putting it all together ... Mettere tutto insieme ...
i.e. Clinical Reasoning es. Ragionamento Clinico

- Perform your assessment of a particular patient and
 - determine the aims of treatment
 - prioritise these aims
 - decide on the intervention
 - undertake the intervention
 - assess the intervention

Eseguire la valutazione di un particolare paziente e

- Determinare gli obiettivi del trattamento
- Dare priorità a questi obiettivi
- Decidere l'intervento
- Fare l'intervento
- Valutare l'intervento





Factors to consider in treatment: Fattori da considerare nel trattamento:

Predisposing factors:

- female, older age, family history, congenital defects, connective tissue, neurological defects

Fattori predisponenti:

- donne, età avanzata, storia familiare, difetti congeniti, tessuto connettivo, difetti neurologici

Inciting factors:

- vaginal delivery nerve damage, neurological disease, lung disease, bladder outlet obstruction in men

Fattori incitanti:

- Danno nervoso al parto vaginale, malattia neurologica, malattia polmonare, ostruzione del collo vescicale negli uomini

Factors to consider in treatment: Fattori da considerare nel trattamento:

Promoting factors:

- constipation, straining, obesity, occupation, recreation, smoking, pelvic surgery, menopause, menstrual cycle, medication, UTI, candida, toilet habits

Fattori di promozione:

- Stitichezza, tensione, obesità, occupazione, ricreazione, fumo, chirurgia pelvica, menopausa, ciclo mestruale, medicinali, UTI, candida

Decompensating factors:

- Ageing, delirium, atrophic vaginitis, medications, mobility/debility, endocrine disorders (Thyroid & T2DM), stool impaction

Fattori decompensanti:

- Età, delirio, vaginite atrofica, farmaci, mobilità / debolezza, disturbi endocrini (tiroide e DMT2), stitichezza

www.ics.org ICI 2013 Incontinenza, 5th ed

Initial Management of Urinary Incontinence in Women

This flowchart outlines the initial management of urinary incontinence in women. It starts with 'HISTORY' (Incontinence on physical activity, mixed symptoms, or urgency/frequency) and 'CLINICAL ASSESSMENT' (General assessment, urinary symptom assessment, quality of life, physical examination, cough test, urinalysis, and assessment of pelvic floor muscle function and post-void residual urine). 'PRESUMED DIAGNOSIS' includes Stress Incontinence, Mixed Incontinence, and Urgency Incontinence. 'TREATMENT' involves lifestyle interventions, pelvic floor muscle training, bladder retraining, and antimuscarinics. A 'SPECIALISED MANAGEMENT' section addresses failures in treatment, such as electrical stimulation or vaginal devices.

www.ics.org ICI 2013 Incontinenza, 5th ed

Specialised Management of Urinary Incontinence in Women

This flowchart details the specialised management of urinary incontinence in women. It begins with 'HISTORY/SYMPTOM ASSESSMENT' (physical activity, mixed symptoms, urgency/frequency, or complicated incontinence) and 'CLINICAL ASSESSMENT' (assessing pelvic organ mobility/prolapse and urodynamics). 'DIAGNOSIS' categories include Urodynamic Stress Incontinence (USI), Mixed Incontinence (USI/DOI), Detrusor Overactivity Incontinence (DOI), and Incontinence associated with poor bladder emptying. 'TREATMENT' options include initial therapy (lifestyle, surgery, bulking agents, neuromodulation, bladder augmentation) and more complex interventions like correct anatomic bladder outlet obstruction, intermitant catheterization, and correction of lower urinary tract anomalies.

A typical patient, Anna ...

Un paziente tipico, Anna ...

Anna is a 38 year old mother who presents to your clinic. She is concerned because she has been developing 'a weak bladder' since the birth of her 3rd child 2 years ago.

Anna è una madre di 38 anni che si presenta in clinica. È preoccupata perché ha sviluppato "una vescica debole" dalla nascita del suo terzo figlio, 2 anni fa.

What is the key information?

What is her presenting problem?

What might be the cause of her problem(s)?

Do you need further information to refine your hypotheses?

Quali sono le informazioni chiave?

Qual è il suo problema che si presenta?

Che cosa potrebbe essere la causa del suo problema?

Hai bisogno di ulteriori informazioni per perfezionare le tue ipotesi?

Informazioni in più su Anna

- She plays volleyball x2/week
- Now has frequent small leaks when she runs or stretches for a ball
 - Sometimes has to change her pad during the game
- General health excellent, normal BMI, no surgery
- Job is a retail manager of a small to medium business
 - Works 2 days/week

Lei gioca a pallavolo 2 volte a settimana

- Ora ha piccole perdite frequenti quando corre o si allunga per prendere la palla
 - A volte deve cambiare il suo PAD durante il gioco

Salute generale eccellente, BMI normale, nessuna operazione

Lavora come retail manager di una piccola-media impresa

- Lavora 2 giorni a settimana

More about Anna

Altro su Anna

- Has had 3 vaginal births
 - Last baby was largest at 3500gm, very fast labour, large episiotomy
 - She did PFMT after all babies, but after this baby the 'exercises felt different'
- All babies breastfed to about 9 months
 - Other 2 children are 6 & 8yrs

Ha avuto 3 parti naturali

- L'ultimo bambino era più grande di 3500 g, travaglio molto difficile, grande episiotomia
- Ha fatto la riabilitazione del PFM dopo tutti i bambini, ma dopo quest'ultimo bambino 'gli esercizi li sentiva diversi'

Tutti i bambini sono stati allattati fino a circa 9 mesi

- Gli altri due bambini hanno 6 e 8 anni

Objectively, on vaginal examination ...

Obiettivo, per l'esame vaginale ...

What if her muscles were weak, minimal occlusion, in-coordinate contraction, 4 sec hold, perineal descent with a cough?

Che cosa succede se i suoi muscoli erano deboli, occlusione minima, contrazione in coordinazione, si tiene premuto per 4 secondi, discesa perineale con tosse?

Decide on a treatment plan for Anna

Decidere un piano di trattamento per Anna

OR

Objectively, on vaginal examination ...

Obiettivo, per l'esame vaginale ...


OR

What if you found her PFM were strong, responsive, good occlusion, 30 sec hold, with full relaxation, reflex action with a cough?

Cosa succede se hai trovato il PFM forti, reattivi, buona occlusione, premono per 30 secondi, con pieno relax, azione riflessi con tosse?

Decide on a treatment plan for Anna

Decidere un piano di trattamento per Anna

Margaret Sherburn 

Affiliations to disclose[†]:

Nulla

† All financial ties (over the last year) that you may have with any business organisation with respect to the subjects mentioned during your presentation

Funding for speaker to attend:

Metti una X nel box appropriato

Self-funded

Institution (non-industry) funded

Sponsored by: *Nome della Società*


Workshop W30 

Principles of teaching PFMT, and training regimes: evidence, clinical application, training progression

Principi di insegnamento PFMT e regimi di formazione: prove, applicazioni cliniche, progressione formativa



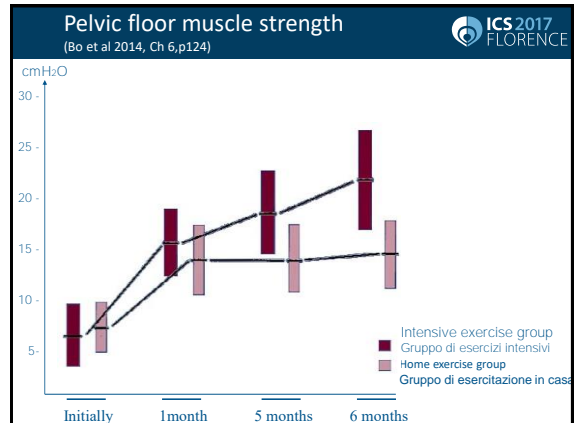
Margaret Sherburn PhD, FACP
The University of Melbourne, Australia
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Evidence for PFMT 

'La formazione muscolare del pelvico dovrebbe essere offerta, come terapia di prima linea, a tutte le donne con stress, urge o incontinenza urinaria mista'

'Pelvic floor muscle training should be offered, as first line therapy, to all women with stress, urge or mixed urinary incontinence'

Level 1a evidence, Grade A recommendation
Evidenza di livello 1a, raccomandazione del grado A
6th International Consultation on Incontinence
Abrams et al ICI 2017 (www.ics.org)



PFM training for PF dysfunction – a balance 

PFM formazione per la disfunzione della PF-un equilibrio




PF fatigue / PF training / PF fisica

For:
 Motor control / Controllo del motore
 Strength Forza
 Endurance Resistenza
 Speed Velocità
 Coordinazione
 Timing Sincronizzazione

Against:
 Sovraccarico
 Specificità
 Periodicity
 Recupero
 Ritornimento energetico
 Vascolarizzazione
 Overload
 Specificity
 Periodicity
 Recovery
 Energy supply
 Vascularisation

De-ossigenazione mitocondriale
 Desaturazione dell'ossigeno
 Accumulo di lattato di anima
 Stanchezza neuromuscolare
 Mitochondrial de-oxygenation
 Oxygen desaturation
 Blood lactate accumulation
 Neuromuscular fatigue

Training for Strength 

Formazione per la forza

High-resistance - near maximum - low number repetitions -full recovery between sets

Load that limits exercise to between 4-8 repetitions (Berger, 1963)
 Others suggest 5 or 6 reps (Atha, 1981)

Load of 80-85% of maximum

Isometric contractions held for 3-10 secs (Bo et al 2014)
 • Time variation for progression in difficulty

Experienced individuals perform all reps at single session

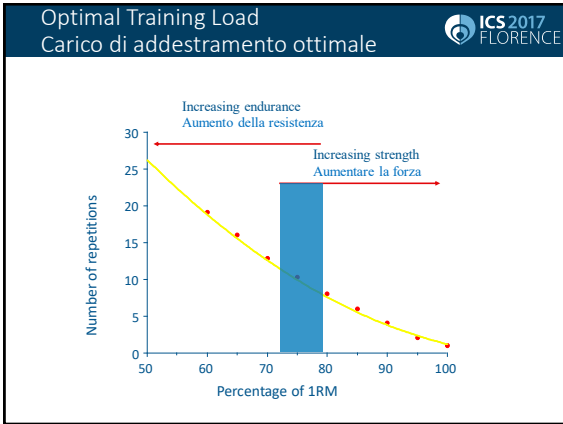
Elevata resistenza - vicino a massimo - ripetizioni di numeri bassi - ottimo recupero tra i set

Load che limita l'esercizio tra 4-8 ripetizioni (Berger, 1963)
 Altri suggeriscono 5 o 6 ripetizioni (Atha, 1981)

Carico massimo del 80-85%

Contrazioni isometriche tenute per 3-10 secs (Bo et al 2014)
 • Variazione del tempo per grado di difficoltà

Gli individui esperti eseguono tutti i ripetizioni a una sessione singola



Training for Endurance Formazione per la resistenza

Basic principle:

- moderate to light load
- high repetitions, with short rest between sets and exercises

Minimise recovery period to:

- promote ↑ numbers mitochondria, ↑ capillary density,
- muscle fibre type transformation
- improved lactate capacity

Dosage: 3-4 sets of 10-20 reps. Rest 30 sec to 2 mins

**** Perception of submaximal effort when PFM are weak??**

- so do endurance training after strength training

Criterio basilare:

- da carico moderato a leggero
- molte ripetizioni, con riposo breve tra serie e fine esercizio

Ridurre al minimo il periodo di recupero a:

- promuovere ↑ numeri mitocondri, ↑ densità capillare,
- trasformazione del tipo di fibra muscolare
- una migliore capacità di lattato

Dosaggio: 3-4 sets di 10-20 ripetizioni. Riposo da 30 sec a 2 minuti

**** Percezione dello sforzo subumattico quando i PFM sono deboli??**

- quindi allenare la resistenza dopo aver allenato la forza

Repetition Maximum Continuum Ripetizione massimo continuo

RM	≤2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	≥ 20	
Forza Strength					Forza				Forza				Forza							
Potenza Power					Potenza				Potenza				Potenza							
Ipertrafia	Ipertrafia		Hypertrophy		Ipertrafia		Ipertrafia													
Resistenza					Resistenza				Resistenza				Endurance							

Progressione

Increase exercise volume

- More important than intensity

Increase power (force x speed)

- Strength more important than speed

Increase load

- Gravity – upright positions
- Contract on forced expiration

Aumentare il numero di esercizi

- Più importante dell'intensità

Aumentare la potenza (forza x velocità)

- Componente di forza più importante della velocità

Aumenta il carico

- Gravità – posizioni verticali
- Contratto di scadenza forzata

Coordination/ timing: The 'Knack' Coordinazione/ timing: The 'Knack'

'The Knack': A pre-contraction before a cough
'The Knack': è una pre-contrazione prima della tosse

Subjects taught this, no other PFMT

- Re-tested 1 week later, 73% reduction in urine leakage on deep cough (Miller et al 1996)

I soggetti hanno insegnato questo, nessun altro PFMT

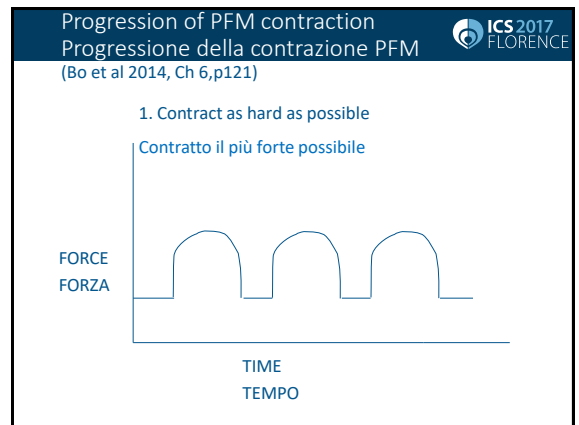
- Riesminata 1 settimana dopo, riduzione del 73% della perdita delle urine sulla tosse profonda (Miller et al 1996)

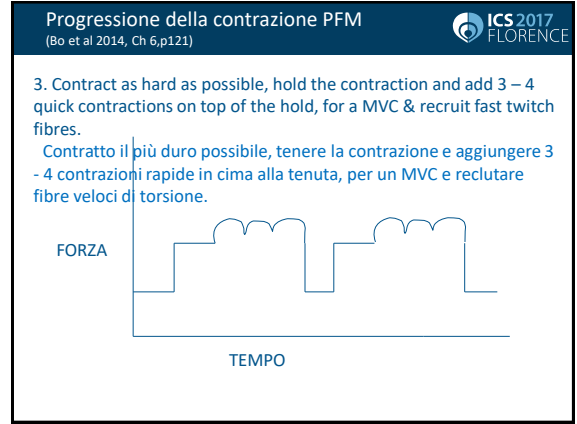
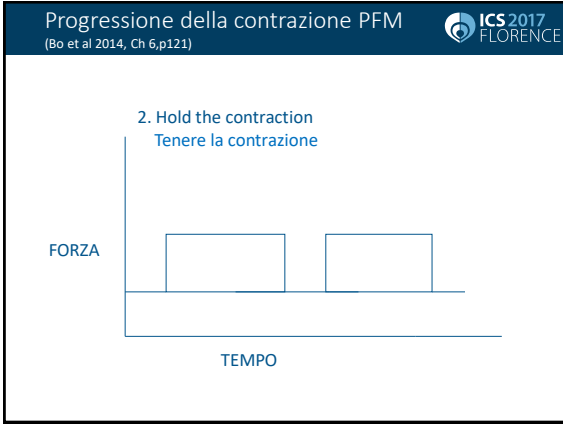
Is this a coordination (timing) or functional exercise?

- Effectiveness does depend on having some PFM strength

E' questo un coordinamento(temporale) o esercizi funzionali?

- L'efficacia dipende dal fatto di avere una certa forza PFM





Teaching cues: Facilitation
Segnali di insegnamento: Facilitazione

Verbal - squeeze, hold, lift
Orale - spremere, tenere, sollevare

Visual - anatomy charts, mirror
Visiva - grafici di anatomia, specchio

Kinaesthetic - feel self, tap, sit on firm chair
Kinesthetic - sentire sé, toccare, sedersi sulla sedia aziendale

Imagery

Floating scarf
Move away from a sharp pin

Sciarpa galleggiante
Spostarsi da un perno tagliente



Measuring Pelvic Floor Muscle Function
Misurazione della funzione PF muscolare

In research, is a secondary outcome measure
Methods to evaluate PFM function and strength:
(Bo & Sherburn 2005)

1. Ability to contract (in previous talk)
2. Quantification of strength

Nella ricerca, è una misura secondaria del risultato
Metodi per valutare la funzione e la forza PFM :
(Bo & Sherburn 2005)

1. Capacità di contratto (nel discorso precedente)
2. Quantificazione della forza

1. Ability to contract: visual observation Yes/No
Capacità di contratto: osservazione visiva

Measurement of PFM function and strength cont...

Misurazione della funzione PFM e della forza cont ...

Bo & Sherburn 2005

2. Quantification of strength: Maximal squeeze force

- Manual muscle testing: Oxford, ICS scales - conflicting reliability
- Manometry: various perineometers, and sources of error
- Dynamometers (Dumoulin 2004, 2006)
 - Measures PF muscle force (Newtons)
- Vaginal weights/cones: poor research

2. Quantificazione della forza: Forza massima di compressione

- Test muscolari manuali: Oxford, scale ICS – affidabilità in conflitto
- Manometria: vari perineometri e fonti di errore
- Dinamometri (Dumoulin 2004, 2006)
 - Misura forza muscolare PF (Newtons)
- Pesi vaginali/coni: scarsa ricerca

PFM lift measurement: US and MRI
Misura PFM ascensore: US e MRI

Measurement of PFM function and strength cont ...

Misurazione della funzione PFM e della forza cont ...

Bo & Sherburn 2005

No single method able to measure elevation and compression force

Nessun singolo metodo in grado di misurare l'elevazione e la forza di compressione

Methods influenced by subjective judgment, skill and clinical experience

Metodi influenzati dal giudizio soggettivo, dall'abilità e dall'esperienza clinica

Behaviour change and adherence to PFMT

Cambiamento del comportamento e adesione a PFMT

No adherent personality (Borello-France et al 2013)
Nessuna adesione (Borello-France et al 2013)

Adherence can be modified by:

- Knowledge: personal, from a health professional, trusted source
- Physical skill: Mastery of physical skill, has 'bodily' knowledge, mental rehearsal
- Feelings about PFMT: often negative, no innate reward, guilt when lack of motivation
- Cognitive analysis, planning, and attention: problem solve to create plan – time, habit, no disruption
- Prioritisation: choices & compromise, social & personal
- Service provision: available, timing, distance

L'adesione può essere modificata da:

- Conoscenza: personale, da un professionista sanitario, fonte di fiducia
- Abilità fisica: Abilità fisica, abilità fisica, sperimentazione mentale
- Sentimenti su PFMT: spesso negativi, nessuna ricompensa innata, colpa quando mancanza di motivazione
- Analisi cognitive, pianificazione e attenzione: il problema risolve per creare tempi di programmazione, abitudine, non interruzione
- Priorità: scelte e compromessi, sociali e personali
- Fornitura di servizi: disponibile, tempi, distanza

(Hay-Smith et al, Frawley et al, McClurg et al. 2011 ICS State-of-the-Science Seminar Research Papers 1-4, NAU 2015)

10 Best Motivational Tips

10 migliori consigli motivazionali

1. Adherence and motivation

- The 2 factors most consistently associated with positive outcomes

2. Knowledge of program

3. Defined length of program (realistic)

4. Expectations of & benefits to patient

5. Convenient & appealing (eg appointment times)

1. Aderenza e motivazione

- I due fattori più coerentemente associati a risultati positivi

2. Conoscenza del programma

3. Lunghezza del programma definita (realistica)

4. Le aspettative dei benefici e dei pazienti

5. Comodo e attraente (es. Tempi di appuntamento)

More Motivational Tips

Suggerimenti più motivati

6. Regular reviews, incl after discharge

7. Reminders (eg phone/text messages)

8. Associate with other activities (eg brushing teeth)

9. Realistic but positive - check asterisk points

10. Encouragement during plateau

6. Revisioni regolari, incl. dopo scarico

7. Ricordi (ad es. Messaggi telefonici / di testo)

8. Associarsi ad altre attività (ad es. Spazzolare i denti)

9. Punti asterisk realistici ma positivi

10. Incoraggiamento nell'altipiano

PFM training in the ideal world

Formazione PFM nel mondo ideale

- ✓ Minimum number of high quality individual consultations (Neumann et al 2005)

- ✓ With or followed by group exercise sessions (Bo et al 1990)

- ✓ Plus weight loss where appropriate

- ✓ Until maximum results gained

- ✓ Then continued at maintenance dosage for life

- ✓ Con o seguito da sessioni di esercitazioni di gruppo (Bo et al 1990)

- ✓ Plus perdita di peso se necessario

- ✓ Fino al massimo dei risultati ottenuti

- ✓ Quindi è continuato a dosaggio di mantenimento per la vita

PFM training in the ideal world
Formazione PFM nel mondo ideale



*Manage PF dysfunction as other chronic diseases & **do not** withdraw treatment*

- Eg. Diabetes, heart disease, arthritis

Gestire la disfunzione della PF come altre malattie croniche e non ritirare il trattamento

- Es. Diabete, malattie cardiache, artrite

For full rehabilitation ...
Per la riabilitazione completa ...



Think local

- High quality PFM training

Pensa locale

- Alta qualità dei training PFM

Think functional

- In ADL
- Pre-contraction before activity, 'the knack'

Pensa funzionale

- In ADL
- Pre-contrazione prima dell'attività, 'the knack'

Think global

- Neuromuscular rehabilitation
- Lifestyle factors addressed, eg.
 - ↓ BMI
 - ↓ Chronic cough
 - ↓ Smoking

Pensa globale

- Riabilitazione neuromuscolare
- Fattori di stile di vita, eg.
 - ↓ BMI
 - ↓ Tosse cronica
 - ↓ SFumo

ICS
2016
T O K Y O

Affiliations to disclose[†]:

Chair of the ICS Physiotherapy Committee
Passed Chair of the UK Pelvic, Obstetric and Gynaecological Physiotherapy sub-committee of the Chartered Society of Physiotherapy.

† All financial ties (over the last year) that you may have with any business organisation with respect to the subjects mentioned during your presentation

Funding for speaker to attend:

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Sponsored by:

Adjunctive treatments for pelvic floor dysfunction – Trattamenti aggiuntivi per le disfunzioni del pavimento pelvico–
Biofeedback, Electrical stimulation and Ultrasound - Biofeedback, stimolazione elettrica e ultrasuoni

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Nursing, Midwifery and Allied Health Professions Research Unit
Improving health through research

Doreen McClurg
Doreen.mcclurg@gcu.ac.uk



Adjunct
Feedback come strumento clinico aggiuntivo **nmahp-ru**

An adjunct is an aide:-
Un complemento diagnostico e/o terapeutico è un aiuto clinico:

- Patient Understanding – why and how
Comprensione del paziente– perchè e come
- Patient belief – self-efficacy
Fiducia del paziente– self-efficacy
- Patient adherence to do enough exercises to make a difference
Aderenza del paziente ad eseguire esercizi in numero sufficiente a fare la differenza

Principles of feedback
Principi del feedback

- **Feedback** studies are those which use a clinician mediated method of giving information about a voluntary pelvic floor muscle contraction back to the woman performing the contraction. Per **Feedback** si intende fornire informazioni circa una contrazione volontaria dei muscoli del pavimento pelvico alla stessa donna che la sta eseguendo, utilizzando strumenti mediati dall'operatore sanitario
- In practice, this means verbal feedback from observation or palpation of the perineum, vagina or anus during a contraction.
- In sostanza vengono utilizzati feedback verbali derivanti dall'osservazione o dalla palpazione del perineo, vagina o ano durante la contrazione.

Henderschee R, Hay-Smith EJC, Herbison GP, Roovers JP, Hehman MJ. Feedback or biofeedback to augment pelvic floor muscle training for urinary incontinence in women. Cochrane Database of Systematic Reviews 2011, Issue 7. Art.No. CD009252. DOI: 10.1002/14651858.CD009252.

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Biofeedback

Biofeedback (BF) studies use an instrument or device to record the biological signals (e.g. squeeze pressure, electrical activity, movement) during a voluntary pelvic floor muscle contraction and present this information back to the woman in auditory or visual form (for example, the sound gets louder or more lights show on a visual display as the strength of the squeeze increases).

Il Biofeedback (BF) rappresenta l'utilizzo di un macchinario che registra i segnali biologici (es. Pressione di contrazione, attività elettrica, movimento) durante una contrazione volontaria dei muscoli del pavimento pelvico, restituendo questa informazione alla donna sotto forma di stimolo uditivo o visivo (ad esempio l'intensità dello stimolo uditivo o il numero degli stimoli luminosi aumentano all'aumentare dell'intensità della contrazione muscolare).

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ICS definition

'the technique by which information about a normally unconscious physiologic process is presented to the patient and/or therapist as a visual, auditory or tactile signal

Definizione ICS

- "la tecnica mediante la quale informazioni circa un processo fisiologico normale ed inconscio, viene riportato al paziente e/o al terapeuta sotto forma di segnali visivi, uditivi o tattili."

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Useful for : -

Utilizzato per: -

- Weak pelvic floor - loss of proprioception
- *Pavimento pelvico debole – Perdita della propriocezione*
- Substitution of other muscle groups
 - *Sostituzione" da parte di altri gruppi muscolari*
- Loss of motivation
 - *Perdita di motivazione*

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Feedback/Biofeedback tools Strumenti di Feedback/Biofeedback

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- Digital vaginal palpation
- *Palpazione vaginale digitale*
- Digital self-palpation
- *Autopalpazione digitale*
- Digital vaginal palpation with pressure to increase proprioception to identify PFM.
- *Palpazione vaginale applicando una pressione digitale per incrementare la propriocezione ed identificare i PFM*
- Mirror
- *Specchi*

Biofeedback tools Strumenti di Biofeedback

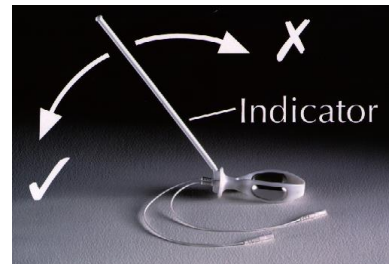
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- Educator Vaginal cones
Coni vaginali rieducativi
- Manometry
Manometria
- Electromyography
Elettromiografia
- Dynamometry
– Dinamometria
- Ultrasound
– Ultrasuoni

Simple pelvic floor biofeedback Biofeedback semplice del pavimento pelvico

Perform electrode with indicator stick
Elettrodo piriforme con bacchetta indicatrice

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Manometric Manometria

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EMG biofeedback

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EMG is the study of muscle function through the enquiry of the electrical signal which the muscle emanates

L'EMG è lo studio della funzione muscolare tramite la registrazione del segnale elettrico generato dal muscolo stesso

Bernigian & DeLura 1985

...the recording of muscle bio-electrical activity - a practical indicator of its contractility

...la registrazione dell'attività bioelettrica di un muscolo rappresenta un pratico indicatore della sua contrattilità

Vothsack 1994



ELVIE

Electromyography Elettromiografia

Surface sEMG Biofeedback – data collection sEMG (EMG di superficie) Biofeedback – raccolta dei dati

Onset time : Normal < 1 second
 -Tempo di insorgenza: Normale < 1 secondo

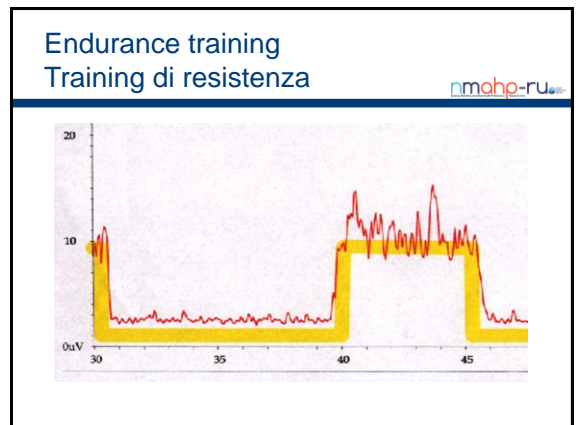
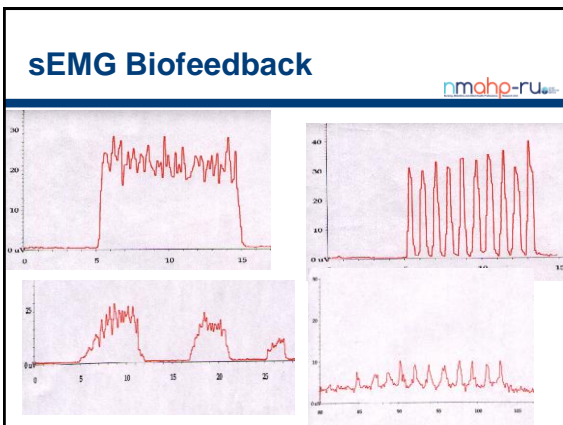
Work average – μV - Impulso medio in contrazione - μV
 Rest average – μV - Impulso medio a riposo - μV

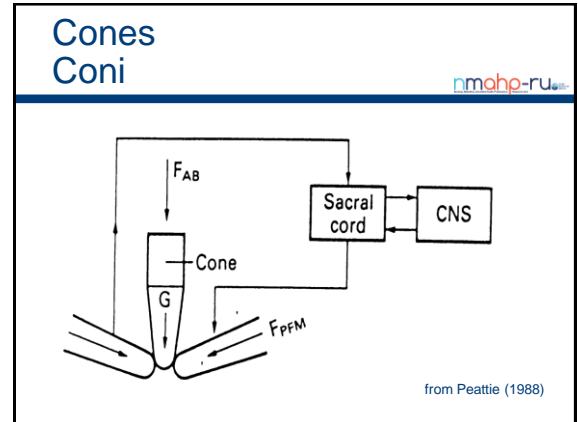
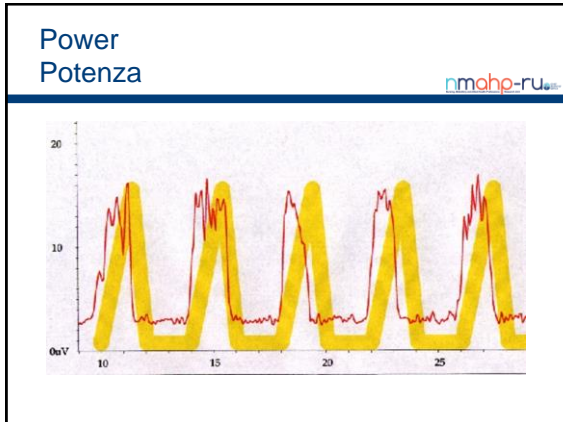
Average deviation- Deviazione media

Hold time - Tempo di tenuta

Release time : Normal < 1 second- Tempo di rilasciamento: Normale < 1 secondo

Maximum μV : varies - Intensità massima - μV : variabile





- ## Regimen Regimi terapeutici
- 1 x per day 8 – 12 weeks
 - 1 x al giorno 8 – 12 settimane
 - Retain maximum weight +/- smallest size shell for up to 20 minutes
 - *Mantenere il guscio più pesante e/o più piccolo per più di 20 minuti.*
 - Add activities of daily living e.g. climbing stairs, making bed
 - *Aggiungere attività quotidiane es. Salire le scale o rifare il letto*
 - Useful as a progression from clinic sessions e.g. EMG Biofeedback
 - *Utile come step successivo alle sedute terapeutiche ambulatoriali (es. EMG Biofeedback)*
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- ## Principles of electrical stimulation(ES) Principi di elettrostimolazione(ES)
- 2 major forms
 - 2 forme principali
 - Neuromuscular stimulation
 - Stimolazione neuromuscolare
 - Neuromodulation
 - Neuromodulazione
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- ## Intravaginal/anal ES ES intravaginale/ anale
- Primarily in the UK it is maximal ES used at high-intensity stimulus (just below pain threshold for a short duration (15-30mins) several times a week)
- ES prevalentemente utilizzata in UK con stimolazione ad alta intensità (appena al di sotto della soglia del dolore per una breve durata (15-30 min) numerose volte alla settimana*
- Assist with pelvic floor muscle contraction
 - *Utilizzata in aiuto alla contrazione dei muscoli del pavimento pelvico*
 - Neuromodulation
 - *Neuromodulazione*
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Parameters for Stress urinary incontinence- Pelvic floor muscle stimulation
Parametri per stress urinary incontinence Stimolazione dei muscoli del pavimento pelvico

- Bi-phasic constant current *Corrente costante bifasica*
- Pulse rate 35-40Hz *Frequenza dell'impulso 35-40Hz*
- Pulse width 250 msec *Ampiezza dell'impulso 250 msec*
- 5 sec stimulation and 10 seconds rest *5 sec di stimolazione e 10 sec di riposo*
- Maximum-tolerated intensity *Intensità massima tollerata*
- Active assisted exercises *Esercizi "active assisted"*

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Choice of electrodes
Scelta degli elettrodi

- Size of vagina
- Dimensione della vagina
- Condition of tissues
- Condizione dei tessuti
- Use of lubricating gel
- Utilizzo di gel lubrificanti



In clinic and or at home
In ambulatorio e/o a casa

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Neuromodulation
Neuromodulazione

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Urgency incontinence – Sensory inhibition via a feedback loop

Urgency Incontinence – *Inibizione sensitive sfruttando un circuito di feedback*

Frequency 5 - 10Hz

Frequenza 5-10 Hz

Continuous biphasic

Continua bifasica

4s stimulation 4s rest

4sec di stimolazione 4sec riposo

Fall & Lindstrom (1991)
Erikson (1989)

Contraindication to use of intravaginal/intral ES
Controindicazioni all'utilizzo di ES intravaginale/intrale

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- Inability to understand/Lack of informed consent
- *Incapacità a comprendere o mancanza di adeguato consenso informato*
- Vaginal infection
- *Infezione vaginale*
- Known pregnancy
- *Gravidanza*
- Cancer in the area***
- *Cancro nella zona di stimolazione****
- Implanted pacemaker
- *Pacemaker*

Contraindication to use of intravaginal/intral ES
Controindicazioni all'utilizzo di ES intravaginale/intrale

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- Recent haemorrhage
- *Emorragia recente*
- Haematoma
- *Ematoma*
- Tissue Damage
- *Danno tissutale*
- Atrophic vaginitis (treat prior to NMES)
- *Vaginite atrofica (trattare prima della NMES)*
- UTI (treat before commencing NMES)
- *UTI (trattare prima della NMES)*

Electrical stimulation (cont'd) Stimolazione elettrica (cont'd)

- Could try... Si potrebbe provare...
- Vital Compact neuromuscular electrical stimulation (NMES) via external garments, without the need for an internal probe
- *Vital Compact: elettrostimolazione neuromuscolare (NMES) mediante indumenti, senza la necessità di una sonda interna*
- BUT limited research to support
- *Scarsa presenza di dati in letteratura della tecnica*



ES using surface electrodes ES utilizzando elettrodi di superficie

- Transcutaneous electrical stimulation (TENS)
- Elettrostimolazione transcutanea (TENS)
- Suprapubic
- Sovrapubica
- Sacral or penile/clitoral attachment of electrodes
- Applicazione degli elettrodi sacrale o peniena/clitoridea
- Plantar/thigh
- Plantar/thigh
- Lower back
- Zona lombare

Neuromodulation: Neuromodulazione:

- Any medical intervention which acts on nerves to alter the neurotransmission processes of other nerves and alter the function of an organ – the bladder
- *Ogni atto medico che agisce su uno o più nervi al fine di alterare i processi di trasmissione nervosa di altri nervi e modificare la funzione di un organo – la vescica*
- Stimulation can be electrical, magnetic, chemical
- *La stimolazione può essere elettrica, magnetica o chimica*

Recent advances in technology and improved knowledge of micturition physiology have coincided with the growth of neuromodulation for the treatment of **urinary urgency, urge incontinence and non-obstructive urinary retention. NOT SUI**

*I recenti avanzamenti tecnologici e la migliore conoscenza della fisiologia della minzione hanno posto le basi per l'aumento dell'utilizzo della neuromodulazione come trattamento della **urinary urgency, urge incontinence e della ritenzione urinaria non ostruttiva. No StressUI***

- Stimulation of afferent sacral nerves in either the pelvis or lower extremities increases the inhibitory stimuli to the efferent pelvic nerve and reduces detrusor contractility.
- *La stimolazione delle terminazioni afferenti dei nervi sacrali nella pelvi o nelle estremità inferiori incrementa lo stimolo inibitorio alle terminazioni efferenti dei nervi pelvici e riduce la contrattilità detrusoriale.*
- Thought to have its effect via somatic afferent nerves which modulate efferent outflow to detrusor and reduce the sensation of urgency and detrusor overactivity.
- *Il suo effetto viene attribuito alle afferenze somatiche nervose che modulano le terminazioni efferenti detrusoriali, riducendo la sensazione di urgenza e l'iperattività detrusoriale.*

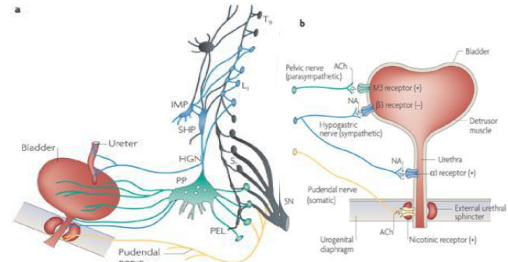
- Exact mechanism of action has yet to be fully understood
- *L'esatto meccanismo d'azione deve essere ancora completamente compreso*
- Urodynamically increases in cystometric capacity shown and reduced detrusor contractility
- *Parametri urodinamici modificati sono la capacità cistometrica aumentata e la riduzione della contrattilità detrusoriale.*

Posterior Tibial Nerve Stimulation – how does it work? Transcutaneous or percutaneous

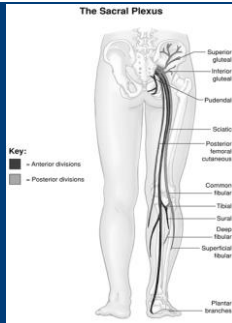
Neurostimolazione del tibiale posteriore – come funziona? Transcutaneo o percutaneo?

PTNS modulates the sacral nerve plexus indirectly via the posterior tibial nerve, a mixed nerve branch of the sciatic nerve that originates from the same spinal segments as the nerves controlling the bladder and pelvic floor (S2-S4)

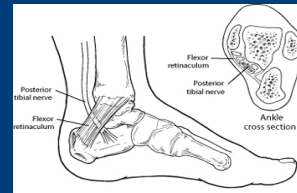
La PTNS modula il plesso sacrale in modo indiretto, tramite il tibiale posteriore, una branca nervosa mista del nervo sciatico che origina dal medesimo segmento spinale dei nervi che controllano la vescica e il pavimento pelvico (S2-S4)



The Posterior Tibial Nerve Origins Origine del tibiale posteriore



Posterior Tibial Nerve Nervo tibiale posteriore



TPTNS example protocol used in Treat-UI study

TPTNS esempio di protocollo utilizzato nel trattamento dell'UI

- Stimulation sessions delivered via two surface electrodes:
 - negative electrode placed behind the medial malleolus
 - positive electrode 10cm proximal.
- Sessione di stimolazione eseguita mediante due elettrodi di superficie:
 - l'elettrodo negativo è posizionato posteriormente al malleolo mediale
 - l'elettrodo positivo 10 cm prossimalmente.

• Correct positioning determined by halux reaction. • Il corretto posizionamento è determinato dalla reazione dell'alluce.



• Stimulation protocol: • Protocollo di stimolazione:
fixed frequency of 10 Hz frequenza impostata a 10 Hz
pulse width of 200ms ampiezza dell'impulso di 200ms
continuous mode delivery impulso in modalità continua

• Stimulation intensity determined by hallux reaction and participant comfort level (range 1-90mA).
• L'intensità della stimolazione è stabilita dalla reazione dell'alluce e dal livello di confort del paziente (range 1-90mA).



Evidence base for transcutaneous posterior tibial nerve stimulation for bladder dysfunction

Evidenza scientifica a supporto dell'utilizzo della stimolazione transcutanea del tibiale posteriore per trattare le disfunzioni vescicali.

Nine studies, of variable quality
Nove studi di differente valore

• Six RCTs involving 202 adults (183 women) with OAB. Sei retrospettivi con 202 partecipanti adulti (183 donne) con OAB

• 3 case series involving 170 adults (158 neurogenic OAB) 3 prospettivi con 170 adulti (158 OAB neurogene)

• 48% – 68% reported cure or improvement

48% – 68% hanno riportato risoluzione o miglioramento dei sintomi

Transcutaneous posterior tibial nerve stimulation Stimolazione del tibiale posteriore transcutanea

• Indications that it may be effective for bladder dysfunction (small trials)

La tecnica sembra essere efficace nel trattamento delle disfunzioni vescicali (pochi studi)

• No safety concerns

Nessun problema di "safety" nell'utilizzo

• Could be first-line treatment – alternative to drugs

Potrebbe rappresentare la prima linea di trattamento, alternativa ai farmaci

• Time commitment needed, can be self-managed at home

Necessita di tempo, ma la tecnica è compatibile con un utilizzo casalingo

- Low cost and accessible
- *Di facile accessibilità e di costo contenuto*
- Need definitive evidence of effect and application e.g. in stroke-related bladder and bowel dysfunction, Parkinson's, MS
- *C'è ancora bisogno di ulteriori evidenze a sostegno del suo utilizzo e per comprovarne l'efficacia (es. In disfunzioni vescicali/intestinali post-stroke, M. di Parkinson, Sclerosi Multipla)*

Percutaneous posterior tibial nerve stimulation Stimolazione del tibiale posteriore transcutanea

• Effective therapy for OAB and lower urinary tract dysfunction

• *Una terapia efficace per il trattamento dell'OAB e delle disfunzioni del basso apparato urinario*

• Recommended by NICE for OAB treatment, as effective in short and medium term (2013)

• *Raccomandato dal NICE per il trattamento dell'OAB, efficace nel breve e medio periodo (2013)*

• No safety concerns *Nessun problema di "safety" nell'utilizzo*

• Second line treatment – after conservative approaches

• *Trattamento di seconda linea – segue i trattamenti conservativi*

• Requires significant time commitment by patient

• *Necessita di un impegno notevole in termini di tempo da parte del paziente*

• Cost implications – equipment, secondary care, time implications

• *Problema dei costi – strumentazione, "secondary care", time implications*

Posterior Tibial Nerve Nervo tibiale posteriore

- Since 2005 Uroplasty has marketed the Urgent PC Neuromodulation System, the only PTNS device commercially available to-day
- *Dal 2005 Uroplasty ha commercializzato Urgent PC Neuromodulation System, l'unica apparecchiatura per PTNS attualmente disponibile*



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Ultrasound *Ultrasuoni*

- All ultrasound is based on interpreting a returning echo
- *Tutte le tecniche che utilizzano ultrasuoni sono basate sull'interpretazione dell'onda sonora di ritorno*
- An echo is formed as the sound wave hits a tissue interface
- *Un "eco" viene generato nel momento in cui l'onda sonora colpisce un qualsiasi tessuto*
- The delay of the returning signal tells us the depth of the tissue interface
- *Il "ritardo" con il quale ci giunge il segnale di ritorno ci fornisce informazioni circa la profondità e le caratteristiche del tessuto analizzato*



The sound wave L'onda sonora

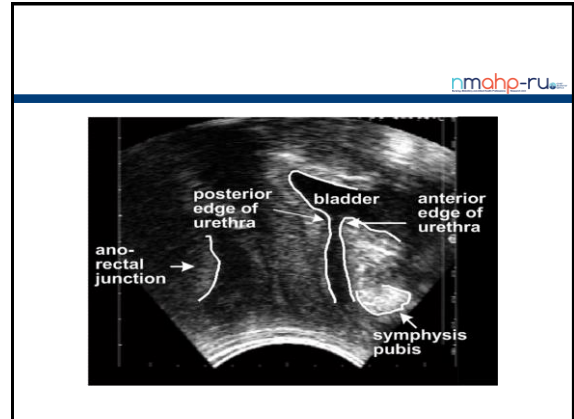
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- Echogenicity *Ecogenicità*
- Different tissues reflect the sound wave differently
- *Tessuti diversi riflettono l'onda sonora in maniera differente*
- Bone: White *Ossso: Bianco (iperecogeno)*
- Liquid: Black *Liquido: Nero (ipo/anecogeno)*
- Striated muscle contains less fluid than smooth muscle therefore able to detect internal & external sphincters on endo-anal ultrasound scan
- *Il muscolo striato contiene meno liquidi rispetto alla muscolatura liscia, grazie a queste caratteristiche siamo in grado di identificare e differenziare gli sfinteri interno ed esterno durante un esame ecografico endo-anale*

Ultrasound Ultrasuoni

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- Transperineal
- *Transperineale*
- Transaddominale
- *Transabdominal*



References Referenze

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- Electrical Stimulation with non-implanted devices for stress urinary incontinence in women Stewart F, Berghmans B, Bo K, Glazener C. Cochrane Database for systematic reviews 2016 Issue 10. Art No CD012390 DOI: 10.1002/14651858.CD012390