Dry Needling & Pelvic Floor

Comprehensive training in dry needling therapy of the pelvic floor and related structures

Bruce Barker & Gahl Sela

www.dryneedling.co.za

About this course

What you can expect to learn:

This course is a collaboration between the Dry Needling and Women's Health Physiotherapists who have asked repeatedly for the course. It is aimed at qualified pelvic floor physiotherapists. The course will equip you with the Dry needling skills appropriate to treating musculoskeletal pain and dysfunction related to the pelvic floor and related structures.

Participants will be expected to participate fully in both the theoretical and practical aspects of the course.

THE LECTURERS

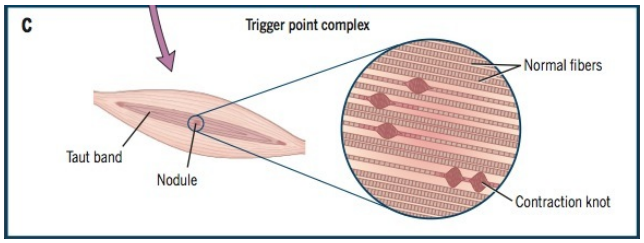
Gahl Sela holds a Bachelor of Science in Physical Therapy as well as an MPhys (Manipulative). The subject of his research was palpation skills. Gahl has worked in the USA in private practice, and has worked in Israel since 1998 in both Private Practice and the Public sector. He sat on the Board of Directors of the Israel Physiotherapy Society (IPTS) for 4 years. He has taught in the Physiotherapy department of University of Haifa since 2003. He has been involved with facilitating & assisting with the ODNS courses sponsored by the IPTS in Israel since 2009. He has been teaching with ODNS since 2011.

Table of Contents

Definition

Myofascial trigger point: "a hyper-irritable spot in skeletal muscle, associated with a hypersensitive palpable nodule in a taut band"

- The spot is tender when pressed and can give rise to characteristic referred pain, motor dysfunction and autonomic phenomena



5

Definition

Dry Needling: The insertion of needles into tender points in the body **without** the injection of any substance.

- Used to treat painful musculoskeletal disorders, esp. myofascial pain syndromes.
- Muscles, ligaments, tendons, periosteum but usually myofascial trigger points MTrPs.

4

Early History 1

Trigger point theory:

C16th: de Baillou (1538-1616) early description of myofascial pain syndrome (MPS)

1816: Balfour (UK Physician): *"nodular tumors and thickenings which were painful to the touch, and from which pains shot to neighbouring parts"*

1898: Strauss (Physician Germany): *"small, tender & apple-sized nodules & painful, pencil-sized to little-finger-sized palpable bands*"

1930's: First published book on the topic (Lange M. Die Muskelhärten (Myogelosen).

Gutstein (AKA Gutstein-Good, Good): Similar work, but not as widely published/read

- **Kellgren's 1938 paper stimulated an international flurry of interest over the next few years in the *(see next slide)*.**

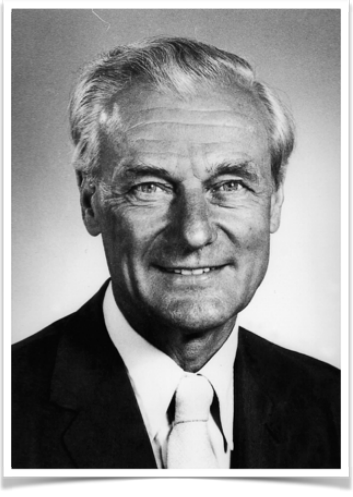
6

Jonas "Yonky" Kellgren

John Kellgren 1911-2002.

- **Pain from muscles is often referred, and occurs in specific patterns.**
- **Tenderness could also be referred.**
- **Tenderness was only a useful sign if it was the patient's familiar pain (P1/*sign)**
- **Some pain could be *relieved by injecting procaine* into acutely tender points which were often at some distance from the reported site of the pain.**
- **The relief obtained often far outlasted the effects of the anaesthetic and in many cases could be considered permanent.**

1947 he reverted to a career as a physician and was appointed clinical director to the University of Manchester Centre for Research in Chronic Rheumatism.



7

Early History 2

1940: Harman and Young (CS in Lancet): Tx tender points could simulate visceral pain, which could be eliminated by injecting the tender points.

1940: Arthur Steindler (USA) first to use the term "trigger points".

- **"Sciatica" referred from musculo/tendinous/ligamentous structures not irritation of the sciatic nerve. His use of the term "trigger point" was not confined to myofascial trigger points.**

1941-1962: Michael Kelly (Australia) stimulated by Kellgren to try injection techniques for treating somatic pain as GP

1942ff :Janet Travell, Seymour Rinzler, Davic Simons etc. Their use of the term "trigger points" was restricted to tender points in muscles.

1945: Pugh and Christie: First paper to use trigger point in *a* title.

- **TPs were more common in servicemen with a history of musculoskeletal pain [>30%] than in those without [3%].**

Late 1960-70's: US Chiropractors Nimmo and Vannerson.

Nimmo's Law "Hypertonic muscles are always painful to pressure"

8

Dry Needling gradually emerges

1941 Brav and Sigmond (US):

- Pain relief by simple needling **without the injection of any substance.**

1947 JD Paulett (Lancet) The earliest mention of the term **"dry needling"**

- 25 cases of **low back pain** with no evidence of organic disease. Injection into the tender points using procaine, saline and "even dry needling".
- Importance of **deep insertion and reflexive spasm** noted.
- Contained a **series of illustrations showing the referral patterns from 38 muscles** = basis for reliable diagnosis and location of TrPs
- Included the brief self-referential statement "**dry needling could be an effective method of treating myofascial trigger points** "[

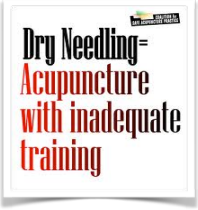
1960's TrP concept was established in the medical literature if not common in general practice. Usual treatment was still the injection of anaesthetic into the tender points.

1960's and early 70's: Minimal new insights into trigger point theory or dry needling.

- 21 papers referring to MSK TrPs (case reports or reviews) 1960 -1975 (Three = iatrogenic pneumothorax from injecting trigger points)

9

Acupuncture "Arrives" in the West



1970's China opens! **Surge of interest** in acupuncture esp Anaesthesia and pain.

Few clinical trials:

- Ghia et al. in 1976 compared DN and Acu. Concluded that intensity of stimulation was more important than location.
- 1977 Melzack claimed a 71% correlation between Acu points and trigger points.

"These considerations suggest a hypothesis; that trigger points and acupuncture points for pain, though discovered independently and labeled differently, represent the same phenomenon"

(Melzack R. 1977. Trigger points and acupuncture points for pain: correlations and implications. Pain 3(1):3–23

10

DN and Acu Diverge

1974 **Chan Gunn**, Intramuscular stimulation IMS. 1980 Motor Point needling

1979, Karel Lewit (Cz) "*The Needle Effect in the Relief of Myofascial Pain*".

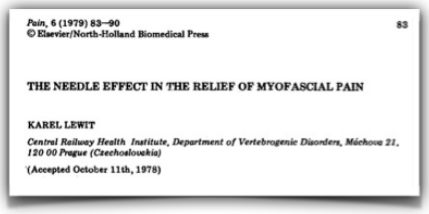
Chronic pain case series

Effect depends on the **intensity of the tenderness** at the point **&** **accuracy** of the needling.

Tender points in **scars, ligaments, periosteal insertions** were all included in his study.

Combined use of Acu needles and hypodermics (acupuncture needles were safer and produced less bleeding and bruising).

Relief of pain resulting from dry needling as **"The needle effect"**



The **poor separation** between the concepts of dry needling and acupuncture in the 1970s and 1980s:

MacDonald et al. 1983. SDN of TPs was superior to placebo but he called the treatment Acu

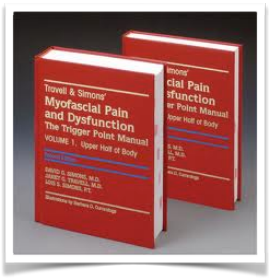
Garvey et al. 1989. DN = fx of two other injection regimes, and cooling spray plus acupressure.

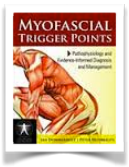
11

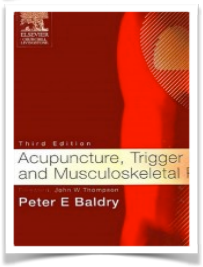
ACU v DN

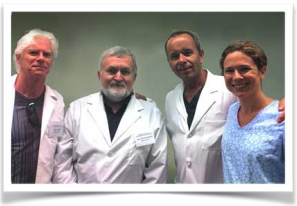
	Acu	DN
Origin	TCM	Biomedicine: No Acu required
Points	Meridians & extra points	MTrP (palpation)
Needles	Same	
Practitioners	Trained, licenced & regitered TCM	PT, Chiro, MD, Osteo
Clinical indicator of success	De Qi	LTR
Depth	Supf and leave	SDN & DDN
Duration	20 mins<	Rapid, multiple LTR and remove
Goal	Balance Qi	Biochem and Biomech correction

21st Century









1980s and 90s. Moderate interest. <30 papers.

2000 **Surge in interest**.

100+papers, worldwide, multiple disciplines

Why?

- **Needles**.
- Ease of **access** to technique, multiple styles

  SDN - Baldry, Fu

  DDN - IMS, TOIMS
- **Books:**

  Travell and Simons (1998) "Myofascial Pain & Dysfunction" Vols 1+2

  Gunn (1989) "Treating Myofascial Pain" released as 2ed "Treatment of Chronic Pain" in (1996)

  Baldry (1989) "Acupuncture, Trigger Points and Musculoskeletal Pain" released as 2Ed "Myofascial Pain and Fibromyalgia Syndromes" (2001)
- **Robust science**

Unresolved Issues

Indications for use of DN:

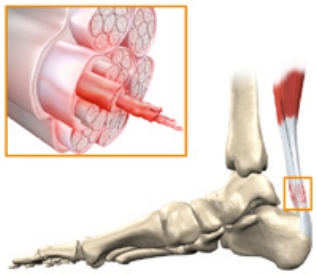
DDN: About 70% of relevant articles refer to dry needling as a treatment for **myofascial trigger points.**

BUT…..

Other practitioners support a broader scope

Other targets: tender points in tendons, ligaments, scar tissue, ethesopathies,

? articular tissues



14

Neurophysiology of Superficial Dry Needling (SDN)

Fibre type: (Sensory fibre type in brackets)	**From**	**To**	**Speed** m/sec	**Signal carried**	**DHC Neuro-transmitter**	**Significance for DN**
A-β (II) See also A-γ(II)	Mechanoreceptors: myelinated fibres touch receptors, fine discriminatory touch and vibration	DHC	35-120	All mechanical stimuli	GABA	PAIN GATE theory. GABA blocks Glutamate so will block transmission of C- fibre information at DHC level. The small winding motion ne through the superficial needling may stimulate the Aδ- fibres.
A-δ (III)	Small myelinated primary afferents skin & muscle	DHC	5-30	Fast sharp "pain", pin prick, sudden heat, sudden cold, first 'pain' shallow pain	Glutamate	DHC level activates enkephalinergic stalked cells leading to release b- endorphins and metenkephalin for segmental inhibition of C also at PAG level activation of descending serotinergic and adrenergic inhibition (segmental and descending inhibition) opioids/serotonin/adrenalin.
C (IV)	Afferent somatic sensory fibres periphery	DHC	0.5-2	Slow burning lasting "pain" aching, soreness 'second pain' lasting, deep	Glutamate Substance P	Patient's presenting "pain"/perception of "credible threat" - or the beginning of development of centralized sensitisation. Unhelpful stimulation. You want to inhibit this using any modality incl. needling. PAIN GATE theory.

Table: Summary of major sensory fibre types

A-α(Ia)	Muscle spindle (annulospiral endings)	DRG looping to the **α**- motor unit of source muscle	Very fast	Rate of change in muscle length/ speed. Modified/reset by **γ-**motor neurones		The development and maintenance of MTrPs may result from the over- sensitivity of alpha motor neurons and interneurons to the Ia and II afferent signals. Note the role of neural sensitivity.
A- α(Ib)	GTO	DHC		Senses muscle tension throughout range		Involved in the autogenic inhibition reflex, which may impact on MTrPs (esp. latent)
A-γ II	Polar "flower spray endings" of the spindle	DRG	Very fast	Joint position. Fires when muscle is not moving	ACh	The development and maintenance of MTrPs may result from the over- sensitivity of alpha motor neurons and interneurons to the Ia and II afferent signals. Note the role of neural sensitivity.

Table: Summary of major sensory fibre types

Safety

Dry needling is an invasive technique. Care must be taken to insure safety of both patient and therapist in the use of the technique.

THE CLEAN FIELD TECHNIQUE

1. The basic working environment: The premises where the technique is performed should comply with regulations as set out in the relevant Government Gazette[1]

The premises must conform to the professional guidelines for the practice of Physiotherapy as these pertain to either hospital or rooms treatments. Such premises must include a hygienic hand washing facility.

Home visits: The standards here should adhere as closely as possible to the clean technique described below, with the proviso that no treatment should expose the patient to harm. All related waste should be removed from the site.

2. Ethical considerations: No therapist may practice any technique for which he/she has not been adequately trained. It is the responsibility of each practitioner to ensure they have this training.

The therapist is required to obtain written informed consent from the patient before treatment. Such consent must include informing the patient of the exact technique to be employed, the potential risks of the technique and likelihood of a measure of discomfort. Of particular concern is the risk of causing a pneumothorax. This must be clearly explained in a written document. See Appendix 1 “Dry Needling Information”

3. The treatment area should comply with the “Clean working environment” principle: “The treatment room should be free from dirt and dust, and should have a special working area such as a table covered with a sterile towel, on which sterile equipment should be placed. This equipment (incl. containers of needles, cotton wool balls, and 70% alcohol or similar disinfectant e.g. Dermabac) should be sealed or covered with a sterile towel until needed for use. Adequate light and ventilation should be provided throughout the treatment rooms” In all circumstances, there must be sufficient space for a “clean field” of equipment, with adequate lighting

4. The Practitioner should have clean hands: Practitioners should always wash their hands before treating a patient. Washing the hands again immediately before the needling procedure is particularly important in preventing infection, and should include through lathering with soap, scrubbing the hands and fingernails, rinsing under running water for 15 seconds, and careful drying on a clean paper towel. Thereafter, a dermoprotective gel (Dermabac, Steritec etc) should be applied to the therapist's hands and be allowed to air dry(The use of gloves and alcohol swabs for protection of both therapist and patient is recommended if a dermoprotective gel is not used.

5. Preparation of needling site: The needling sites need to be clean, free from cuts, wounds or infections. The area to be treated should be covered with a dermoprotective gel (Dermabac, Steritec etc) and be allowed to air dry. If such a gel is not used, then the area to be needled should be swabbed with 70% ethyl or isopropyl alcohol from the centre to the surrounding area using a rotator scrubbing motion, and the alcohol allowed to dry.

   The patient should be treated in a well-supported position. This is most commonly prone, supine or side lying. Where seated position is used, the patient must be supported such that the risk of falling as a result of fainting is avoided.

6. Sterile needles and equipment: Only single use, pre-sterilized, disposable solid needles, with or without a guide tube may be used. Where a guide tube is used, this must be pre-packed with the needle. Re-usable needles are not acceptable. The needles should be opened in front of the patients.

   The needle should be made of stainless steel and may have a copper, plastic or rubber handle. The use of other metals shows no additional clinical benefit.

   Clean cotton wool, either sterile or unsterile must be used upon withdrawal of the needle. The wad is to be pressed against the skin and the shaft of the needle as it is withdrawn to limit any fluid leakages. Pressure should be maintained for 5 seconds per needle. Additional pressure for up to 3 minutes should be applied if leaks or if a hematoma arises. *Hemophiliacs should not be treated using needles without written consent*

from the patient's doctor.

A disinfectant must be used on both the therapist's hands and the treatment area immediately prior to treatment. Therapists must use either 70% isopropyl alcohol swabs or a residual disinfectant (Dermabac, Steritec etc) to achieve this. Single use sterile gloves should be used at least on the palpating/ non needling hand to protect the therapist

Pelvic Floor should not be disinfected secondary to the effect of the disinfection solutions on the vulva or anus. The area must be clean prior to needling. Moist towels specially made for this area can be used.

Recommended Needles Needed for Pelvic floor practitioner:

0.25X15mm

0.25X25mm

0.25X30mm

0.30X30mm

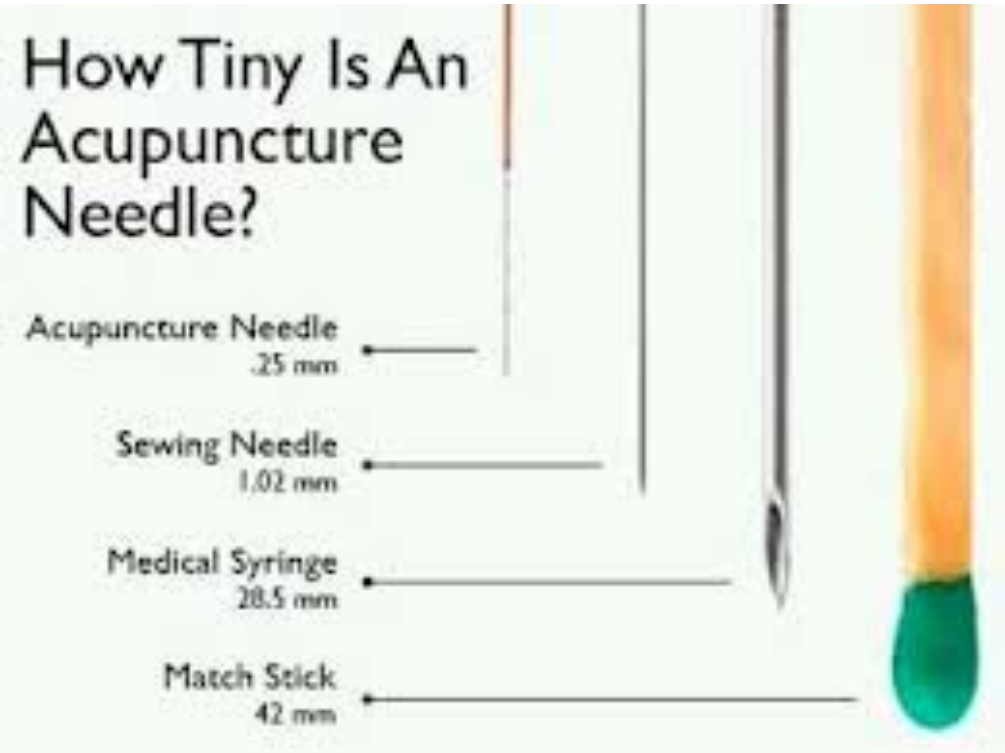
0.30X40mm

0.35X50mm

0.35X60mm

0.35X75mm

0.35X100mm



7. Disposal of needles and equipment: All needles should be disposed of in a clearly marked yellow “sharps” bin. The bin must clearly state “Danger-Contaminated needles”. This bin should be disposed of when three quarters full by a medical waste company in an appropriate fashion.

   This is to avoid the risk of needles accidentally “bouncing” out when attempting to force the needle into an overly full container.

   All swabs should be disposed of in red biohazard bin. This must then be disposed of by a medical waste company in an appropriate fashion.

   Guide tubes and the plastic inserts that accompany them are to be disposed of as domestic/non-clinical waste.

8. Aseptic technique**:** A “No touch technique” should be followed with respect to the shaft of the needle. Where touching is necessary, use a sterile cotton wool swab or a fresh guide tube as means of contact.

On withdrawing the needle, a sterile cotton wool ball should be used to press the skin at the insertion site. The swab must then be disposed of in a hazardous waste container. Remember to use gloves

Single-use, medical examination gloves should be used on at least the palpating hand. The gloves may be made of latex, vinyl nitrile or similar medical grade material.

9. Safe management and disposal of needles and swabs: All needles should be disposed of in a yellow “sharps bin” immediately after treatment. Once full, this container must be disposed of by incineration by a medical waste disposal company

10. In case of a needle stick injury: The therapist should do as follows:

- Encourage free bleeding from the area,
- Wash thoroughly with disinfectant.
- Follow the approved local needle stick protocol, or where this does not exist, consult their GP or Casualty department as soon as possible

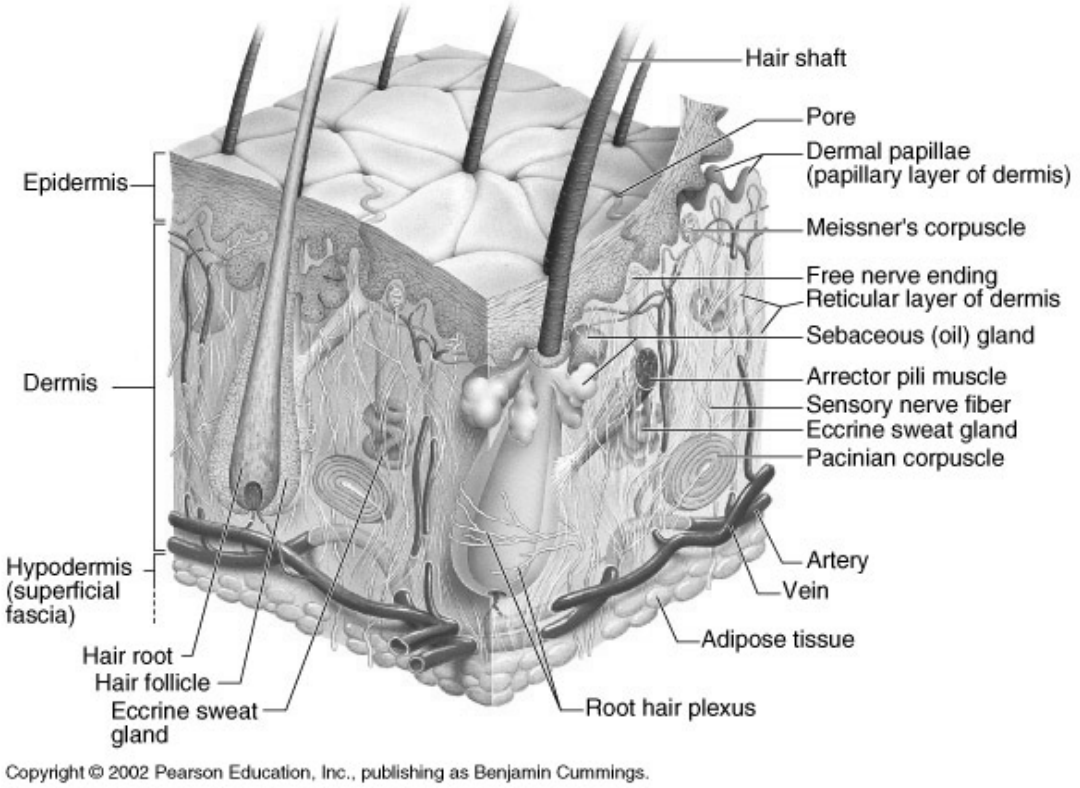
Note that the therapist is encouraged to know his/her own HIV status independent of any exposure to risk

See also APTA 2012

References:	
1.	British Acupuncture Council Code of Safe practice
2.	WHO guidelines on acupuncture safety
3.	Swiss Guidelines for safe dry needling

Superficial needling

Anatomy: Skin and dermis showing receptors, depth, picture with annotations



Schematic diagram of human skin

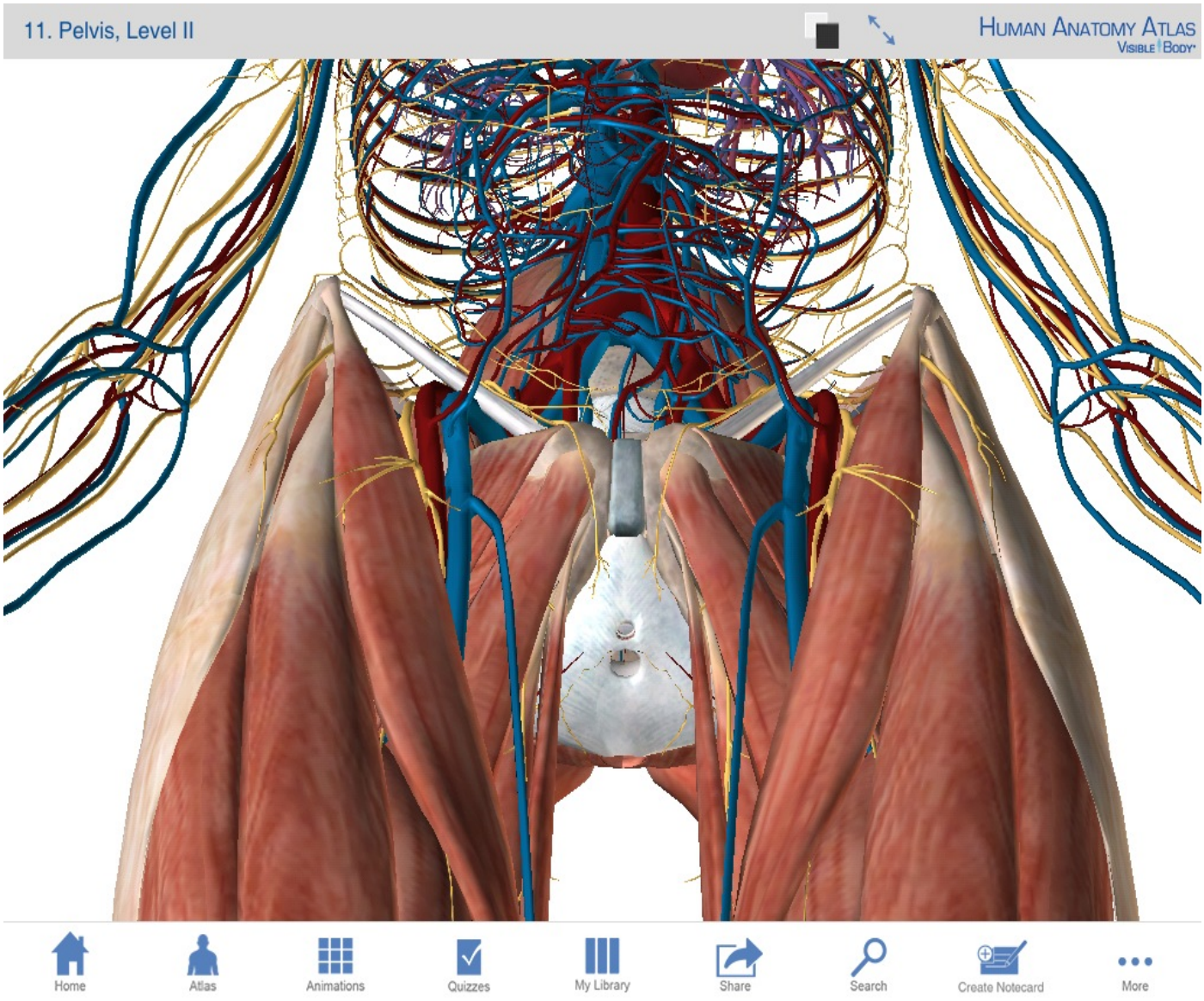
http://apbrwww5.apsu.edu/thompsonj/Anatomy%20&%20Physiology/2010/2010%20Exam%20Reviews/Exam%202 %20Review/diagram%20dermis.jpg

Participant notes

Acute indication	*Example*	*Chronic indication*	*Example*
Analgesics unavailable	*Needle over or around affected area*	*Widespread pain/ Multiple pain areas*	*Centrally sensitised areas, Fibromyalgia, cancer patients, polytrauma*
Analgesics undesirable.	*Sensitivity or intolerance to medication, or need to monitor level of consciousness*	*Active scar referral or indurated scars*	
Acute injury	*Protective muscle spasm. (e.g. acute whiplash, acute muscle tears)*	*Stagnant contusions/hematomas*	*Large, unresolving contusions in quadriceps in athletes.*
Precautionary	*Patients on blood thinners, hemophiliacs*	*Anatomically dangerous areas*	*Scalene muscles, anterior neck*
Safety	*Anywhere where deep needling could prove inaccurate and unsafe (e.g. obesity, known anatomical variant)*	*Within the referral area of an Active MTrP*	*Skin over Fibularii in a patient with Gluteus minimus MTrP*

STRUCTURES OF SPECIAL CONCERN

- ✓ Pudendal nerve (in Pudendal canal)
- ✓ Sciatic nerve
- ✓ Urethra
- ✓ Perineal a & V
- ✓ Deep dorsal vein of clitoris
- ✓ Rectum, Anus, Sphincters
- ✓ Femoral triangle
- ✓ Adductor canal



Indications

Dry needling is used to treat pain, particularly myofascial pain and dysfunction of the myofascial system. These may be mechanical, but have particular presentations when they occur in the pelvic floor and related areas.

WOMEN'S HEALTH INDICATION

- ✓ CPP, Vaginismus
- ✓ Cystitis
- ✓ Endometriosis
- ✓ Urinary incontinence
- ✓ Dyspareunia
- ✓ Levator Ani syndrome
- ✓ High Pelvic Floor tone
- ✓ IBS
- ✓ nerve entrapments
- ✓ Pudendal neuralgia
- ✓ vulvar pain disorders
- ✓ coccygeal pain
- ✓ incontinence
- ✓ pelvic muscular dysfunction, including hyper-tonus and incoordination

Trial	Diagnosis	Numbers	Intervention	Outcome
Weiss, 2001	Urinary incontinence (IC)	45 women 7 men	Manual myofascial release (MMR) 8-12 weeks	Patient reported symptom scores: 25-50% mild improvement 51-75% moderate 76-99% marked
Anderson et al, 2005	Chronic prostatitis (CP) Sacroiliac joint dysfunction (SIJ)	138 men	MMR	69% improvement overall 80% improvement in urinary output
Lukban et al. 2001	Dyspareunia SIJ dysfunction	16	MMR Re-education Home exercise programme	94% improvement in quality of urination 9 out of 16 returned to pain-free intercourse.
Oyama et al, 2004	IC and high tone dysfunction of pelvic floor	21 females	Theile massage 2x weekly for 5 weeks TrPt deactivation	Long term follow up described as significantly improved
Riot et al, 2005	Irritable bowel syndrome (IBS), Levator ani syndrome (LVAS), SIJ dysfunction	101 subjects 76 female 25 male over 1 year	Trigger point deactivation to coccygeus	69 % free of all LVAS symptoms 10% symptoms remained At 12 months 62 % symptom free 10% improved 53% IBS group symptom free 78% at 6 months 72% at 12 months
Frank et al, 2008	CPP	19 women with CPPP 20 healthy controls		Women with CPPP demonstrated myofascial findings: 61% demonstrated asymmetric iliac crests 50% demonstrated asymmetric pubic symphysis height 37% demonstrated positive posterior pelvic provocation testing VAS 3/24 vs. 0/24; (P<. 05) pelvic tenderness Pelvic floor control 78% vs. 20% (P<. 001)

Evidence for the use of myofascial trigger point deactivation.
Longbottom 2009

ODNS
OPTIMAL DRY NEEDLING SOLUTIONS

Contraindications

There are relatively few absolute contra-indications associated with dry needling. Those that do exist are summarized as below

Absolute Contraindications:

- ✓ Lack of signed informed consent
- ✓ Existing infection at the site (Chlamydia, STD etc)
- ✓ Patient phobia of needles
- ✓ Patient unable to remain still or follow instructions
- ✓ Therapist is not qualified in the correct technique for a given area
- ✓ Allergy to surgical steel
- ✓ Medical emergency e.g.. Acute cardiac arrhythmia
- ✓ Into a lymphoedematous limb (refer to the appropriate watershed areas)

Relative Contraindications:

All of the following patients may be needled if the listed precautions are adhered to:

- ✓ **Abnormal bleeding –** Patients on medication to thin the blood (**warfarin/ heparin)** or those with **hemophilia** should be needled only with caution, and additional haemostatic pressure time should be used– Consult the patient's specialist prior to needling as they may need plasma beforehand
  Take care to not needle vigorously especially in deep muscles where accurate haemostasis by pressure cannot be performed; the actual risk has been shown to be minimal (Geriatrics Aging 2008:11920:93-97)
- ✓ **Pregnancy** – Needling is NOT contra-indicated but please take care especially in the first trimester. Needle with fewer needles and avoid the lower back and stomach areas. This is a reasonable precaution rather than a contra-indication *per se.* Avoid aggressive/strong needling. Do not use e-stims.

  https://osteopractor.wordpress.com/2016/08/08/dry-needling-during-pregnancy-the-risks-and-benefits/

"Systematic reviews have indicated that acupuncture is safe and can be effective for both LBP and pelvic girdle pain (PGP) during pregnancy (Pennick et al, 2008; Smith et al 2008); this is supported by the British Medical Acupuncture Society (BMAS), who suggest that the concept of 'forbidden points' in pregnancy is not backed by reliable data (Cummings et al, 2004). That said, however, care and sensitivity are always requiredduring pregnancy, and if there is any doubt as to the response of the patient, needling should be replaced with manual techniques" (Longbottom 2009)

- ✓ **E-stims.** These are *only* contra-indicated in the face, on the periosteum, and across the chest (if the patient has a pacemaker). Avoid e-stims in pregnancy.

- ✓ **Muscle trauma:** do not needle acutely injured muscles. You may however needle superficially in the area to decrease pain and swelling.

Myofascial Pain Syndrome

A Myofascial Pain Syndrome is a regional pain disorder characterised by the presence of myofascial trigger points (MTrPs). Many overlapping and some confusingly similar pain syndromes exist and confound diagnosis in the field of Women's Health. However, the dry needling treatment of these trigger points is standard despite the specific diagnosis.

MYOFASCIAL TRIGGER POINTS (MTRP)

With reference to a muscle, Hong & Simon's integrated hypothesis argues that a MTrP is a local energy crisis which results from a dysfunctional neuromuscular end plate. It is palpable as a hard pea like nodule within a taught band of muscle tissue. This is supported by recent electro-diagnostic and histopathological investigations which reveal the palpable MTrP as actually being a cluster of numerous microscopic loci of intense EMG abnormality. (These microscopic loci are scattered throughout the MTrP nodule, but not throughout the length of the muscle)

Essential Criteria	Confirmatory observations
Taught palpable band (if palpable)	Visual/tactile confirmation of local twitch response
Exquisite spot tenderness in a nodule of a taught band	Imaging of an LTR induced by needle penetration of a tender nodule
Patient pain recognition of current pain complaint by pressure on tender nodule	Pain or altered sensation in the distribution expected from a trigger point in the muscle on compression of the tender nodule
Painful limit to full stretch range of motion	Electromyography demonstration of spontaneous electrical activity characteristic of the active loci in the tender nodule of a taught band
Muscle weakness as a result of muscle Inhibition of power*	

Table: Recommended criteria for identifying MTrPs

Dommerholt & Huijbrechts 2010, Dommerholt et al 2006*

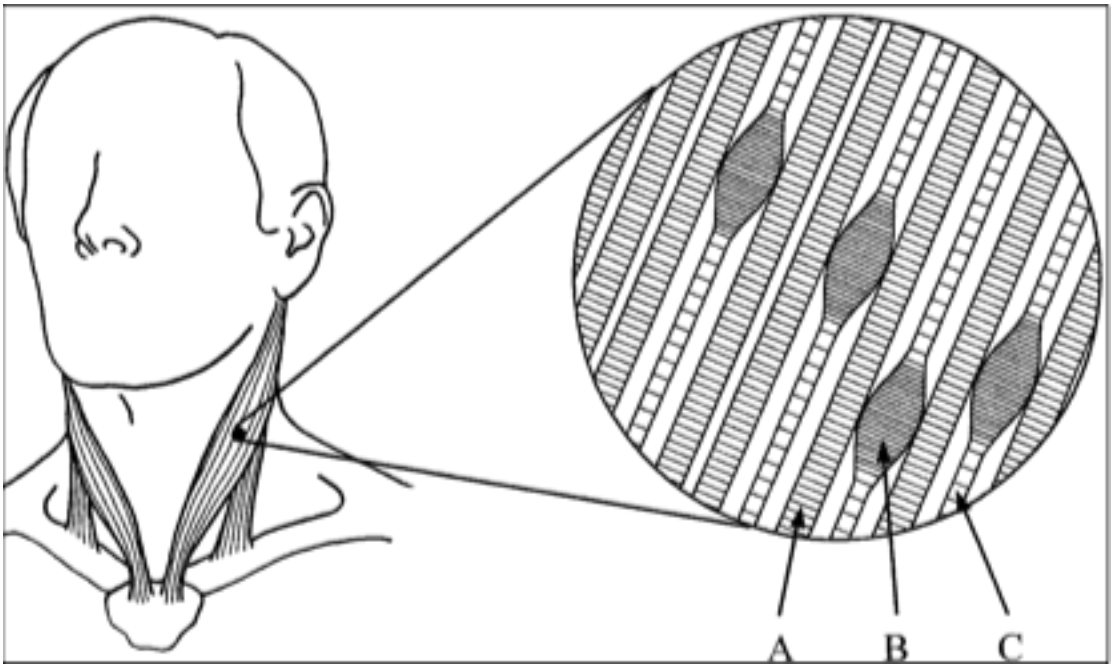


Figure: Schematic diagram of MTrP showing EMG level detail of myofibrils in a MTrP.

Davies, C. 1999. The Trigger Point Therapy Workbook.

Clinical features of muscles which contain MTrP's

- ✓ A decrease in muscle power, especially in the inner and outer ranges.
- ✓ Increased fatigability with increasing loss of co-ordination.
- ✓ Delayed recovery after exercise.
- ✓ Delayed relaxation. The muscle is unable to relax fully, causing a static load to remain on the muscle, especially in repetitive work or exercise. The muscle in less able to regenerate and rest.
- ✓ Referral of pain and spasm to other muscles/ muscle groups. Examples include infraspinatus referring to deltoid, gluteus minimus referring to the peroneal (fibularis) group.
- ✓ Referral of inhibition to other muscles. Examples include quadratus lumborum referring to the gluteal group. This is in addition to the effect of compensation in chronic cases. In many cases, proprioceptive and biofeedback retraining is essential.
- ✓ Autonomic disturbances include: local cutaneous hyperemia, referred cutaneous hypothermia, persistent tearing (crying) with MTrP's in neck region together with related proprioceptive

disturbances including dizziness, tinnitus and balance problems.

- ✓ NB! CRPS seems to dispose the patient to the development of MTrP's, and in many cases may be actually caused by untreated MTrP's. Sympathetic phenomena will clear if treated promptly and correctly.

Types of MTrPs

ACTIVE/PRIMARY: A MTrP with all the essential criteria and is **painfully symptomatic without stimulation**

LATENT: A MTrP with all the essential criteria which is **painfully symptomatic only when stimulated (can be primary)**

SECONDARY: A MTrP with all the essential criteria found in the **agonist or antagonist** muscles of the active/primary MTrP

SATELLITE: A MTrP will all the essential criteria set up within the referral zone of an active/primary MTrP

The Local Twitch Response

A LTR is a brisk transient contraction of the palpable taut band of muscle fibres.

It is commonly elicited by either snapping palpation or by the insertion of a needle. The needle is repeatedly manipulated to mechanically stimulate the MTrP. This LTR is a *local* phenomenon, distinct from the "jump sign" where the entire limb, or even the entire patient jerks in response to the stimulus. Clinically, the use of a needle is able to reproduce a LTR far more consistently than can be achieved by snapping palpation. This is in part due to the inaccessibility of some deeper muscles (gluteus medius, multifidi etc), but mostly due to the needle's ability to mechanically disrupt a relatively focused area and change the local blood supply channels, thereby counteracting the local energy crisis in a way that blunt palpation rarely can.

The LTR is seen as the **key element** in deep muscular dry needling. It is as important to intra-muscular needling as a pinprick is to superficial needling. It signals that the needle has reached that part of the MTrP that will be most therapeutically effective. It is a spinally mediated reflex, is completely involuntary, cannot be mimicked by the patient, and is not subject to supraspinal influences.

Meticulous accuracy in palpation is required to localise, and then fix the trigger point between the fingers of the therapist needling the patient. The LTR is the most difficult of the MTrP characteristics to reproduce reliably (Gerwin *et al 1997).* A single hand insertion technique is required to elicit and monitor this effect. The LTR is felt by the patient to be deeply uncomfortable or even excruciatingly painful. It should reproduce the patient's pain. The severity of the pain frequently associated with the LTR suggests that it can originate from stimulation of sensitised nociceptors in the MTrP area.

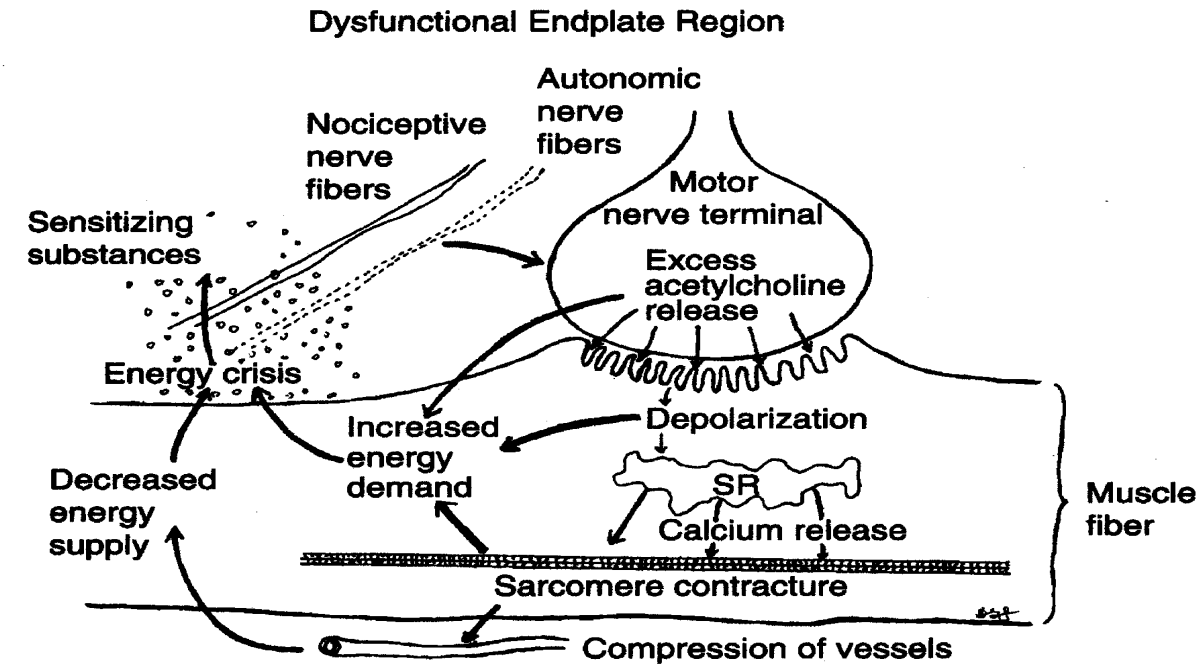


Figure: The Travell and Simons Integrated Hypothesis

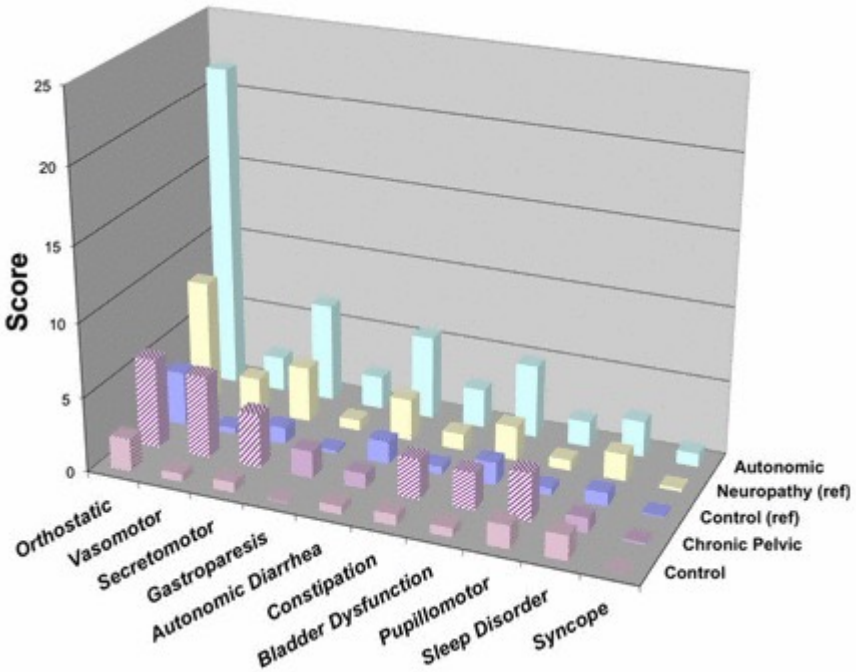
The clinical effects of MTrP physiology

Chen & Grinnell (1997) have shown that a 1% increase in myofascial tension at the motor end plate evoked a 10% increase in ACh release.

Motor effects	Sensory effects	Autonor effect
Compresses local nerves, causing reduced axoplasmic flow which normally inhibit Ach release	Nociception (pain)	Pilomot Vasomo Sudomo
Compression of local blood vessels, causing depletion of ATP, leading to “Energy crisis” in 3 ways. 1) The lack of ATP results in excess Ach being released from the neuromuscular junction 2) Reduced Ca^{2+} pump 3) Ca^{2+} induced calcium release via RYR leading to cross- linkage formation	Central sensitisation 1)“Neurologic lens”	Visceral re
Effect of Adenosine is controversial, but in excess may recruit Voltage sensitive calcium gated channels, causing contraction.	Peripheral sensitisation	
	Ephaptic cross-talk	

Motor effects	Sensory effects	Autonomic effects
Non-contracting pelvic floor Incontinence, poor sexual function	Pelvic pain between menses Dyspareunia Pain with walking/lifting Pain with bowel movement Dysmenorrhea Central sensitisation Peripheral sensitisation Vaginal pain Pain in abdomen, coccycx, hip, lower back, suprapubic areas Pain with prolonged sitting	Vasomotor Sudomotor Secretomotor Gastroparesis Orthostatic intolerance Constipation Bladder dysfunction Pilomotor Visceral referral
Urinary hesitancy or retention, Constipation, Penetration difficulties		
Non-contracting, non-relaxing pelvic floor Multiple organ problems		

ANS symptoms in CPP patients. **(Janicki et al 2013.)**



Clinically relevant articles

Dommerholt J, Grieve R. 2016. A critical overview of the current myofascial pain literature - July 2016 Journal of Bodyworks & Movement J Bodyw Mov Ther. 2016 Jul;20(3):657-71. doi: 10.1016/j.jbmt.2016.07.009. Epub 2016 Jul 27.

Absstract:

The overview of the myofascial pain literature includes a wide variety of basic and clinical studies, ranging from assessing muscle activation patterns to the impact of platelet-rich plasma injections. Contributions to the literature once again came from all corners of the world, such as Australia, Belgium, Brazil, Germany, Greece, Iran, Italy, Japan, Korea, the Netherlands, Norway, Poland, Spain, Taiwan, Turkey, and the USA. A total of 30 papers are included in this overview.

Fernández-de-las-Peñas C, Dommerholt J. 2014. Myofascial Trigger Points: Peripheral or Central Phenomenon? Curr Rheumatol Rep. 2014 Jan;16(1):395. doi: 10.1007/s11926-013-0395-2.

Abstract:

Trigger points (TrP) are hyperirritable spots in a taut band of a skeletal muscle, which usually have referred pain. There is controversy over whether TrP are a peripheral or central nervous system phenomenon. Referred pain, the most characteristic sign of TrP, is a central phenomenon initiated and activated by peripheral sensitization, whereby the peripheral nociceptive input from the muscle can sensitize dorsal horn neurons that were previously silent. TrP are a peripheral source of nociception, and act as ongoing nociceptive stimuli contributing to pain propagation and widespread pain. Several studies support the hypothesis that TrP can induce central sensitization, and appropriate TrP treatment reduces central sensitization. In contrast, preliminary evidence suggests that central sensitization can also promote TrP activity, although further studies are needed. Proper TrP management may prevent and reverse the development of pain propagation in chronic pain conditions, because inactivation of TrP attenuates central sensitization.

Hong C-Z, Kuan T-S, Chen J-T, Chen S-M. 1997. Referred pain elicited by the palpation and by needling of myofascial trigger points: A comparison. Arch Phys Med Rehabil 78:957-960.

Objectives: To investigate the occurrence of referred pain (ReP) elicited by palpation (Pal-ReP) or by needle injection (Inj-ReP) of myofascial trigger points (MTrP), and to assess the correlated factors, including the pain intensity of an active MTrP and the occurrence of a local twitch response (LTR).

Design: Correlational study

Patients: Ninety five patients who were treated with MTrP

injections.

Interventions: MTrP injections

Main outcome measures: Pain intensity of MTrP and occurrence of Pal-Rep, Inj- Rep, and LTR.

Results: Both Pal-Rep and Inj-Rep were elicited in 53.9% of MTrPs. Inj-Rep, but not Pal-Rep, was elicited in 33.7% of MTrPs. Both Pal-Rep and Inj-Rep were unobtainable in 12.3% of MTrPs. The occurrence of ReP was significantly correlated to the Pain intensity of active MTrP and the occurrence of LTR.

Conclusions: Rep could be elicited more frequently by needling than by palpation. The frequency of occurrence in ReP mainly depends on the pain intensity of an active MTrP.

Hong C-Z. 2006. Treatment of Myofascial pain syndromes. Curr Pain Headache Rep. Oct;10(5):345-9

Abstract: Myofascial pain syndrome (MPS) is caused by myofascial trigger points (MTrPs) located within taut bands of skeletal muscle fibers. Treating the underlying etiologic lesion responsible for MTrP activation is the most important strategy in MPS therapy. If the underlying pathology is not given the appropriate treatment, the MTrP cannot be completely and permanently inactivated. Treatment of active MTrPs may

be necessary in situations in which active MTrPs persist even after the underlying etiologic lesion has been treated appropriately. When treating the active MTrPs or their underlying pathology, conservative treatment should be given before aggressive therapy. Effective MTrP therapies include manual therapies, physical therapy modalities, dry needling, or MTrP injection. It is also important to eliminate any perpetuating factors and provide adequate education and home programs to patients so that recurrent or chronic pain can be avoided.

Pre & Post treatment protocols

Incorporating Dry Needling with other treatment modalities

THE ROLE OF EXERCISE

Core stability

Pelvic diaphragm, abdominal muscles, respiratory diaphragm

exercises: Sit on corner of table - left skin of perineum off table, not using legs.

Breathing

Squats

Pelvic tilting in standing and supine

Thoracic posture - mid position “rise up”

Shoulder: reaching up and over

Turn feet out, auto squeeze buttocks to get a feel of the wrong mm. Lift around the openings, lift as high as possible, hold for 5 seconds breathing, no locking.

Squeeze and lift, then super add sharp upward lifts at end of range. Be sure to relax

4pt: 3 pt lifting off hand placed under lower abdomen. Hold for 8 seconds, hold and go into superman

Side plank, but don't lift hip off floor, just get contract first (hold 3 seconds), then go into ladies plank. Repeat both sides.

Prone, head on hands, 1 leg in hurdle position, the other straight. Do pelvic floor contraction on hurdle leg. Hold for 10 seconds. Then superadd fast contraction

Bridge bilat and unilat

Prone splayed legs, upper tx lift, also puppy plank, also superman, also splayed puppy

Do sets of 10 for all

The treatment of MTrP's

Muscle Stretch

In acutely activated MTrP's, simple focussed therapeutic stretches are remarkably effective. These should always:

- ✓ Be done slowly (20-30 seconds)
- ✓ In a pain free range of movement while still achieving a stretch effect
- ✓ Be accompanied by controlled breathing

Therapeutic stretches may be enhanced by:

- ✓ Using hot/ cold modalities (hot pack, spray & stretch)
- ✓ Post-isometric relaxation (Lewitt)
- ✓ Reciprocal inhibition techniques
- ✓ Facilitatory eye movements
- ✓ Visualisation

Trigger point release

In previous years, the term "ischaemic compression" was used for this technique. This is unsatisfactory for 2 reasons.

There is no convincing experimental evidence that substantiates the suggestion that ischaemia is the primary driver of the technique's success.

The name has lead clinicians to apply unnecessary, excessive and often painful force to the patient, which is counterproductive and unethical.

The technique now recommended conforms more to the concept of barrier release more common in osteopathic circles. The therapist applies a gentle gradually increasing pressure on the MTrP until a definite increase in the resistance is encountered *(the barrier).* At the same time, the patient begins to feel a degree of discomfort. By simply maintaining this degree of minimal discomfort, the palpable tension/ barrier releases after 30 seconds or sooner. This gentle yet effective procedure may be repeated until complete relief is

felt. It has the advantage of allowing the patient to be part of the treatment as he/ she gives constant feedback on the initially the discomfort, and then the relief levels. The process is vital for the patient to learn how far he/ she can work in self treatment. It works equally well with non-human patients like horses and dogs.

The key is in “listening” to the patient’s tissue and adjusting the therapeutic process to the body’s pace.

The use of injectables

EU Guidelines on Chronic Pelvic Pain 2012
Botulinum A toxin

Botulinum A toxin (BTX-A) is an inhibitor of acetylcholine release at the neuromuscular junction and has a paralysing effect on striated muscles. BTX-A has been injected into trigger points. It is more expensive than lidocaine and has **not been proven to be more effective**. Reviews **do not support** the

injection of BTX-A into **trigger points**.

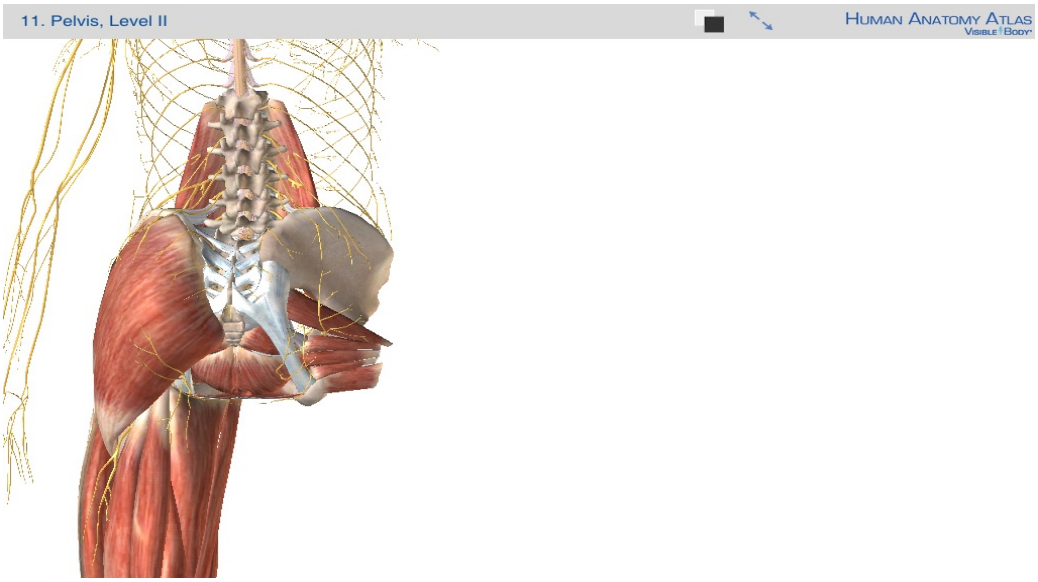
Botox has variable results and is not recommended for MTrP injection

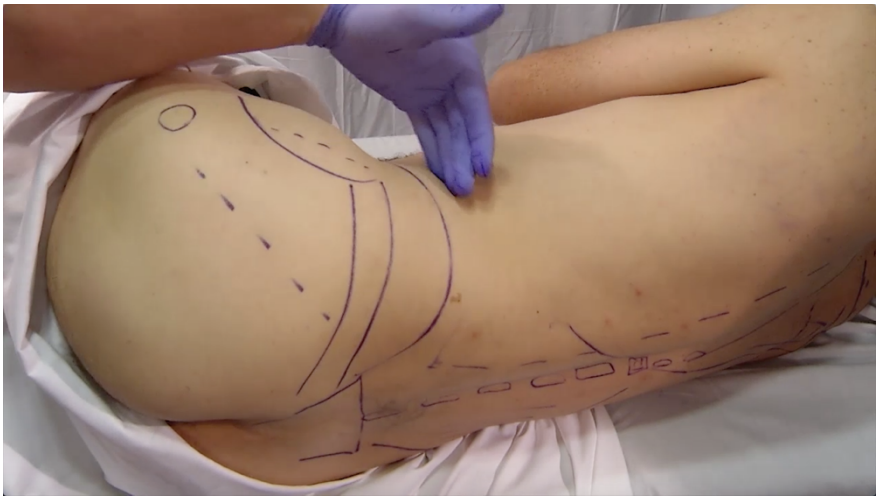
Pelvic floor muscle over activity plays a role in CPP. BTX-A, as a muscle relaxant, can be used to reduce the resting pressure in the pelvic floor muscles. In women with high resting pressure in the pelvic floor muscles, it has been found that BTX-A lowers this pressure significantly. The magnitude of reduction was significantly higher than that in the placebo group. On the pain score (VAS), no intergroup differences were found in this relatively small randomised study.

BTX-A can also be injected at the sphincter level to improve urination or defecation. Relaxation of the urethral sphincter alleviates the bladder problems and secondarily the spasm. In a cohort study of 13 patients with CPP, BTX-A was injected into the external urethral sphincter. Subjectively, 11 patients reported a substantial change in pain symptoms, from 7.2 to 1.6 on a visual analogue scale.

Posterior Hip Muscles

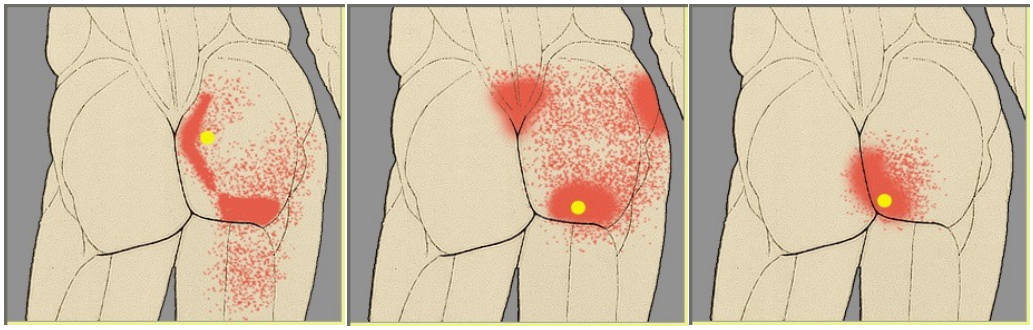
Gluteals
Piriformis
Gemelli
Obturator internus (with Pelvic Floor) & externus
Quadratus Femoris





- Gluteus maximus

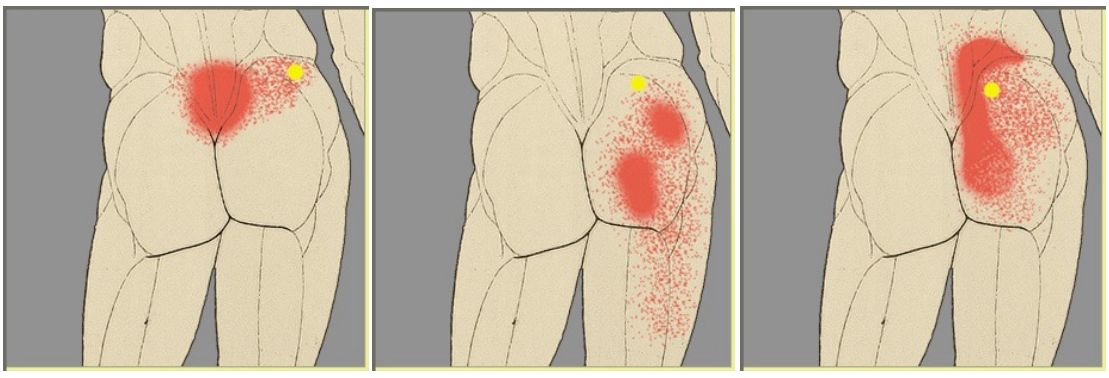
	Normal	Problem factors
Innervation	L5, S1, S2	
Function: Isometric/Support	Assists force closure of SIJ & tenses ITB (with TFL)	
Concentric/Contract	Hip extension incl. rising from seated position	
Eccentric/Relax	Limits hip flexion	
Common MTrP causes	Prolonged sitting, Prolonged uphill walking, freestyle swimming	
Starting position	Contralateral Sy ly, pillow btw flexed knees	
Palpation landmarks	Iliac crest, sacrum, Greater trochanter	
Possible Needle sizes	0.30x40mm-0.30x50mm	Excess adipose tissue
Possible Grip	Flat palpation near sacrum, but pincer for free border	Keep non-dominant hand in contact muscle being needled
Direction of insertion	Obliquely toward ASIS	Avoid pushing the needle deeper than glut max
Special precautions	**Avoid sciatic nerve as it runs laterally from anterior to the sacrum, to turn caudally in the mid third of buttock**	



Gluteus Maximus referral pattern. (Dry Needling App)

- Gluteus medius

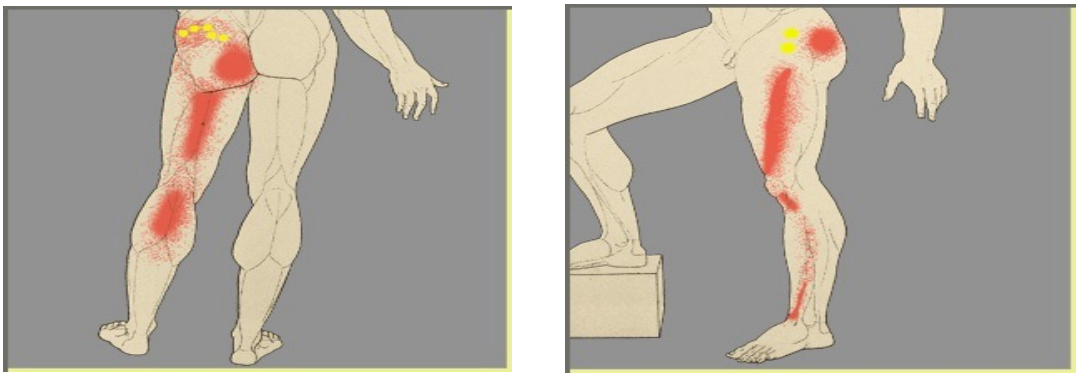
	Normal	Problem factors
Innervation	L4,5, S1	
Function: Isometric/Support	Resists adduction i.e. prevents Trendellenburg	
Concentric/Contract	Hip abduction	
Eccentric/Relax	Resists adduction i.e. prevents Trendellenburg	
Common MTrP causes	Prolonged sitting, Prolonged uphill walking, freestyle swimming	
Starting position	Contralateral Sy ly, pillow btw flexed knees	
Palpation landmarks	Iliac crest, sacrum, greater trochanter	
Possible Needle sizes	0.30x40mm-0.30x75mm	Excess adipose tissue
Possible Grip	Flat palpation	Keep non-dominant hand in contact muscle being needled
Direction of insertion	Perpendicular: aim at Ilium	Avoid periosteal peck of Ilium unless intended
Special precautions	**Avoid sciatic nerve, which runs vertically between the ischial tuberosity and the greater trochanter**	



Gluteus Medius referral pattern. (Dry Needling App)

- Gluteus minimus

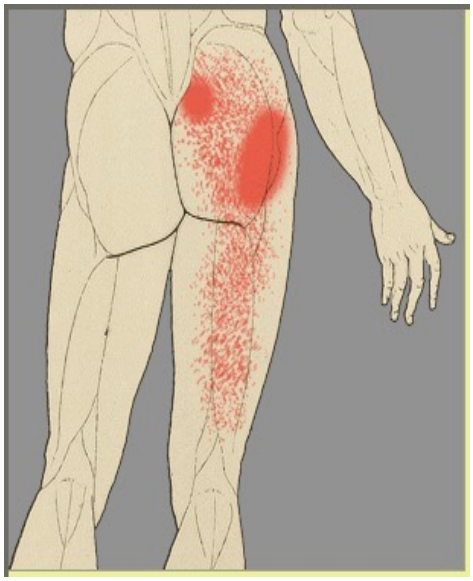
	Normal	Problem factors
Innervation	L4,5, S1	
Function: Isometric/Support	Resists adduction i.e. prevents Trendellenburg	
Concentric/Contract	Hip abduction	
Eccentric/Relax	Resists adduction i.e. prevents Trendellenburg	
Common MTrP causes	Prolonged sitting, Prolonged uphill walking, freestyle swimming	
Starting position	Contralateral Sy ly, pillow btw flexed knees	
Palpation landmarks	Iliac crest, sacrum, greater trochanter	
Possible Needle sizes	0.30x40mm-0.30x75mm	Excess adipose tissue
Possible Grip	Flat palpation	Keep non-dominant hand in contact muscle being needled
Direction of insertion	Perpendicular: aim at Ilium	Avoid periosteal peck of Ilium unless intended
Special precautions	**Avoid sciatic nerve, which runs vertically between the ischial tuberosity and the greater trochanter**	



Gluteus Minimus referral pattern. (Dry Needling App)

- Piriformis

	Normal	Problem factors
Innervation	S1, S2	
Function: Isometric/Support	Stabilisation of femoral head in acetabulum	
Concentric/Contract	Lateral hip rotation (in hip extension) NWB Hip abduction when hip is at 90 degrees of flexion NWB	
Eccentric/Relax	Check-reign medial rotation	+ FAIR test
Common MTrP causes	Prolonged walking Prolonged sitting	S1 nerve root compression, Sacroiliac joint dysfunction, Hamstring injury, Pudendal nerve entrapment (Pace et al, 1976)
Starting position	Contralateral Sy ly, hip flexed to 90 degrees and in adduction, no pillow btw knees	
Palpation landmarks	Draw a line from the middle of the sacrum to the greater trochanter. Needle just superior to this line at the junction of the lateral and middle third of this line.	
Possible Needle sizes	0.35X75mm-0.35x100mm	Excess adipose tissue
Possible Grip	Flat palpation	Keep non-dominant hand in contact muscle being needled
Direction of insertion	Toward Ilium	
Special precautions	**Avoid sciatic nerve, which runs vertically between the ischial tuberosity and the greater trochanter**	



Piriformis referral pattern. (Dry Needling App)

- The Gemelli

	Normal	Problem factors
Innervation	Superior L5-S2 Inferior L4-S1	
Function: Isometric/Support	Stabilises femur within femoro-acetabular joint	The Gemelli are functionally part of the Obturator internus and may even be fused with it.
Concentric/Contract	Lateral hip rotation Hip abduction when hip is at 90 degrees of flexion NWB	
Eccentric/Relax	Check-reign medial rotation	
Common MTrP causes		
Starting position	Contralateral Sy ly, hip flexed to 90 degrees and in adduction, no pillow btw knees	
Palpation landmarks	Palpate deeply below the free border of gluteus maximus. The Sciatic nerve and the sacrotuberous ligament lie medially, with the greater trochanter laterally	
Possible Needle sizes	0.30x40-0.35x50mm	Excess adipose tissue
Possible Grip	Flat palpation	Keep non-dominant hand in contact muscle being needled
Direction of insertion	Angle away from the sciatic nerve	
Special precautions	**Avoid sciatic nerve, which runs vertically between the ischial tuberosity and the greater trochanter, very close to the ischial tuberosity**	

- Obturator externus

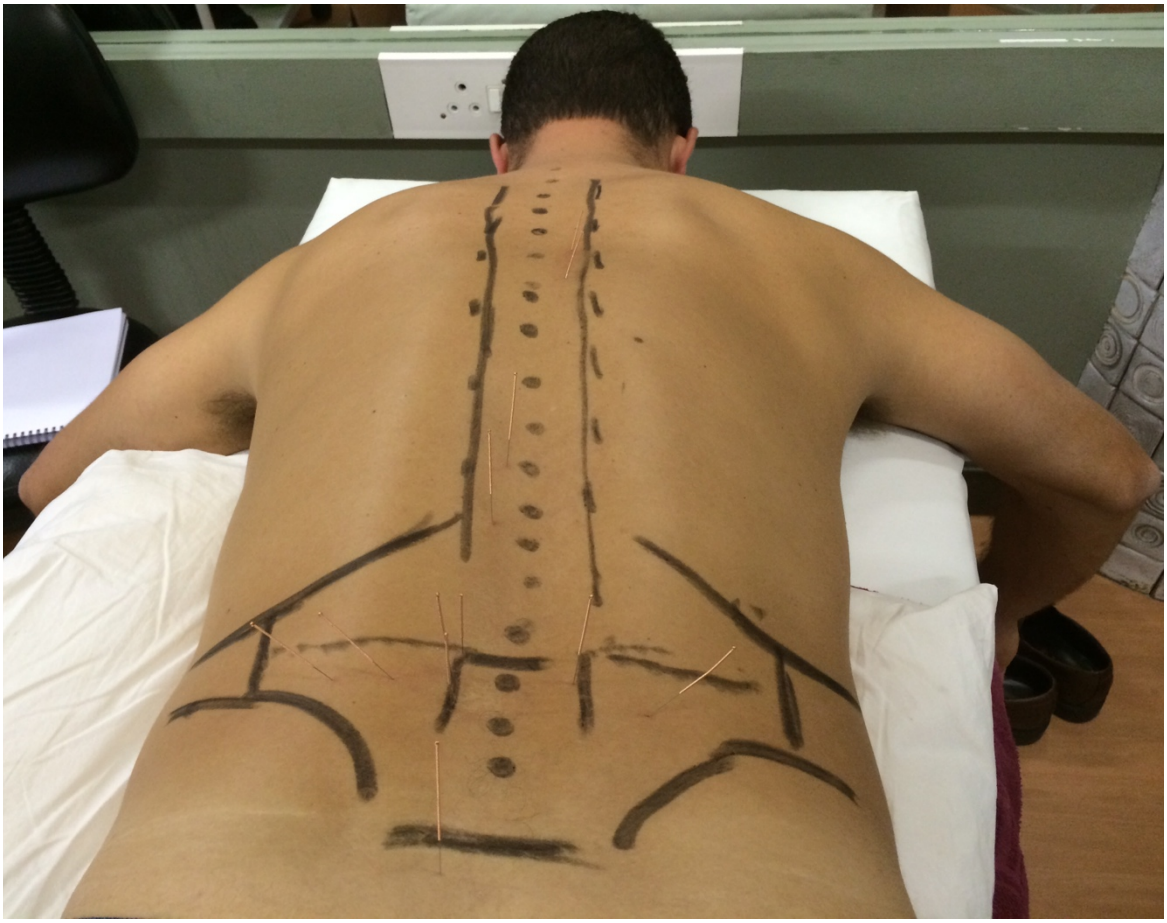
	Normal	Problem factors
Innervation	L3-L4 (Obturator nerve, posterior part)	
Function: Isometric/Support	Stabilises femur within femoro-acetabular joint	
Concentric/Contract	Lateral hip rotation Hip abduction when hip is at 90 degrees of flexion NWB	
Eccentric/Relax	Check-reign medial rotation	
Common MTrP causes		
Starting position	Contralateral Sy ly, hip flexed to 90 degrees and in adduction, no pillow btw knees	
Palpation landmarks	Palpate deeply below the free border of gluteus maximus. The Sciatic nerve and the sacrotuberous ligament lie medially, with the greater trochanter laterally	
Possible Needle sizes	0.30x40-0.35x50mm	Excess adipose tissue
Possible Grip	Flat palpation	Keep non-dominant hand in contact muscle being needled
Direction of insertion	Angle away from the sciatic nerve	
Special precautions	**Avoid sciatic nerve, which runs vertically between the ischial tuberosity and the greater trochanter, very close to the ischial tuberosity**	

- Quadratus Femoris

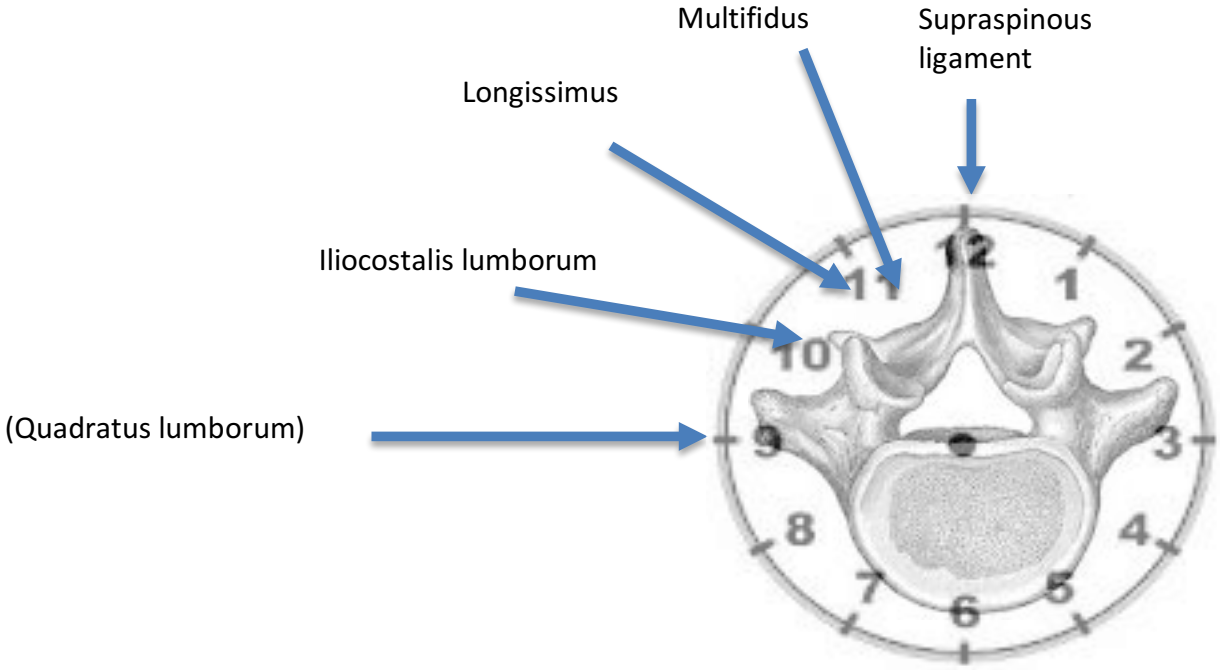
	Normal	Problem factors
Innervation	L5-S1	
Function: Isometric/Support	Stabilises femur within femoro-acetabular joint	
Concentric/Contract	Lateral hip rotation Hip abduction when hip is at 90 degrees of flexion NWB	
Eccentric/Relax	Check-reign medial rotation	
Common MTrP causes		
Starting position	Contralateral Sy ly, hip flexed to 90 degrees and in adduction, no pillow btw knees	
Palpation landmarks	Palpate deeply beneath the free border of gluteus maximus. The Ischial tuberosity lies medially and greater trochanter laterally.	
Possible Needle sizes	0.30x30-0.35x50mm	Excess adipose tissue
Possible Grip	Flat palpation	Keep non-dominant hand in contact muscle being needled
Direction of insertion	Angle away from the sciatic nerve	
Special precautions	**Avoid sciatic nerve, which runs vertically between the ischial tuberosity and the greater trochanter, very close to the ischial tuberosity**	

Lumbar Spine Muscles

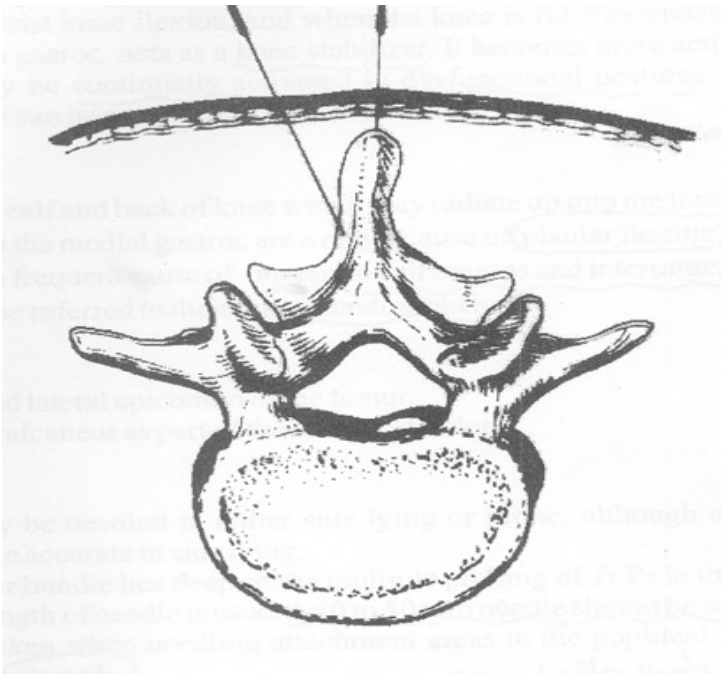
Multifidus
Longissimus Lumborum
Iliocostalis Lumborum



ODNS
OPTIMAL DRY NEEDLING SOLUTIONS



Relative directions of lumbar needles



- Lumbar Multifidus

	Normal	Problem factors
Innervation	Posterior Rami of relevant spinal nerve	
Function: Isometric/Support	Segmental stability of vertebrae together with semispinalis and rotatores (transversospinal group	
Concentric/Contract	Does not appreciably shorten	
Eccentric/Relax	Does not appreciably shorten	
Common MTrP causes	Postural dysfunction, surgery, overload	
Starting position	Prone with pillow under lumbar spine to “open up” spine	Check that the pillow is not creating hip flexion rather than lumbar flexion
Palpation landmarks	Spinous processes, iliac crest, 12^{th} rib	
Possible Needle sizes	0.30x30-0.35x50mm	Excess adipose tissue
Possible Grip	Flat palpation 1 index finger width away from spinous process	Avoid needling anterior to transverse processes
Direction of insertion	Towards the lamina of the same level (remember the concept of a clock🕛)	Avoid pushing the needle all the way onto the lamina
Special precautions	**The thoracolumbar fascia is thick and tough, especially in chronic cases. The needles may need to be left in situ even after LTR to achieve full relaxation**	

- Lumbar Longissimus

	Normal	Problem factors
Innervation	Poterior Rami of relevant spinal nerve	
Function: Isometric/Support	Segmental stability of costovertebral joints	Becomes dysfacilitated in the presence of pain
Concentric/Contract	Bilaterally: Extension of vertebral column Unilaterally: lateral flexion of vertebral column	
Eccentric/Relax	Check rein movement into lumbar flexion	
Common MTrP causes	Postural dysfunction, surgery, overload	Poor core stability
Starting position	Prone with pillow under lumbar spine to “open up” spine	Check that the pillow is not creating hip flexion rather than lumbar flexion
Palpation landmarks	Spinous processes, iliac crest, 12^{th} rib	
Possible Needle sizes	0.30x40-0.35x75mm	Excess adipose tissue, scar tissue
Possible Grip	Flat palpation 3cm away from spinous process palpate for MTrP	Avoid needling anterior to transverse processes
Direction of insertion	Towards the lamina of the same level (remember the concept of a clock🕐)	Avoid pushing the needle all the way onto the lamina
Special precautions	**The thoracolumbar fascia is thick and tough, especially in chronic cases. The needles may need to be left in situ even after LTR to achieve full relaxation**	

- Lumbar Iliocostalis

	Normal	Problem factors
Innervation	Poterior Rami of relevant spinal nerve	
Function: Isometric/Support	Segmental stability of costovertebral joints	Becomes dysfacilitated in the presence of pain
Concentric/Contract	Bilaterally: Extension of vertebral column Unilaterally: lateral flexion of vertebral column	
Eccentric/Relax	Check rein movement into lumbar flexion	
Common MTrP causes	Postural dysfunction, surgery, overload	Poor core stability
Starting position	Prone with pillow under lumbar spine to “open up” spine	Check that the pillow is not creating hip flexion rather than lumbar flexion
Palpation landmarks	Spinous processes, iliac crest, 12^{th} rib	
Possible Needle sizes	0.30x40-0.35x75mm	Excess adipose tissue, scar tissue
Possible Grip	Flat palpation 4-5cm away from spinous process palpate for MTrP	Avoid needling anterior to transverse processes
Direction of insertion	Towards the lamina of the same level (remember the concept of a clock🕐)	Avoid pushing the needle all the way onto the lamina
Special precautions	**The thoracolumbar fascia is thick and tough, especially in chronic cases. The needles may need to be left in situ even after LTR to achieve full relaxation. Somatoemotional release following needling here is not uncommon. Onward referral to a good psychologist may be in order.**	

(Dry Needling App)

Pain pattern: Iliocostalis lumborum

Pain pattern: Multifidi L2

Pain pattern: Multifidi S1

Anterior Hip Muscles

The groin

TFL
Iliopsoas
Pectineus
Sartorius

TFL referral pattern.

(Dry Needling App)

Iliopsoas referral pattern.

(Dry Needling App)

Pectinius referral pattern.

(Dry Needling App)

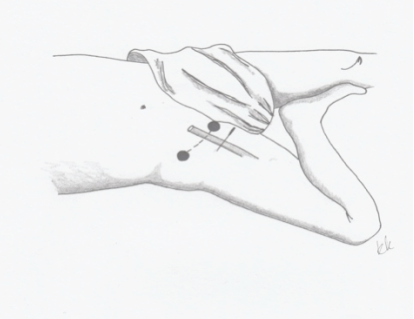
Sartorius referral pattern.

(Dry Needling App)

- Tensor Facia Lata

	Normal	Problem factors
Innervation	L5, S1 (superior gluteal n)	
Function: Isometric/Support	Stability of hip during single leg phase	
Concentric/Contract	Abduct and medially rotate hip.	High Heel shoes
Eccentric/Relax	Check-reign contralateral hip “dipping” Check rein genu varus	Sway back posture,
Common MTrP causes	Weak gluteals, weak lumbar stabilisers, Poor foot alignment, thigh weakness	ITB
Starting position	Supine – expose ASIS and adjacent iliac crest	
Palpation landmarks	ASIS & greater trochanter	
Possible Needle sizes	0.3X30mm-0.35x50mm	Excess adipose tissue
Grip	Flat palpation Delineate the muscle with your fingers	Avoid needling into the gluteus minimus – aim diagonally
Direction of insertion	Superiorly toward the iliac crest	
Special precautions	**Take care not to loosen the TFL before strengthening the weak muscles which are driving the increased muscle tension**	

- Iliopsoas

	Normal	Problem factors
Innervation	L1-2	
Function: Isometric/Support	Iliacus helps keep the head of the femur in the acetabulum anteriorally Psoas stabilises the lumbar vertebrae anteriorally	
Concentric/Contract	Iliacus: Hip flexion Psoas Maj.: Lumbar extension & Hip Flexion	Excessive lumbar lordosis Hip flexion contractures
Eccentric/Relax	Check-reign hip extension and lumbar flexion	
Common MTrP causes	Sway back posture, Recovering from a flexed, laterally flexed and rotated position	"Plantar fasciitis"
Starting position	Supine – FABER . Patient cups/covers their own genitalia and gently pulls away from the intended site	
Palpation landmarks	Identify femoral triangle, especially the pulsing Femoral artery. Place one finger over the pulse, then one finger lateral to this (cover the femoral nerve), and then insert the needle lateral to this second finger +/- 5 cm inferior to the Inguinal ligament	
Possible Needle sizes	0.35x50mm – 0.35x75mm	Excess adipose tissue
Possible grip	Flat palpation	Avoid needling into the femoral vein
Direction of insertion	Straight down toward the lesser trochanter	
Special precautions	**Respect the patient's dignity at all times.**	

- Pectineus

	Normal	Problem factors
Innervation	L2-L3 (Femoral n)	
Function: Isometric/Support	Hip stability	
Concentric/Contract	Lateral hip rotation, adduction	
Eccentric/Relax	Check-reign lateral hip rotation and abduction	Forceful hip abduction e.g. falls, tackles in contact sport, sexual trauma
Common MTrP causes	Groin strain, OA hip, trauma	Psoas syndrome. Often co-activate with Quadratus Lumborum and the Levator Ani group
Starting position	Supine – FABER	
Palpation landmarks	Lateral border of Pubis	
Possible Needle sizes	0.3X30mm-0.35x50mm	Excess adipose tissue
Possible grip	Flat palpation: Patient covers/cups their own genitalia and gently pulls away from the needling site	
Direction of insertion	Toward the pubis	
Special precautions	**Respect the patient's dignity at all times. Remember to keep well medial to the Femoral vein**	

- Sartorius

	Normal	Problem factors
Innervation	L2-L3 (Femoral n)	
Function: Isometric/Support	Hip-knee stability with TFL	
Concentric/Contract	Hip flexion, and lateral rotation	Cross legged sitting
Eccentric/Relax	Check-reign medial rotation of hip and knee	Pes planus,
Common MTrP causes	Genu valgum, pes planus	“Plantar fasciitis”
Starting position	Supine – FABER	
Palpation landmarks	ASIS, pes anserinus	
Possible Needle sizes	0.25X25mm-0.30x30mm	Excess adipose tissue
Possible grip	Flat or pincer if possible	
Direction of insertion	Obliquely superiorally to ASIS, or inferiorally if you are the lower parts of the muscle	
Special precautions	**Beware needling into femoral triangle or femoral vessels in the canal underneath**	

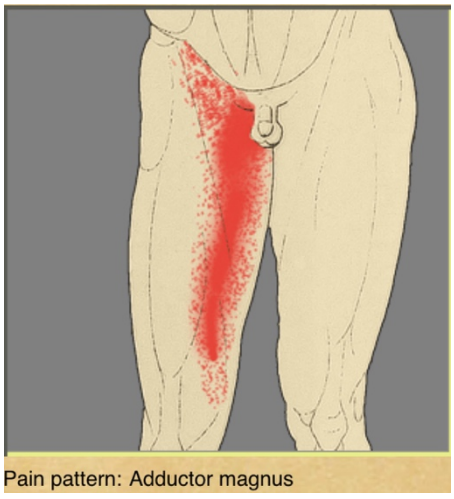
Medial hip muscles

The groin

Adductors of the thigh
- Adductor longus
- Adductor brevis
- Adductor magnus
- Gracilis

Pain pattern: Adductor longus

Pain pattern: Adductor brevis



Pain pattern: Adductor magnus

Pain pattern: Gracilis

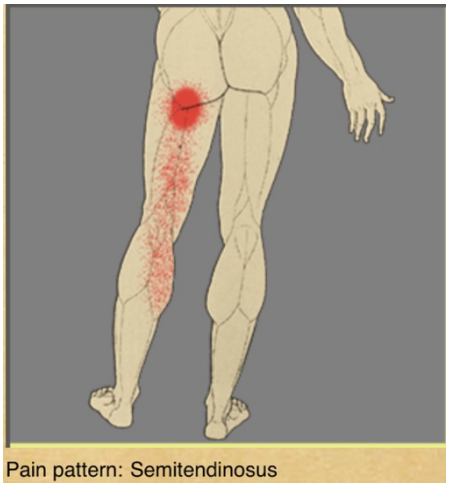
- Adductors

	Normal	Problem factors
Innervation	Longus & Brevis & Magnus ant fibres (adduction) = L2-4 (Obturator n.). Magnus post fibres (knee flexion) = L4-5 Tibial n.)	
Function: Isometric/Support	Assists with Hip stability	
Concentric/Contract	Adduction of the thigh Knee flexion (Magnus post)	Adductor hypertonus, large Q angles
Eccentric/Relax	Check-reign ipsilateral abduction	Sway back posture
Common MTrP causes	Pelvic trauma, weak gluteals	Osteitis pubis, Pubic symphysis dysfunction, Groin strain (Ekberg et al, 1996)
Starting position	Supine – FABER or Crook lying (medial). Support the knee on a pillow or on the therapist's arm	
Palpation landmarks	Adductor compartment. Identify Os Pubis (Superior anus). Note the hamstrings	
Possible Needle sizes	0.3X30mm-0.35x50mm. On rare occasions a 0.35x75mm may be required.	Excess adipose tissue
Possible grip	Lumbrical	Avoid needling into the posterior compartment
Direction of insertion	AP - Toward your gripping fingers. In the upper 1/3, you can needle all 3 components with a single needle. In the middle 1/3, just Longus and Magnus, and in the distal 1/3, just Magnus. Angle the needle toward pubis	Avoid pushing the needle into your own finger
Special precautions	**Beware the Femoral vessels in the Adductor canal. In the distal 1/3, the posterior part of Magnus should be needled with the needle angling PA as for VMO. Do not needle into the popliteal fossa**	

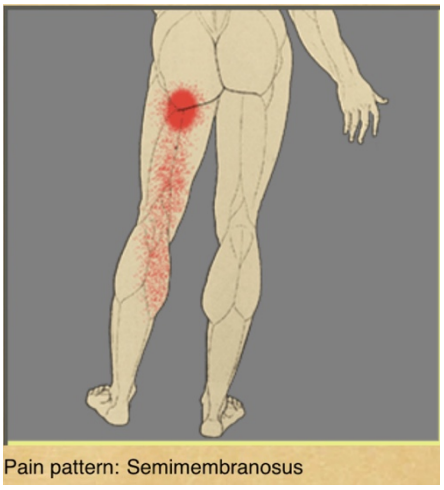
Posterior hip muscles

Hamstrings
- Semitendinosus
- Semimembranosus
- Biceps Femoris

Pain pattern: Biceps femoris



Pain pattern: Semitendinosus



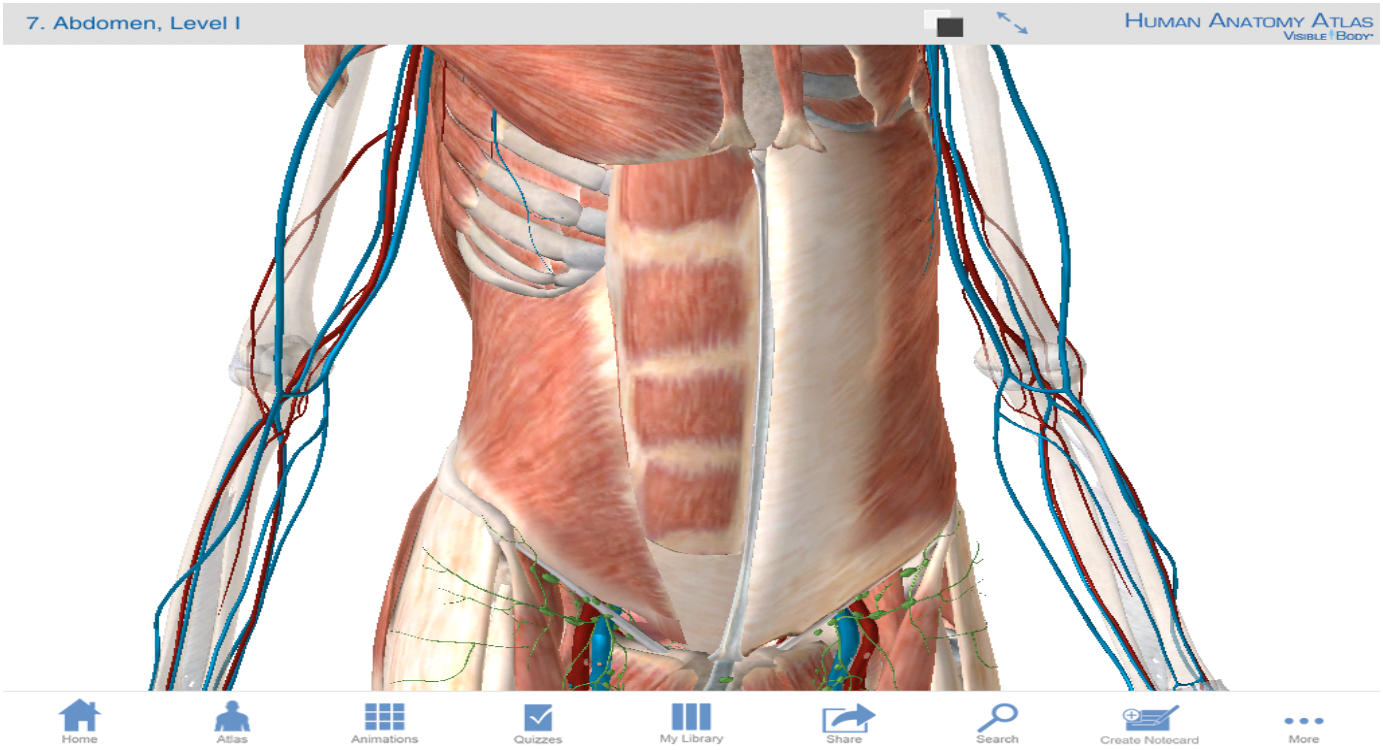
Pain pattern: Semimembranosus

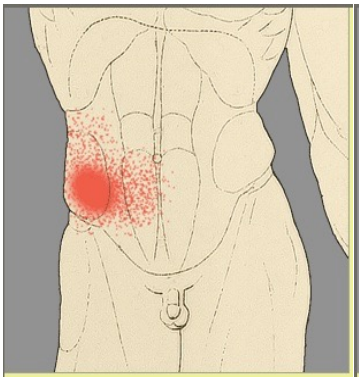
• Hamstrings

	Normal	Problem factors
Innervation	L4,5 –S1 (Tibial n). Biceps Short head = Common Peroneal n. (L5-S1)	
Function: Isometric	Helps maintain position of tibia on femur	High heel shoes
Concentric	All: Hip extension, Knee flexion, Semis = Medial rotation of Tibia on Femur Biceps = Lateral rotation of Tibia on femur	Pes planus
Eccentric	Check-reign knee extension and Hip flexion	Sway back posture
Common MTrP causes	Poor foot and knee position, lumbar spine weakness	
Starting position	Supine –FABERS or Crook Lying (Semis) Contralateral sy ly (Biceps)	
Palpation landmarks	Identify Ischial tuberosity & Tendons of each of the three Hamstrings	
Possible Needle sizes	0.3x30mm-0.3x50mm	
Possible grip	Lumbrical	Excess adipose tissue
Direction of insertion	Toward your gripping fingers. Avoid the Sciatic nerve deep to the muscles by pulling the gripped muscle posteriorally	Avoid pushing the needle into your own finger
Special precautions	**Make sure you are in the posterior compartment**	

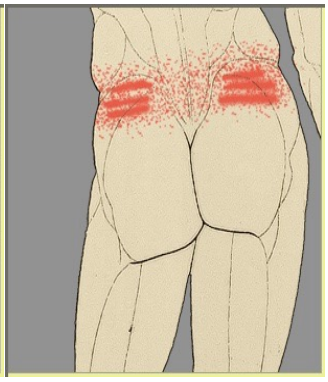
Abdominal wall

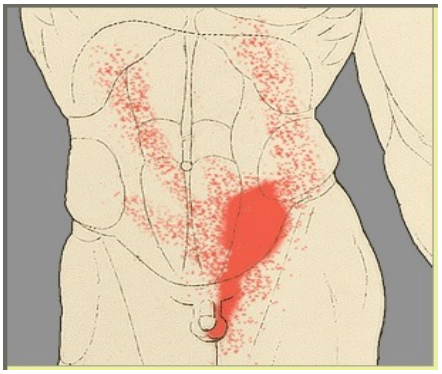
Rectus Abdominis
Internal & Exernal Oblique
Quadradus Lumborum





Rectus Abdominis referral pattern. (Dry Needling App)





External oblique referral pattern.

Quadradus Lumborum referral pattern.

ODNS
OPTIMAL DRY NEEDLING SOLUTIONS

- Rectus Abdominis

	Normal	Problem factors
Innervation	Thoracoabdomninal nerves T7-12	
Function: Isometric	Maintenance of relationship of ribs to pelvis, keep abdominal contents within the abdominal cavity	
Concentric	Anteriorally tilt pelvis toward lower ribs, or ribs toward Pelvis	
Eccentric	Restrain lumbar extension, restrain posterior pelvic tilt	
Common MTrP causes	Lumbopelvocinstability, visceral MTrPs	"Dysmenorrhea"
Starting position	Supine	May find hip and knee flexion helpful.
Palpation landmarks	Pubis, costal margin, linea alba	
Possible Needle sizes	0.25x15mm-0.3x30mm	
Possible grip	Flat palpation	Create a flat platform to insert into
Direction of insertion	**Pubic:** Locate pubis between your fingers and aim the needle at the bone **Belly**: Insert from lateral to medial	Ask the patient to cover their own genitals with the opposite hand Be sure to needle the muscle, not the overlying adipose tissue
Special precautions	**If the patient has too much adipose in this area to make accurate palpation possible, then DO NOT PERFORM the technique.**	

• The Internal and External oblique

These two muscles are anatomically closely related and it is not practically possible to separate them out for needling purposes. They are consequently dealt with as one unit.

	Normal	Problem factors
Innervation	Thoracoabdomninal nerves T7-12	
Function: Isometric	Maintenance of relationship of ribs to pelvis, keep abdominal contents within the abdominal cavity	
Concentric	Flexion and rotation of the trunk, pelvic rotation	
Eccentric	Restrain lumbar extension + Rotation, restrain pelvic rotation	
Common MTrP causes	Overuse, overload	
Starting position	Supine	Hip and knee flexion may be helpful
Palpation landmarks	Pubis, costal margin, linea alba	Take care to observe patient's dignity
Possible Needle sizes	0.25X13mm-0.3x30mm	
Possible grip	Flat palpation except for the "love handles" where you should use a pincer grip.	Beware penetrating into the peritoneum
Direction of insertion	**Ribs**: Aim at the rib between your fingers as they block the intercostal spaces **"Love handles"** into the pincer grip, aiming at your finger	
Special precautions	**Take care not to penetrate into the abdominal cavity.**	

- Quadratus Lumborum

	Normal	Problem factors
Innervation	Segmental T12=L4	
Function: Isometric	Helps stabilise ribs on pelvis and lumbar spine	Becomes dysfacilitated in the presence of pain
Concentric	Bilaterally: Extension of vertebral column Unilaterally: lateral flexion of vertebral column	
Eccentric	Check-rein opposite movement	
Common MTrP causes	Postural dysfunction, surgery, overload. May be a factor in failed back surgery	Poor core stability. Take care to assess and treat gluteal region
Starting position	Sy Ly with many pillow under the lumbar spine to open up the gap btw ribs and ilium	Check that the pillow is not creating hip flexion rather than lumbar flexion
Palpation landmarks	Iliac crest, costal margin, L2, Free border of Obliques	
Possible Needle sizes	0.3X40mm-0.35x100mm	Excess adipose tissue, scar tissue
Possible Grip	Flat palpation	Avoid needling anterior to transverse processes
Direction of insertion	Deep: aim toward the transverse processes Insertional: aim toward the ilium between your split fingers	Avoid pushing the needle all the way onto the lamina
Special precautions	**Be sure to "fish" in the length of the muscle and not anterior to it (peritoneum) or behind it (lumbar paraspinals). Take Extreme care to not needle the pleura if you needle the upper portion (not advised)**	

Pelvic Floor

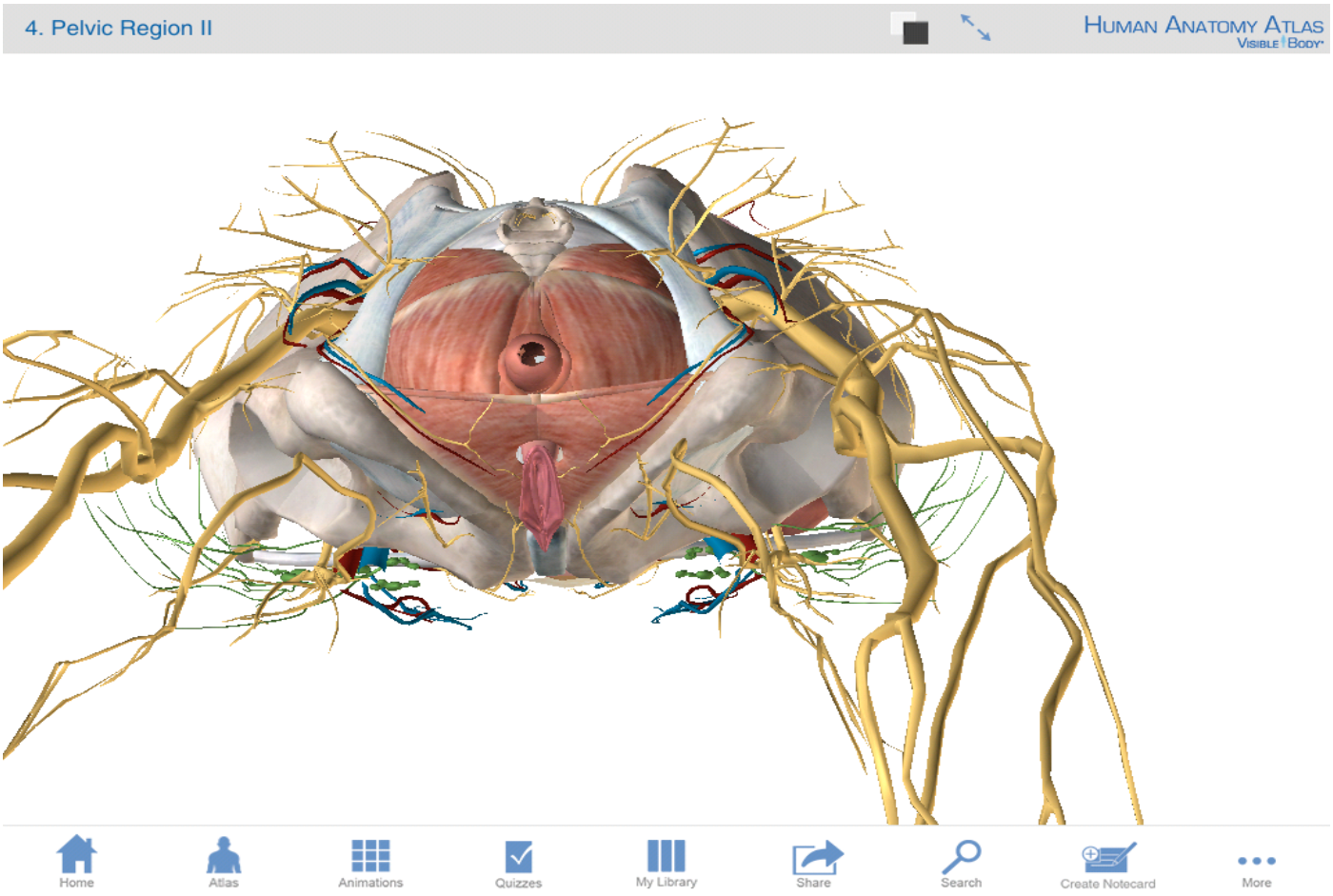
The pelvic floor has layers of muscles. The more easily palpable superficial layers need only external flat palpation. The deeper layers require pincer palpation to accurately localise the tissue to be needled. This requires the therapist to insert a gloved finger through the anus or the vagina.

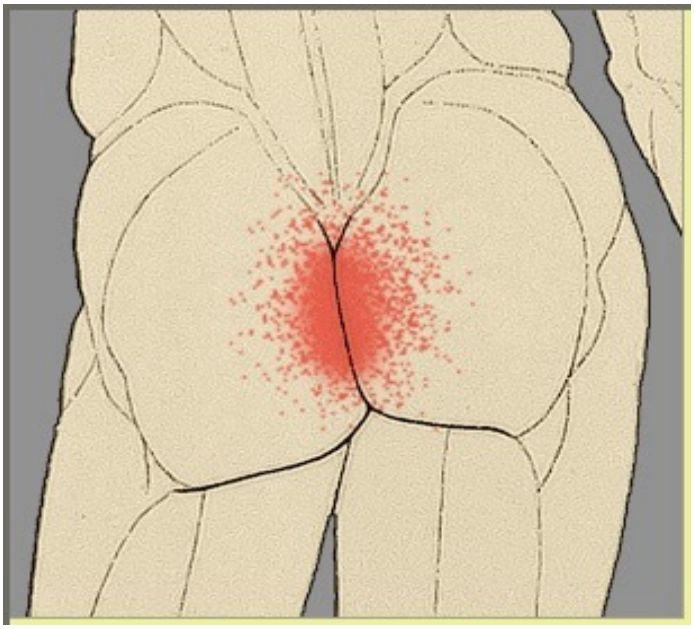
Langford et al (2007)

Internal palpation

Approximate trigger point locations in the pelvic floor. Sarton 2007

- Pubococcygeus
- Ischiococcygeus
- Coccygeus
- Ishichiocavernosus
- Bulbospongiosus
- Transverse Perinei Supf and deep
- Obturator Internus





“Levator Ani” (Pubococcygeus + Iliococcygeus + Coccygeus) referral zone as per Timmermans. (Dry Needling App)

- Pubococcygeus

	Normal	Problem factors
Innervation	S4	
Function: Isometric/Support	Support the pelvic and abdominal viscera	
Concentric/Contract	Elevate the distal portion of the rectum and vagina. Aid in forced expiration.	
Eccentric/Relax	Check-rein AP movement of the coccyx during defecation and parturition.	
Common MTrP causes		Levator ani syndrome Interstitial cystitis Bladder pain syndrome Pain with prolonged sitting and after defecation Coccydynia, Interstitial cystitis (Ryder et al, 2000)
Starting position	Side-lying, hips flexed to 90° pillow between knees	
Palpation landmarks	Anal sphincter and perineal body, medial border of the ischial tuberosity	
Possible Needle sizes	0.25x25mm	
Possible Grip	External palpation: Patient grips medial aspect of their own gluteus maximus and pulls upward to expose the anus Internal palpation: Gloved finger through the vagina or anus using a 2-finger pincer grip of the muscle laterally	
Direction of insertion	Aim toward posterior side of pubis, at 45°	
Special precautions	**Take care of sphincters**	

- Iliococcygeus

	Normal	Problem factors
Innervation	S2-S4	
Function: Isometric/Support	Support the pelvic and abdominal viscera	Muscle is normally very fibrous
Concentric/Contract	Elevate the distal portion of the rectum and vagina. Aid in forced expiration.	
Eccentric/Relax	Check-rein AP movement of the coccyx during defecation and parturition.	
Common MTrP causes		Levator ani syndrome Pain with prolonged sitting and after defecation
Starting position	Side-lying, hips flexed to 90◦pillow between knees	
Palpation landmarks	Anal sphincter and perineal body. Place your palpating fingers infero-laterally to external anal sphincter, medial border of ischial tuberosity	
Possible Needle sizes	0.25x30mm-0.30-40mm	
Possible Grip	Patient grips medial aspect of their own gluteus maximus and pulls upward to expose the anus. Internal palpation: Gloved finger through the vagina or anus using a 2-finger pincer grip of the muscle laterally	
Direction of insertion	Aim toward posterior side of pubis, at 45◦	
Special precautions	**Take care of sphincters**	

- Coccygeus

	Normal	Problem factors
Innervation	S4-S5	
Function: Isometric/Support	Support the pelvic and abdominal viscera	
Concentric/Contract	Pulls coccyx anteriorally after defecation and parturition Force closure of Sacroiliac joint	
Eccentric/Relax	Elevate the distal portion of the rectum and vagina. AId in forced expiration.	
	Check-rein AP movement of the coccyx during defecation and parturition.	
Common MTrP causes		
Starting position	Side-lying, hips flexed to 90◦pillow between knees	
Palpation landmarks	Gluteal cleft, inferior edge of Gluteus Maximus (free border), sacrotuberous ligament laterally	
Possible Needle sizes	0.30x40mm	
Possible Grip	Flat palpation, Split finger block with your palpating fingers on the long axis of the coccygeus. Internal palpation: Gloved finger through the vagina or anus using a 2-finger pincer grip of the muscle laterally	
Direction of insertion	From medial to lateral	
Special precautions	**Take care of sphincters**	

- Ischiocavernosus

	Normal	Problem factors
Innervation	S2-S4 (pudendal nerve)	
Function: Isometric/Support		
Concentric/Contract	Compression of veins to maintain penile or clitoral erection	Muscle is larger in males than in females
Eccentric/Relax		
Common MTrP causes		Loss of male erection, loss of clitoral engorgement
Starting position	Lithotomy position	
Palpation landmarks	Pubic ramus laterally, bulbospongiosus medially	
Possible Needle sizes	0.25x25mm	
Possible Grip	Flat palpation of the muscle, pushing it against the pubic ramus	
Direction of insertion	Aim toward pubic ramus	
Special precautions	**Take care of the posterior labial nerve and Pudendal nerve**	

- Bulbospongiosus

	Normal	Problem factors
Innervation	S2-S4 (pudendal nerve)	
Function: Isometric/Support		
Concentric/Contract	Constricts the vagina. Compression of veins to maintain penile or clitoral erection	Muscle is larger in males than in females, but is generally thin.
Eccentric/Relax		
Common MTrP causes		Dyspareunia, Vaginismus
Starting position	Lithotomy position	
Palpation landmarks	Perineal body, posterior third of the vagina	
Possible Needle sizes	0.25x13 - 0.25x25mm	
Possible Grip	Pincer palpation with your middle finger inside the vagina pushing against the lateral wall, and your thumb and index fingers on the lateral aspect of the labia majora	
Direction of insertion	Aim toward your internally palpating middle finger	
Special precautions	**Beware the urethra and the perineal artery and vein**	

- Transverse Perinei Supferficial and deep

	Normal	Problem factors
Innervation	S2-S4 (pudendal nerve)	
Function: Isometric/Support	Stabilise the central tendon of the Perineal body	
Concentric/Contract		
Eccentric/Relax		
Common MTrP causes		Dyspareunia
Starting position	Lithotomy position	
Palpation landmarks	Perineal body, vagina, anus	
Possible Needle sizes	0.25x13 - 0.25x25mm	
Possible Grip	Pincer palpation with your middle finger inside the vagina . Hook your finger toward the posterio-lateral aspect and grip the transverse muscle between your thumb and index fingers between the anus, vagina and pubic ramus	
Direction of insertion	Aim toward your internally palpating middle finger	
Special precautions	**Beware the urethra and the perineal artery and vein**	

• Obturator Internus

	Normal	Problem factors
Innervation	Superior L5-S2 Inferior L4-S1	
Function: Isometric/Support	Stabilises femur within femoro-acetabular joint	The Gemelli are functionally part of the Obturator internus and may even be fused with it.
Concentric/Contract	Lateral hip rotation when in hip flexion Hip abduction when hip is at 90 degrees of flexion NWB	
Eccentric/Relax	Check-reign medial rotation	
Common MTrP causes		Vaginismus, Anococcygeal pain
Starting position	Sy ly, or Crook lying, hip flexed to 90 degrees and in adduction, no pillow btw knees	
Palpation landmarks	Locate Ischial tuberosity, and palpate medially to that.	
Possible Needle sizes	0.30x40-0.35x50mm	Excess adipose tissue
Possible Grip	Flat palpation or internal pincer grip PV	Keep non-dominant hand in contact with the muscle being needled
Direction of insertion	Angle away from the sciatic nerve	
Special precautions	**Avoid sciatic nerve, which runs vertically between the ischial tuberosity and the greater trochanter, very close to the ischial tuberosity. Beware pudendal canal and the vessels it contains.**	

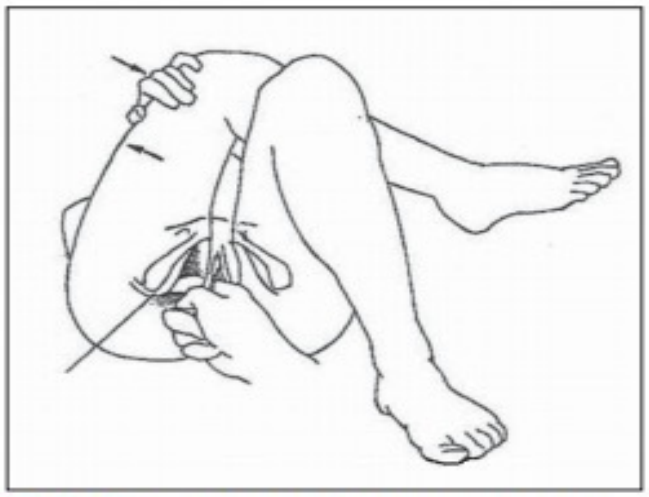


FIGURE 2. Location and palpation of the obturator internus muscle.

Reprinted with permission from Wiess JM. Pelvic floor myofascial trigger points: manual therapy for interstitial cystitis and the urgency-frequency syndrome. *Int J Urol.* 2001:166(6);2226-2231.

Obturator internus referral pattern. (Dry Needling App)

References

Berkley, KJ. 2005. A life of pelvic pain. *Physiology and Behaviour 86:272-280*

Carinci AJ, Pathak R, Young M, Christo PJ. 2013. Complementary and alternative treatments for Chronic Pelvic Pain. Curr Pain headache Reports 17:316

Dommerholt, J & Fernandez-De-Las-Penas, C. 2013. Trigger Point Dry Needling: An evidence and clinical based approach. Churchill-Livingstone Elsevier

Engeler D, Baranowski AP, Elniel S, Hughes J, Messelink EJ, Oliviera P, van Ophoven A, de C Williams AC. 2012. European Union guidelines on Chronic Pelvic Pain. European Association of Urology

Giamberardino MA, Affainati G, Fabrizio A, Costatini R. Effects of treatment of myofascial trigger points on the pain of fibromyalgia. Curr Pain Headache Reports 15: 393-399

Hoffman, D. 2011. Understanding multisymptom presentations in chronic pelvic pain: The inter-relationships between the viscera and myofascial pelvic floor dysfunction. *Curr Pain Headache Reports 15: 343-346*

Hawton, K. 1985. Sex therapy: A Practical Guide. Oxford University Press

Itza F, Zarza D, Serra L, Gomez-Sancha F, Salinas J, Allona-Almagro A. 2010. Myofascial pain syndrome in the pelvic floor: A common Urological condition. Actas Urologicas Espanolas 34(4):318-326

Janicki TI, Gree A, Ialacci S, Chelimsky TC. 2013. Autonomic dysfunction in women with chronic pelvic pain. Clin Auton Res DOI 10.1007/s10286-012-0182-6

Jarrell, J 2011, Endometriosis and abdominal myofascial pain in adults and adolescents. *Curr Pain Headache Reports 15: 368-376*

Kotarinos RK. CP/CPPS Pelvic Floor Dysfunction: Evaluation and treatment. Genitourinary Pain and Inflammation: Diagnosis and management. JM Potts ed. Humana Press, Totowa, NJ

Langford CF, Nagy SU, Ghoniem G. 2007. Levator Ani Trigger Point Injections:
An Underutilized Treatment for Chronic Pelvic Pain. *Neururology and Urodynamics* 26:59-62

Longbottom J. 2009. The treatment of pelvic pain with acupuncture: Part 1. Journal of Chinese Medicine 91. 15 pages

O'Sullivan P, Beales DJ. 2007. Diagnosis and classification of pelvic girdle pain disorders - Part 1: A Mechanism based approach within a biopsychosocial framework. Manual Therapy 12: 86-97

O'Sullivan P, Beales DJ. 2007. Diagnosis and classification of pelvic girdle pain disorders - Part 2: Illustration of the utility of a classification system via case studies. Manual Therapy 12: e1-e12

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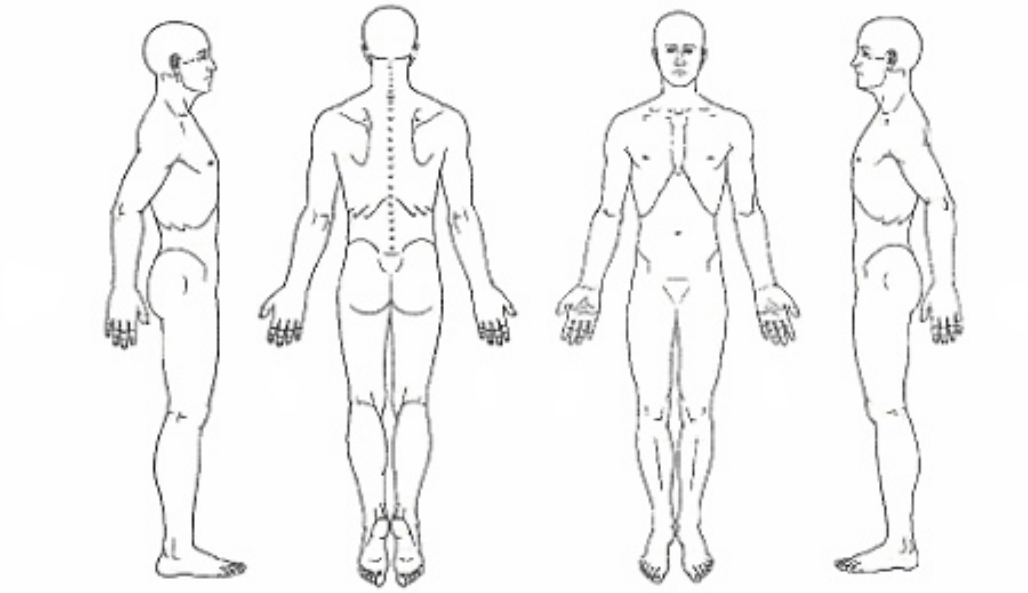
Sarton J. 2007. Physical therapy for pelvic pain: Understanding the musculoskeletal connection. The Female patient 32 (September):50-56

Shin JH, Howard FM. 2011. Management of Chronic Pelvic Pain. Curr pain Headache Reports 15: 377-385



Digital resources

There are many powerful apps that area available for both iOS (App Store) and Android platforms. Those listed are used on this course by the lecturers and are given here as references.

None of the lecturers involved have any financial interest in these products, and the products themselves are not hereby endorsed

	IOS	Android	Web Site
Anatomy	https://itunes.apple.com/il/app-bundle/complete-reference-human-anatomy/id918608714?mt=8	https://play.google.com/store/apps/details?id=com.argosy.vbandroid&hl=en	http://www.visiblebody.com/index.html
Referral patterns	www.realbodywork.com	http://www.appbrain.com/app/muscle-trigger-point-anatomy/com.real.bodywork.muscle.trigger.points	http://www.realbodywork.com/mobile-apps/
Dry Needling	https://itunes.apple.com/us/app/dry-needling-clinic-companion/id1153681691?mt=8	https://play.google.com/store/apps/details?id=com.goodbarber.dryneedling&hl=en	

ODNS
OPTIMAL DRY NEEDLING SOLUTIONS

Indemnity form for course usage only

1. I, ……(the undersigned) hereby give my consent to be examined, palpated and dry needled by any of my co-participants and/or the demonstrators in ways consistent with the content of the course.
2. I declare that I have already completed the Women's Health Physiotherapy Group's APDL level 2 (or international equivalent), and that I have a demonstrable interest in Women's Health Issues.
3. I have read and understood the document called "Dry Needling Information" and have had sufficient opportunity to ask and have any questions that I want to.
4. I agree to expose the appropriate area of my body being needled, and to loosen or remove such clothing as may be necessary for the technique to be performed properly. I understand this includes *per rectum* and *per vagina* palpation.
5. I indemnify the South African Society of Physiotherapy, the Women's Health Physiotherapy Group, the Dry Needling Physiotherapy Group and all of their lecturers and course organisers against any claim which may arise from this course.
6. I acknowledge that I personally carry appropriate Malpractice insurance either through the South African Society of Physiotherapy (Glenrand) or a similar medical insurer appropriate to the country in which the Course is held.
7. I declare that I participate in this course of my own volition and am under no compulsion to do so.

_____ _____

Participant Date

Dry Needling information

Your physiotherapist has offered to treat you using a technique called "Dry Needling". This information leaflet explains more about this technique.

Dry Needling is a very successful medical treatment which uses very thin needles *without* any medication (a dry needle) to achieve its aim. Dry Needling is used to treat pain and dysfunction caused by muscle problems, sinus trouble, headaches, and some nerve problems. It is not at all the same as acupuncture. Acupuncture is part of Traditional Chinese Medicine, whereas dry needling is a western medicine technique, which needs to have a medical diagnosis. There is a clear scientific understanding of dry needling, and it carries not spiritual "baggage" as acupuncture may do.

Dry Needling works by changing the way your body senses pain (neurological effects), and by helping the body heal stubborn muscle spasm associated with trigger points (myofascial effects). There are additional electrical and chemical changes associated with dry needling therapy which assist in the healing process. It is important to see the needles as just one part of your overall rehabilitative treatment. Dry needling is not a miracle cure – it is a normal part of physiotherapy. It is vital that you do the exercises and follow the advice your therapist gives

you in conjunction with the needling for optimal recovery.

Your therapist has been specifically trained in the various needling techniques. The therapist will choose a length and thickness of needle appropriate for your condition and your body size, and then insert it through the skin at the appropriate place. You will feel a small pinprick. Depending on the type of needle technique chosen by your therapist, you may also feel a muscle ache and a muscle twitch. These are all normal and good sensations, and mean that you will experience good relief from your symptoms.

In general, there is very little risk associated with this technique if performed properly by a trained physiotherapist. You may have a little bruising around the needle site, much the same as you would with any injection. On rare occasions, people may feel very happy, tearful, sweaty or cold. These symptoms all fade quickly. Fainting may occur in a very small minority of people. There are no lasting ill effects of these side effects.
If you are being treated in the shoulder, neck or chest area, there is an additional risk that involves your lung. If the lung itself is punctured, you may develop a condition called a pneumothorax (air in the space around the lung). This is a rare but serious problem, and you should go directly to a hospital casualty department without panicking if it occurs. The symptoms of this event include shortness of breath which gets worse, sudden sharp pain each time you breathe in, a bluish tinge to your lips, and an inability to "catch your breath„. The treatment is very successful for this rare but possible complication.

If you are happy to continue with the therapy as suggested by your therapist, and have asked any questions that you may want to, then please sign the consent form attached to this page, and hand it to your physiotherapist.

Please keep this information page for your own records

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OPTIMAL DRY NEEDLING SOLUTIONS

Consent for Dry Needling treatment

This document is to be read in conjunction with the information sheet titled "Dry Needling information"

1. I..... (full name), in my capacity as:

   ☐ The patient (if aged 12 or over),

   Or

   ☐ The parent or legal guardian of

the patient:.....(patient's full name)

who is my: Spouse/ Child/ Grandchild/ Parent/ Sibling/ Foster Child/ Ward (please circle the appropriate term)

do hereby give my consent for the performance of dry needling therapy by the physiotherapist named ..... at the physiotherapy practice of .....

I understand that the therapist is appropriately qualified and trained to perform the required therapy.

2. The areas of the body that I consent to have dry needled are:
   .....
   .....

3. I am satisfied that the technique has been fully explained to me, and that my concerns have been addressed and that my questions have been answered to my satisfaction. I have read the attached information sheet called "Dry Needling information", and am in a satisfactory position to weigh up the risks and limitations of the technique as regards known side effects.

4. I understand that the technique is performed within a rehabilitatative framework and that I must follow instructions as given by the physiotherapist.

5. I hereby indemnify the therapist and the practice against any liability arising from unforeseen or unknown consequences.

Patient _____ **Date:** _____

Place _____ **Witness** _____

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