The North American Institute of Orthopædic Manual Therapy

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Why Your Pelvic Floor Should be on your Resolution List for 2003

By Diane Lee, PT, MCPA, FCAMT

The muscles of your pelvic floor are critical for optimal function of your low back, pelvis, uterus and bladder; yet according to Bump et al (1991) 50% of women do not know how to contract these muscles when given either a verbal or written command. This finding is not surprising since every vaginal delivery causes some soft tissue damage to the muscles of the pelvic floor and damage to their nerve supply in 80% of women, (Allen et al 1990). However, through the use of Real Time Ultrasound Imaging (Whittaker 2003), it can be seen that even women who have not had children often have difficulty effectively contracting this muscle group. Ashton-Miller, Howard & DeLancey (2000) note that the prevalence of urinary incontinence is as high as 38% in women over the age of 40. It is unknown how many women undergo hysterectomy due to loss of function of their pelvic floor. For 2003, we should all resolve to know how this muscle group functions and how to use it properly.

Anatomy

For a complete description of the anatomy of the pelvic floor the interested reader should consult Ashton-Miller, Howard & DeLancey (2001). Briefly, the pelvic floor is comprised of two muscle groups – the levator ani (puborectalis, pubococcygeus and iliococcygeus) and the ischiococcygeus. Figure 1 is taken from Netter and illustrates the individual muscles of the pelvic floor. Anteriorly, the puborectalis and pubococcygeus attach to the body of the pubis and the anterior part of the obturator fascia. The puborectalis runs posterior, lateral to the urethra, vagina (females) and rectum to unite with its counterpart and forms a muscular sling at the anorectal flexure; there is no posterior osseus attachment. The pubococcygeus runs posterior, inferior to the puborectalis, and attaches to a midline raphe behind the rectum. Through this raphe, fibers unite and continue posteriorly from the anorectal flexure to attach to the anterior aspect of the last two coccygeal segments. The iliococcygeus arises from the posterior part of the arcus tendinous fascia (thick white line of fascia overlying the obturator internus). Fibers from this muscle complete the posterior pelvic floor and attach to the anterior aspect of the coccyx. The ischiococcygeus arises from the ischial spine, blends with the sacrospinous ligament and attaches to the sacrum at its lateral border from S3 to S5. It forms the posterior wall of the pelvis and lies in the same plane as the piriformis muscle.

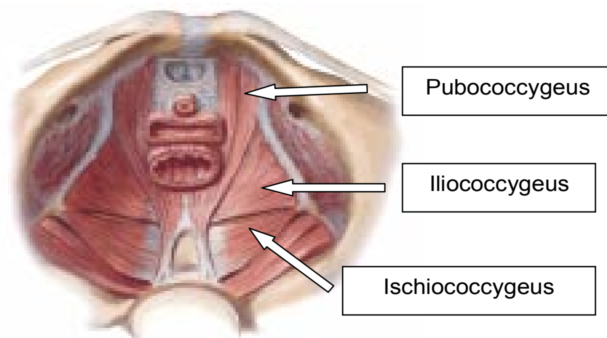

Figure 1

Function

The muscles of the pelvic floor play a critical role in both urinary and fecal continence (DeLancey 1994, Howard et al 2000) as well as stabilization of the joints of the pelvis. It is known that load transfer through the pelvic girdle is more effective when the sacrum is nutated or tilted forward at its superior aspect (Vleeming et al 1990). The amplitude of sacral nutation is controlled by co-activation of the pelvic floor muscles and the sacral multifidus. These two muscle groups act as a force couple and when the sacrum is slightly nutated by the proper activation of these two muscles, the pelvis and the lumbosacral junction are more stable.

The muscles of the pelvic floor and the deep fibers of the multifidus are part of the inner unit or local system of muscle stabilizers for the low back and pelvis (Lee 1999, 2001, Richardson et al 1999). These muscles are commonly called the "core" stabilizers for the lumbopelvic region and function in conjunction with the diaphragm and transversus abdominis. Sapsford et al. (2001) investigated the co-activation pattern of the pelvic floor and abdominals (using needle EMG for the abdominal wall and surface EMG for the pelvic floor) and found that the abdominals contract in response to a pelvic floor

Continued on page 2 as **Pelvic Floor**

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Notes from the Editor

"BEHIND THE SCENES"

This space is usually used for the Editor to acknowledge the efforts of those individuals who have contributed to the current newsletter. Therefore, as usual, I would like to thank Diane Lee for her feature article entitled "Why the Pelvic Floor Should be on your Resolution List for 2003" and also Kathy Stupansky for her report of the AAOMPT meeting in Orlando, FL which featured our own Erl Pettman.
I would also like to take this time to recognize two people who have and continue to contribute a great deal of time and effort for the development and growth of the NAIOMT. Mary Chavin, Central Administration Coordinator and Shari Keyser, Examination Coordinator, are the backbone of this organization and those of you who have had an opportunity to interact with either of them know just how great a job they do and why NAIOMT is so successful.

BILL TEMES

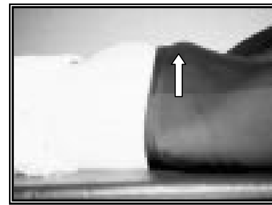
Pelvic Floor cont. from page 1

contraction and visa versa. They found that a *submaximal* contraction of pubococcygeus elicited the greatest response in transversus abdominis. This research suggests that the pelvic floor can be facilitated by co-activating it with transversus abdominis and visa versa.

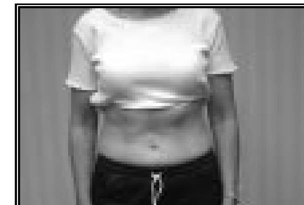
Imbalance between the muscles of the pelvic floor is not uncommon for clients with low back and/or pelvic pain. When the pubococcygeus is weak and the ilio and ischiococcygeus are overactive, the pubic symphysis is poorly supported inferiorly and the sacroiliac joints are overly compressed inferiorly. This can occur unilaterally or bilaterally and also be associated with or without dysfunction of multifidus and transversus abdominis.

Assessment

So how can you tell if you are using your core muscles correctly? The Active Straight Leg Raise Test (ASLR) (Mens et al 1997, 1999) has been validated as a clinical test for measuring effective load transfer between the trunk and lower limbs. When the lumbopelvic region is functioning optimally, the leg should rise effortlessly from the table (Mens 1999) and the pelvis should not move relative to the thorax and/or lower extremity. This requires proper activation of the muscles which stabilize the lumbopelvic region, including the transversus abdominis, multifidus and pelvic floor (Richardson et al 1999, Hides et al 1998, Hodges et al 1996, 1997a,b). Several compensation strategies have been noted when stabilization of the lumbopelvic region is lacking. Some of these include abdominal bulging, breath holding, rotation of the pelvis and/or thorax and an inability to maintain lateral costal breathing while loading. The ASLR test can be used to identify these strategies. Further examination of the core muscles is required should any of these strategies be observed. Although the ASLR may suggest that the pelvic floor is weak, confirmation is required by either palpating the efficacy of the muscle's contraction vaginally (Peschers et al 2001) or visualizing the impact of a proper muscle contraction via Real Time Ultrasound Imaging of the bladder (Whittaker 2003).



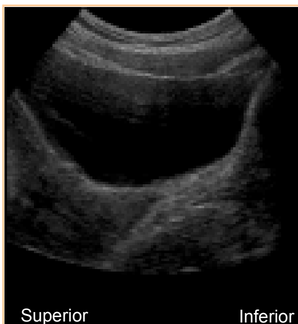
A valsalva with breath holding and abdominal bulging



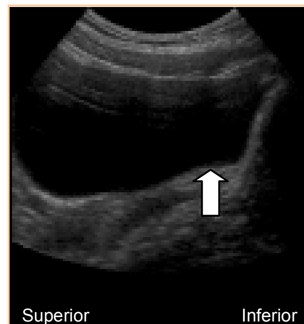
Co-contraction rigidity of the global trunk muscles

Real Time Ultrasound Imaging (RTUS) has been used both as a diagnostic and a biofeedback tool in the motor control analysis and training of the core stability muscles (Hides et al 1998). Using RTUS, O'Sullivan et al (2001) have shown that some patients with pelvic and low back pain cannot control the position of their bladder during an ASLR. They found that the bladder descended inferiorly as they raised their leg and that when compression was applied to the pelvis during the ASLR this descent was controlled. We feel that this finding suggests the client is using a bracing strategy to transfer load through the pelvis through either a

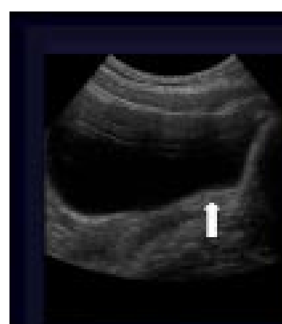
1. valsalva with breath holding and abdominal bulging or
2. co-contraction rigidity of the global trunk muscles (oblique abdominals, rectus abdominis and erector spinae muscles).



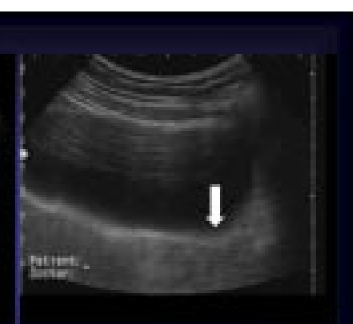
At rest



Anterior Pelvic Floor Contraction



Optimal ASLR Strategy



Excessive IAP during ASLR

Both of these strategies dramatically increase the intra-abdominal pressure and create a strong downward force on the bladder. The impact that a repetitive increase in intra-abdominal pressure has on bladder position control can be demonstrated via RTUS. We feel that optimally the bladder should not descend during an ASLR. Repetitive downward pressure on the bladder and uterus will eventually stretch the fascial slings which support these organs and a downward movement of the bladder during the ASLR is seen via RTUS. Prolapse and incontinence will likely follow.

Conclusion

This has been a brief introduction into the scientific evidence regarding the pelvic floor. It is a hidden muscle group, hard to see, difficult to feel and rarely addressed as often as it should be.

When you are doing (or teaching) any exercises you (or your client) should not feel a descent of the pelvic floor or feel that the uterus or bladder are being forced inferiorly. Because there is no external way of testing the strength of the pelvic floor muscles, a therapist who specializes in the assessment and treatment of pelvic floor function and dysfunction should be consulted if you suspect any difficulties connecting to this muscle. Remember, 50% of women who think they are contracting their pelvic floor, are not (Bump et al 1991) and it is impossible to strengthen the pelvic floor with any exercise if it is not contracting. The first step is to ensure that isolation of the pelvic floor muscles is occurring followed by a deep, slow connection to the deep abdominals.

Diane Lee
PT, MCPA,FCAMT

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Dates for your calendar

Written Examinations

Mar 1 2003 Oct 4 2003

Deadline one month before

Oral Practical Examinations

April 4 2003 Warren, MI

June 21 2003 Vancouver, BC

Deadline two months before

Online Exams

Many of you have been asking about the start date for the online exams. Technical difficulties have delayed the start of this alternative written examination method. We are comitted to working it out and hope to have Level I and II available later this year. When they are available, it will be announced on our website, along with the dates offered, cost, and application procedure. We appreciate your patience with this.

For examination information

Call or fax Shari

at 541 344 4777

Review of the 2002 AAOMPT National Conference

Kathy Stupansky, PT,COMT,OCS,FAAOMPT

The Eighth Annual AAOMPT Conference was held in sunny Orlando, Florida October 3-6, 2002. The Keynote speakers were Peter O'Sullivan, PhD, GDMT, PT from Curtin University, Australia and our very own Erl Pettman, MCPA, FCAMT of Abbotsford, British Columbia. Each of the keynote speakers also taught a pre-conference course-Dr. O'Sullivan's course was entitled Lumbo-pelvic Instability-Clinical Presentation and Physiotherapy Management From a Motor Learning Perspective; Erl Pettman's course covered Assessment, Mobilization and Manipulations of the Cervical Spine using Biomechanics as the Common Denominator. On speaking with many participants, the courses were well received.

The Conference began Friday morning with Dr. Peter O'Sullivan speaking on "The Chronic Low Back Pain Dilemma- Where to from Here?" He proposed the need to identify sub-groups within the CLBP population based on altered motor control patterns. He emphasized the need for detailed knowledge of the biomechanics and patho-mechanics of the lumbo-pelvic region. He described the Local Muscle System and the Global Muscle System, each affecting the body differently. With chronic low back pain, there are changes in this motor programming. He suggested to Mobilize those patients needing mobilization, Stabilize those needing more control and retrain faulty postures, for example if the patient can't bend then retrain them to bend. Recent research has shown that with lumbar spinal instability (LSI) there is a delay in the "feed forward" mechanism that pre-activates the local muscular system. MRI studies of lumbar multifidi have shown the same cross-sectional area with LSI and Painfree individuals, but some of the muscle tissue is actually replaced with fat in the LSI patients. Again, this reinforces the need for evaluating and managing this motor control system.

After lunch Erl Pettman, MCPA, FCAMT, gave an eloquent speech on "The Dangers of Cervical Manipulation". First, he presented an historical perspective of accidents related to cervical manipulation and studies surrounding the possible predictive factors. He described the term "Arterial Dissection" as damage or disruption of the tunica intima after which an aneurysm or thrombus forms acting like a valve to occlude the blood flow in the vertebral artery. He stated that this thrombus may actually remain for up to 8 weeks after the initial incident. There are three things that create the Spontaneous Arterial Dissection (SAD) which are traction, kinking at C1/2 and increased blood pressure. The signs and symptoms of Vertebral Basilar Artery (VBA) Dissection include:

1. Severe pain in the neck/occipital headache
2. Rapid onset of cranial nerve symptoms. He provided a list of criteria for helping to determine if a patient is safe for cervical manipulation:
   - Identify risk groups (for example high blood pressure)
   - Identify "stroke in progress" or "stroke progressed"
   - Assess for spinal/structural Integrity
   - Assess for VBA (or sympathetic) sensitivity
   - Use a technique to avoid damaging the weak segment
   - Use a technique to avoid VBA stretch or kink

Finally, his recommendations for safe cervical manipulation are as follows:

1 Perform a thorough assessment
2 Determine risk groups (Down's Syndrome, RA, Marfans, etc.)
3 SAD in progress (or in history)?
4 Previous reaction to manipulation
5 Determine where segmental instabilities are
6 Patient preparation: verbal consent, slow deliberate set-up, "premanipulative hold"
7 Use of locking techniques for specific localization and less force required
8 Avoid long lever, especially through the head
9 Linear rather than rotary thrusts
10 Keep unstable segment in neutral and never lever through them

After a short break Erl Pettman then provided a lecture on "Spinal Dysfunction and its Effect on Shoulder Girdle Function." He presented how to observe bony anatomical landmarks during movements of the shoulder girdle to assess the articular and neuromuscular cooperation that must occur for normal function. He gives examples of the influence of neuromuscular mediators, which can effect spinal dysfunction and insidiously lead to pathological changes in the gleno-humeral joint. One classic example that he provided was Post-MVA:

- Hypomobility C2-3 left
- Hypermobility C2-3 right
- Hypertonus right levator scapula
- Impingement right biceps
- Hypermobility/instability right gleno-humeral Joint

When assessing scapular motion dysfunctions he suggested the following:

1 Basic anatomy- Axis of motion? Scapula moves around axis created by the A-C joint, clavicle moves around an axis created by the SC joint
2. Osteokinetics- How does it move? Visualize and palpate
3. Myokinetics- Which muscle(s) involved? Habitual function: elevation through abduc tion/ER and extension through adduction/ IR
4. Pathokinetics- Who is the culprit?

Erl Pettman's presentations were extremely informative, thought provoking and inspiring. We owe him much gratitude for representing the NAIOMT with such a stellar performance.

The second day of the conference continued with several breakout sessions. I was able to attend three of the sessions:

- ·Physical Therapy and Prolotherapy-Clinical Teamwork in the Restoration of Function of the Unstable Segment by Erl Pettman, MCPA, FCAMT, OMT.
- An overview of treatment protocol, which he and a local physician are doing for lumbar in stability including prolotherapy, manual therapy and stabilization training.
- ·Manipulation in First Professional Education by Kenneth Olson, PT, MSc, OCS, FAAOMPT.
- A discussion and presentation on how to augment current Physical Therapy School programs to include teaching and practicing Manipulation effectively.
- Diagnosis and Classification of Back Pain Disorders by Peter O'Sullivan, PhD, GDMT, PT.
- A presentation on mainstreaming our Non-Specific Low Back Pain Classification System, dividing into specific sub-groups improving efficacy of treatment.

Other Sessions included:

- Motion Testing of the Cervical Spine- Can we really differentiate between the muscular, ar ticular and neural components? By David McCune, MphtySt, PT, OCS, ATC, FAAOMPT
- How to get your case study published by John Medeiros, PT, PhD
- Beyond the SLUMP Test by Jack Stagge, PT, OCS

There was a nice luncheon on the first day, with recognition of key officers and individuals involved with the AAOMPT and a dinner/dance on the final evening to wrap up the social activities. On the last day several research projects were presented to add to the credibility of what we do as Physical Therapists. All in all, it was an extremely worthwhile experience for all levels of Manual Therapy training. I would like to personally thank Mike Rogers, PT, OCS, OMPT, FMAAOMPT (the President of the AAOMPT at the time of the Conference) and all of those involved with organizing the conference and the AAOMPT. I am proud to be a member of such a fine organization.

Kathy Stupansky

Keep your calendars clear!

9th Annual AAOMPT Conference
Reno, NV
October 16-19, 2003

Clinical Fellowship News

Ann Porter Hoke

The NAIOMT Clinical Fellowship booklet has been updated to reflect our Fellowship status and clarify some points. No policies have changed.

The application process has been stream-lined – so now all the documents (2A, 2B and 9) are in one application booklet. The "5 Steps" handout, which takes the Fellowship student through the stages and documentation of their fellowship, has been extensively revised.

There is an important distinction between the Clinical Fellowship Program (CFP) and a Supervised Clinical Placement (SCP). These description should serve to clarify this.

Clinical Fellowship Program

The **CFP** requires application and admission, and is structured over a specific time frame

The Fellowship student needs to complete all the fellowship requirements within 3 years of admission, pay annual dues and try to reach their goals on time.

Requirements for graduation include: all NAIOMT examinations through level IV; live-patient examinations; theory, practical and clinical hours exceeding 1000 hours and a fellowship project. The graduate is eligible for Fellowship with AAOMPT.

Supervised Clinical Placement

SCP is a period of clinical education that may be a stand-alone continuing education experience — or a component of the Fellowship program.

The SCP student can register for the clinical SCP opportunities, which typically are one - two weeks long. They provide unique opportunities to be tutored individually or in small groups in the clinical setting and postprofessionally supervised while evaluating and treating patients. See the course schedule for SCP opportunities.

Our Credentials:

NAIOMT is credentialed by the American Physical Therapy Association as a post- professional clinical fellowship program for physical therapists in (the subspecialty of) orthopaedic manual therapy. The program was recognized by the American Academy of Orthopaedic Manual Physical Therapists (AAOMPT) in 1998. NAIOMT has expert Clinical Fellowship Instructors and Faculty — 23 instructors are Fellows of US and Canadian manual therapy academies.

For more information on the Clinical Fellowship program or to ask for an application--call or email the central Office at:

1 800 706-5550
information@naiomt.com

Congratulations to these PT's for Passing the Level II Exam!

Helen McDevitt	OR	Laura Lake	CO
Jason Drier	WA	Jon Morrow	NM
Betsy Baker	WA	Allison Rector	CO
Amie Holbrook	WA	Robert Rouleau	FL
Debroah Kier	WA	Eric Verhaeghe	ID
Rob Kennell	WA		

From The Central Administration Office

NAIOMT has seen strong growth for the last several years, in both the number of students taking classes, in our Clinical Fellowship Program, with our University Affiliations, and in the national recognition of our programs. Due to the increased number of students and records that need to be maintained by the Central Office, we have had to initiate several changes in our record keeping.

Student ID Number

As the number of students has increased, so has the incidence of duplicate student names. This increases the risk that a class credit will be given to the wrong student in our records. To prevent this and allow us to positively identify every student, we will be requiring a student ID number on all registrations and other correspondence with NAIOMT. We suggest your social security number, because most likely it is one you already have memorized . Your student records are stored in a secured database with full protection of your information. As you know, the SSN is what most schools require as an ID, so it helps with consistency between the University affiliations.

If you do not wish to use your SSN, you will be assigned a unique ID number by the Central Office and then be notified of what it is. You will be responsible for remembering and using this number on all your registrations and other forms or communication with NAIOMT.

In a couple of years, using this ID no and a password, we hope to be able to allow students to view their NAIOMT information online, print unoffical transcripts, and update address information or name changes in our files.

Registration Completion

We realize that filling out that SAME registration form for every class section you attend seems repetitious. However, it is necessary for you to get NAIOMT credit for your classes. The NAIOMT registration is the central office uses for entering data into your student record. We will be requiring both a registration and a release of liability be completed for each class portion you attend. Since at some point this gets very redundant, it is OK to write your name **and** your ID number and "same as part A" on your part B forms. We know that everybody gets tired of filling out forms, but for now, that is what we need to keep our records of your NAIOMT education complete and accurate.

While on the subject of registrations--PLEASE remember that we have to enter this information into your record, and therefore need to be able to read it. Now, I know about half the time I can't read my own writing, so I know about this, but please try to print clearly for all your information.

This is not meant to be a lecture, but rather to let you know what we need to be able to maintain complete and current records for you and for us.
Your cooperation is greatly appreciated!!

Course Evaluations

Do you ever wonder if the evaluations you complete at every course ever really get looked at? The answer is yes! This instructor generally gets a chance to look them over first, then they are forwarded to Central Administration. We collect all the evaluations for a year and then tablulate them into a summary of scores for each site, site coordinator, and instructor. We will also make a list of pertinent comments and other courses you would like to see. This information it then made available to the faculty. Feedback is very important to us to keep delivering and improving the quality of education we deliver.
Thank you for your help with this!

www.naiomt.com

Keep your eye on the web site for an improved look and navigation soon. We will be redoing the entire web site to make it more attractive, interesting, informative, and easy to use. The go-live goal is to have it completed and up by June. For you certified therapists, please send us any change in information to be posted when you change employment or move. The central office get a fair number of calls asking about the availability of certified Manual Therapists in a certain area. Any questions or comments or information changes can be sent to: information@naiomt.com.

Privacy Policy

We know that people are very concerned about the security and privacy of their personal information. We have drafted a privacy policy so you will know your information is safe with us.

- All of your records are kept in a secure database with all safety measures active.
- We may release your name and addresses as would be helpful to our sites and affiliates for advertising purposes.
- We may release addresses or phone numbers to your classmates or instructors if requested.
- Any other release requests for information must be accompanied by a written release from the student.
- If you wish to have no information released, you must request nondisclosure in writing submitted to the Central Office.

As always---if you have any questions or need more information about anything please call the Central Office at 1 800 706-5550 or email us at information@naiomt.com

Mary Chavin, MSPT
--Central Administrative Coordinator

Acrobat Document

Congratulations to the latest NAIOMT Certified Manual Therapists!!

Level III CMPT

Name	State
Dennis Frazier	WA
David Hillman	ID
Andrew Knox	OR
Christine Kott-Soper	OR
Nina Lieb	CO
Monica Ludlow	UT
Bryant Miller	WA
Julie Thieszen	UT
Nathaniel Thoreson	ID
Patricia Trela	UT
Deborah Zagray	OH

Level IV COMT

Name	State
Palua Jo (Howard) Moores	ID
Trenton Swoverland	IN

Great Job !!!

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