POSTURAL RESTORATION CERTIFIED™ (PRC)

Application Deadline – September 15th, for consideration for testing in December of the same year.

The Postural Restoration Institute® (PRI) has developed this credentialing process for Physical Therapists (PTs), Physical Therapist Assistants (PTAs), Occupational Therapists (OTs), Occupational Therapist Assistants, Chiropractors, Athletic Trainers and Athletic Therapists, to take place annually in December. Postural Restoration Certified™ (PRC) recognizes expertise in a specialized area of physical medicine. PRC is offered to those who have completed all required courses and demonstrated an advanced knowledge and application of Postural Restoration Institute® concepts. PRC is an educational process that credits the applicant for their PRI knowledge and their ability to apply this knowledge, where and when appropriate, in a professional manner within their professional setting. PRI strongly recommends clinical experience and implementation of Postural Restoration® concepts for at least two years before applying for PRC.

Inclusion of other healthcare professionals for PRI credentialing program eligibility will be continually and comprehensively reviewed by PRI for potential policy revision in the future.

PRC Eligibility

You are eligible to apply if you are a:

- Physical Therapist or Physical Therapist Assistant. Verification of current PT or PTA licensure status is needed (a photocopy of your current license is sufficient).
- Occupational Therapist or Occupational Therapist Assistant. Verification of current OT or OTA licensure status is needed (a photocopy of your current license is sufficient).
- Chiropractor. Verification of current Chiropractic licensure status is needed (a photocopy of your current license is sufficient).
- Athletic Trainer with current certification by the Board of Certification (BOC). Verification of current BOC certification status is needed, along with verification of current AT licensure status (a photocopy of your current license is sufficient).
- Athletic Therapist with current certification by the Canadian Athletic Therapists Association (CATA). Verification of CATA certification status is needed, along with verification of current AT licensure status (a photocopy of your current license is sufficient).

**International clinicians who meet the eligibility criteria outlined above, should contact Jennifer Platt by July 15th prior to the PRC application deadline to get more information about additional information that must be submitted and approved by the PRI Board of Directors to determine eligibility for the PRC credentialing program.*

PRC Course Requirements

The following course attendance criteria are required for eligibility to apply for PRC:

- Completion of *Myokinematic Restoration*
- Completion of *Postural Respiration*
- Completion of *Pelvis Restoration*
- Completion of *Advanced Integration*

Note: Courses must be sponsored by the Postural Restoration Institute® (PRI) and therefore presented by PRI Faculty using PRI materials. Courses must be completed in entirety, with a certificate of completion awarded. Home study or live stream courses are applicable.

Reasons for Establishing the PRC Credential

- Establish and maintain continuity between sites implementing Postural Restoration Institute® concepts and techniques.
- Recognize individuals with PRI interest, specialization and expertise.
- Protect the use and application of PRI science, reasoning, processes, techniques, and materials.
- Provide avenues for professional development, collaboration between multidisciplinary specialists with PRI interests, and enhancement of scientific approaches using PRI concepts.
- Allow educational institutions, students, and researchers access to PRI specialists.

PRC Applications and Testing

PRC applications are due annually on or before September 15th. There is no fee to apply. In order for PRI to set a high standard for the credentialing process, applicants are asked to provide a number of objective resources illustrating integration of Postural Restoration Institute® concepts and techniques. In addition, PRI requires that the information supplied with your application be current and accurate.

Applications are accepted throughout the year, and applicants will receive their feedback from the application review committee along with recommendations for PRC testing readiness within two months. If you choose to apply and do not complete credentialing the same year, PRI will retain your application for review the following year. Please contact us to re-submit your application.

The PRC credentialing process will take place annually in December, immediately following our *Advanced Integration* course at the Postural Restoration Institute® in Lincoln, Nebraska. Please visit our website to see testing dates for each year. PRC testing is an educational and learning process that will include both practical and analytical written examination. ***PRC Testing will be limited to 30 candidates yearly. To ensure that you are considered for PRC testing we recommend that you submit your application early.***

PRC Fees and Benefits

A one-time, non-refundable credentialing fee of $2000 will be due prior to the testing process. This is the only monetary requirement and renewal is not required. This fee directly offsets costs associated with testing, assessing competency and completing training. The fee will also assist us in developing the process, advancing individual knowledge of Postural Restoration Institute® concepts and in growing a network of professional support. Individuals who earn the PRC credential will receive Postural Restoration Institute® course updates quarterly, ongoing clinical discussion and dialogue, discounted tuition to select primary and secondary courses *(50% off the regular tuition rate for Myokinematic Restoration, Postural Respiration, Pelvis Restoration, Impingement & Instability, Cervical Revolution and Advanced Integration)*, advertising and promotional opportunities, and other benefits to be determined by the Postural Restoration Institute®.

While we encourage and anticipate a high level of involvement from those who earn the PRC credentials, status will not be affected by future Postural Restoration Institute® support and involvement. In good faith we ask that you keep abreast of all Postural Restoration Institute® activity and development by taking advantage of the tuition discount offered. To be included on the PRI Find a Provider Map of the website, a credentialed clinician must be practicing and have taken at least one PRI

courses within the past 5 years. Please be aware that PRI, in its sole discretion, reserves the right to restrict PRI course attendance or to remove PRI credentialed providers. If other requirements are deemed appropriate in the future they will be determined with the involvement and support of the Postural Restoration Institute® Board of Directors, faculty and credentialed providers. Ron Hruska is very excited to work with all PRC applicants through the testing process as well as continued collaboration thereafter. This credentialing process allows PRI to continue to develop a close and integrated network for future Postural Restoration Institute® leaders.

Again, we truly appreciate your interest and look forward to reviewing your application. Please let me know if you have any questions or if I can assist you in any way.

Jennifer Platt, Director of Education and Credentialing
platt.jennifer@posturalrestoration.com

PRC Application Checklist – *TWO COPIES* *of the following must be received by September 15th. Please include this checklist with your application.*

- ☐ Demographics (page 5)
- ☐ Course Attendance List (page 6)
- ☐ Verification of Current PT, PTA, OT, OTA, Chiropractic or AT licensure status (a photocopy of your current license is sufficient) – Athletic Trainers and Athletic Therapists must also submit current BOC or CATA certification.
- ☐ Case Studies (3 anonymous case studies – please see instructions on page 6 and follow the format of the example provided within this application). *Also, please include a header on each case study page identifying which case study it is, along with page numbers.*
- ☐ Other Clinical / Academic Evidence – might include research or case studies authored or co-authored, in-service materials presented to staff or colleagues (include handouts, slides or outline), and other education materials you have developed based on PRI concepts
- ☐ Three Favorite PRI Non-Manual Techniques and Why (see instructions on page 6 & 7) – ***Please include a photocopy of each Non-Manual Technique selected.***
- ☐ Three Favorite PRI Manual Techniques and Why (see instructions on page 7)
- ☐ Critical Research Review - Five articles supportive or related to PRI concepts and your interpretation of each article. (see instructions on page 7 and the example provided within this application). **Be sure to include the full-text copy of each article.**
- ☐ Ideas for Future Research (see instructions on page 8)
- ☐ PRI Advocacy Questions (see instructions on page 8)
- ☐ **Two Copies of all of the above must be submitted.**

Postural Restoration Certified™ (PRC) Application:

Applications must be received by SEPTEMBER 15th to be considered for DECEMBER credentialing of the same year. Please submit 2 copies of your application (double sided), including full text articles. Do not include your application in a binder or folder.

PART ONE (Demographics)

Today's Date _____

Name _____

Credentials _____

Employer / Company _____

Work Address _____

Work Phone _____

Website _____

Home Address _____

Cell Phone _____

Email _____

Education Background _____

_____

_____

_____

Present Employment Responsibilities _____

_____

_____

PRC testing date for which you are applying _____

PART TWO (PRI Experience)

Course Attendance

- Please list PRI course attendance. *Course requirements: Myokinematic Restoration, Postural Respiration, Pelvis Restoration and Advanced Integration.* Please also list any other PRI Courses you have taken including secondary and tertiary coursework.

  Course Date Location Speaker

  _____

  _____

  _____

  _____

  _____

  _____

  _____

  _____

  Please abbreviate course titles (Ex. Myokinematic, Postural, Pelvis, Cervical, Impingement, and Advanced)

Clinical / Academic Experience

- Please attach thorough evidence of clinical or academic application. Evidence must be provided in the form of **three anonymous clinical cases** using actual patients from initial evaluation through discharge. Be sure to include your **Postural Restoration® assessment tests and rationale for each manual and non-manual technique chosen**. (Please be sure to include at least ONE functional PRI® objective test with each case study – Hruska Adduction Lift Test, Hruska Abduction Lift Test or Functional Squat Test). Be sure that complete titles for the PRI non-manual techniques are used. Clinical cases should demonstrate correct use of **PRI terminology and treatment methodologies from the *Myokinematic Restoration*, *Postural Respiration* and *Pelvis Restoration* courses**. **Please refer to the example case study provided on page 9, and follow this format. Printed Electronic Medical Records (EMR) will NOT be accepted. Also, please include a header on each case study page identifying which case study it is, along with page numbers.**

  In addition, further evidence can be provided in the form of research or case studies authored or co-authored, in-service materials presented to staff or colleagues (include handouts, slides or outline), and other education materials you have developed based on PRI concepts.

  We encourage applicants to submit multiple forms of evidence.

- Please list your three favorite PRI non-manual techniques and explain why. Please use the full PRI technique title and include a photocopy of each non-manual technique with the application. **Each non-manual technique discussion should be at least one page in length.**

  (Be sure to answer the following: What is the purpose of the technique? In your experience, what is the likely outcome of the technique? What techniques would you use before, after or even in the same program in conjunction with the technique? What cues do you find helpful when instructing your patient? What patient diagnoses or objective test outcomes indicate that this technique is appropriate?)

- Please list your three favorite PRI manual techniques (BC or TMCC) and explain why. **Each manual technique discussion should be at least one page in length.**

  (Be sure to answer the following: What is the purpose of the technique? In your experience, what is the likely outcome of the technique? What techniques would you use before, after or even in the same program in conjunction with the technique? What cues do you find helpful when instructing your patient? What patient diagnoses or objective test outcomes indicate that this technique is appropriate?)

PART THREE (Critical Research Review)

- Please attach five articles supportive or related to PRI concepts and your interpretation of each article.The brief discussion (1-2 pages) should fully demonstrate your ability to integrate PRI concepts with current concepts in literature. (Please see example review provided on page 16.) **Be sure to include the full-text copy of each article with your two copies of your application.**

  Suggested journals:
  American Journal of Obstetrics and Gynecology
  American Journal of Respiratory Critical Care Medicine
  Behavioral Neuroscience
  British Journal of Sports Medicine
  Cephalalgia – An International Journal of Headache
  Clinical Journal of Pain
  Frontiers in Human Neuroscience
  International Journal of Health Sciences and Research
  International Journal of Osteopathic Medicine
  International Journal of Sports Physical Therapy
  Journal of the American Podiatric Medical Association
  Journal of Applied Biomechanics
  Journal of Applied Physiology
  Journal of Bodywork and Movement Therapies
  Journal of Clinical Medicine
  Journal of Clinical Pediatric Dentistry
  Journal of Geriatric Physical Therapy
  Journal of Hand Therapy
  Journal of Manual and Manipulative Therapy
  Journal of Modern Rehabilitation
  Journal of Multidisciplinary Healthcare
  Journal of Neurobiology
  Journal of Neurologic Physical Therapy

Journal of Neurology, Neurosurgery, & Psychiatry with Practical Neurology
Journal of Neurophysiology
Journal of Neuroscience
Journal of Orthopedic and Sports Physical Therapy
Journal of Personalized Medicine
Journal of Physiotherapy
Journal of Science and Medicine in Sport
Journal of Sport Rehabilitation
Journal of Strength & Conditioning Research
Journal of Vestibular Research
Journal of Vision
Manual Therapy
North American Journal of Sports Physical Therapy
Physical Therapy
Physical Therapy in Sport
Physiotherapy
Physiotherapy Research International
Physiotherapy Theory and Practice
Spine
Sports Health
Thorax – An International Journal of Respiratory Medicine

- Please list three ideas or suggestions for future clinical research or case studies based upon your review of current related research. Please include hypotheses and ideas of how the research study could be set up for each. This information assists with the future publication of PRI research and case studies.

PART FOUR: (PRI Advocacy)

Please answer the following questions:

- Explain your current professional situation. (i.e. What's your story?). How did you get to where you are today? Are you currently using PRI concepts and techniques in clinical practice? In what capacity are you utilizing or integrating these PRI concepts and techniques? Are you involved in academia? If so, in what capacity? How are you able to integrate PRI concepts in the classroom?

- How have you promoted or recognized the Postural Restoration Institute®? Please provide evidence of this recognition or support. For example: Have you presented or coordinated in-services related to Postural Restoration Institute® concepts or techniques? If so, be sure to include copies of your in-services. How do you plan to further promote the Postural Restoration Institute® and be a catalyst in the future growth of the PRI approach?

Example: Clinical Case Study (Part Two)

Pelvic Floor Dysfunction

Initial Visit

Subjective

- Patient is a 29 year old male who reports perianal and scrotal pain along with left low back pain. These symptoms began four weeks ago with no incidence of trauma. He reports pain with sex and going to the bathroom. He saw a urologist who diagnosed him with prostate inflammation and advised him to attend physical therapy. He works part time as a personal trainer and at a desk job. He reports increased stress at work around the time that his symptoms began. He reports that he uses a high threshold strategy when he is lifting weights by means of a max intensity Kegel. His pain is a 7/10 at its worst and a 2/10 at its best.

Objective

	Left	*Right*
Standing Reach Test	3 inches	
PRI Functional Squat	2/5	
Cervical Rotation	-	-
Cervical Sidebending	-	-
HG IR	90º	90º
HG ER	90º	90º
HG Flexion	170º	170º
Horizontal Abduction	45º	45º
Trunk Rotation	Limited	Limited
SLR	90º	95º
Hip IR	35º	50º
Hip ER	38º	40º
Extension Drop Test	+	-
Faber	+	-
Passive Abduction Raise Test	30º	30º
Adduction Drop Test	+	-

Assessment

- In standing, patient demonstrates increased lumbar lordosis along with a higher R iliac crest. He presents in a L AIC pattern with an inability to achieve authentic L stance. The high threshold strategy he utilizes when lifting weights puts his pelvic diaphragm in a position of ascension. However, he is performing it from a position of extension, which causes the pelvic diaphragm to be descended. Therefore, he is trying to ascend his pelvic diaphragm from a poor position which does not allow it to fully ascend on either side. In the L AIC pattern, he presents with he has a descended L hemi pelvic diaphragm and an ascended R hemi pelvic diaphragm. During gait these two sides need to alternate and reciprocate. An inability to do this results in poor lumbopelvic motor

control. This can result in increased tone during the rest of his daily activities. Stress management is very important for this patient.

Treatment

1. 90/90 Supported Hip Shift with Hemibridge and Balloon 4x5 breaths
    - The left hamstring works to posteriorly rotate the left innominate and restore pelvic neutrality. Sagittal plan control allows for efficient movement in the frontal and transverse planes. The balloon helps the patient optimize both the stabilizing and respiratory functions of the pelvic and thoracic diaphragms.
2. Right Sidelying Supported Left Glute med
    - Patient was unable to feel his left glute med due to lack of inhibition of his TFL.
3. Right Sidelying Supported Hemi 90/90 with Left FAIR 4x5 breaths
    - By having the right foot on the wall, the patient is able to facilitate his R glute max to stabilize his pelvis. The hemi 90/90 position puts the L hip into extension allowing frontal plane adductor as the knee is pressed into the table which abducts his left pelvic outlet. Synchronizing the L glute med with his respiration is key during this activity. It allows the pelvic diaphragm to ascend during inlet adduction during concentric activity of the L glute med and descend during inlet abduction during eccentric activity of the L glute med.
4. All Four Belly Lift 4x5 breaths
    - IO/TA helps to stabilize the anterior inlet while concomitant hamstring facilitation rotates the pelvis posteriorly. This position helped the patient learn to relax his pelvic diaphragm. He reported a sensation of feeling his pelvic floor expand during this activity.

*Following completion of these activities, the patient had a – ADT bilaterally.

<u>Second Visit</u>

Subjective

- Patient reports decreased perianal pain since the previous visit. He says he is better able to consciously relax his pelvic diaphragm throughout the day. He has not returned to lifting weights. His symptoms during sex continue as well as when he sits.

Objective

	Left	*Right*
Standing Reach Test	3 inches	
Standing Back Extension	Limited and Painful	
PRI Functional Squat	2/5	
Cervical Rotation	-	-
Cervical Sidebending	-	-
HG IR	90º	90º
HG ER	90º	90º
HG Flexion	170º	170º
Horizontal Abduction	45º	45º
Trunk Rotation	Limited	Limited
SLR	90º	95 º
Hip IR	35 º	45 º

Hip ER	45°	45°
Extension Drop Test	+	-
Faber	+	-
Passive Abduction Raise Test	30°	30°
Adduction Drop Test	+	-

Assessment

- Patient presents with a L AIC pattern with increased hip ER bilaterally. He continues to have difficulty letting go of his high threshold stabilization strategy that he uses throughout the day. Activities to improve his ability to perform L inlet adduction will allow his L hemi pelvic diaphragm to ascend. The ultimate goal will be to synchronize the activity of his pelvic and thoracic diaphragms.

Treatment

1. 90/90 hip lift with passive L FA IR and balloon
    - This activity is focused on L posterior outlet and L anterior inlet inhibition. Additionally, it uses the hamstring to posteriorly rotate the L innominate.
2. Left Sidelying Knee Towards Knee
    - The patient was an active individual who I felt would be able to integrate his L adductor and R glute max while establishing a ZOA. The frontal and transverse plane control was a challenge for this patient which is what this activity addresses. The L adductor creates L outlet abduction while the R glute max moves the R posterior outlet into a position of adduction.
3. Left Sidelying Trunk Lift
    - The L ZOA is what integrates the L hemipelvis and L side of the thorax. It also helps inhibit the L anterior inlet and posteriorly rotate the L innominate.
4. PRI Positional Handout
    - One of the patient's complaints was his symptoms when sitting. He was taught how to shift between L and R AFIR throughout the day to keep his posterior outlets opening/closing.
    - It was also discussed how to avoid using his high threshold strategy of bracing when he returns to lifting weights. He was taught to maintain his ribs in a position exhalation while he inhales, and to exhale during the concentric part of the lift. By having his ribs in a position of exhalation, or internal rotation, he establishes a ZOA which puts his inlet in a good position while also giving the hamstrings better leverage.

*Following completion of these activities, the patient had a – ADT bilaterally, and a Hruska Adduction Lift Test score of 2/5 bilaterally.

<u>Third Treatment</u>

Subjective

- Patient reports a significant reduction in his symptoms including feelings of pressure in his pelvic floor. He was able to work out this last week with no exacerbation of his symptoms. He reports continued challenge with IBS but that it is also improving.

Objective

	Left	*Right*
Standing Reach Test	2 inches	
Standing Back Extension	Full and Pain free	
PRI Functional Squat	3/5	
Cervical Rotation	-	-
Cervical Sidebending	-	-
HG IR	90º	90º
HG ER	90º	90º
HG Flexion	170º	170º
Horizontal Abduction	45º	45º
Trunk Rotation	Limited	Limited
SLR	90º	95 º
Hip IR	40 º	45 º
Hip ER	45 º	45 º
Faber	+	-
Passive Abduction Raise Test	40 º	40 º
Adduction Drop Test	-	-
Hruska Adduction Lift Test	2/5	2/5

Assessment

- Patient presents with a neutral pelvis with limited frontal plane control as indicated by his Hruska Adduction Lift Test scores. Increased R glute max facilitation along with L adductor/glute med will help the patient lateralize himself to the L during L stance. Synchronous activity of his pelvic and thoracic diaphragms needs to be established.

Treatment

1. Standing Supported Respiratory L AFIR
    - It is important to work on synchronizing the activity of his pelvic and thoracic diaphragms during respiration in a dynamic activity. This challenges the patient to maintain proper position and myokinematic sequencing which will benefit him as he continues to lift weights.
2. Left Sidelying Left Flexed FA Adduction with Right Extended FA Abduction and Left Abdominal Co-Activation
    - This activity challenges his frontal plane control of his pelvis while maintaining a L ZOA. It is a challenge for the patient to inhibit his R ab wall/QL when performing R FA abduction/extension.
3. Squatting Bar Reach 3/5
    - This activity is great for inhibiting paraspinals while establishing bilateral ZOAs and teaching appropriate breathing sequencing during squatting activities. Emphasis is placed on keeping his weight through arches/heels to facilitate glutes and hamstrings.

4. Seated Supported L AFIR/FAIR
    - Sitting was where the patient was experiencing the majority of his symptoms. Facilitating his L adductor/glute med helps adduct his pelvic inlet and allow his L hemi pelvic diaphragm ascend. It was important to teach the patient to become comfortable in this position as he breathed. Through graded exposure to the position his sympathetic response was decreased and he learned that sitting is a safe position for him.

<u>Fourth Visit</u>

Subjective

- Patient reports a decrease in his IBS since the previous visit. He says that overall, he is feeling 90% better. He is still unable to sit for over 45 mins without pain in his perianal region. However, he says that he is now able to relieve his symptoms through moving and deep breathing.

Objective

	Left	*Right*
Standing Reach Test	0 inches	
Standing Back Extension	Full and Pain free	
PRI Functional Squat	3/5	
Cervical Rotation	-	-
Cervical Sidebending	-	-
HG IR	90º	90º
HG ER	90º	90º
HG Flexion	170º	170º
Horizontal Abduction	45º	45º
Trunk Rotation	Limited	Limited
SLR	90º	95º
Hip IR	45º	45º
Hip ER	40º	40º
Passive Abduction Raise Test	40º	40º
Adduction Drop Test	-	-
Hruska Adduction Lift Test	4/5	4/5

Assessment

- Patient presents with a neutral pelvis and improved frontal/transverse plane control as indicated by his Hruska Adduction Lift Test scores. Higher level unsupported standing activities need to be used to teach him how to use the appropriate reference centers when being upright.

Treatment

1. Standing L AFIR w/ R FA Abduction
    - This is a progression of the second activity taught to him on his third treatment session. The position again challenged his frontal plane control. It required

integration of a L ZOA with activity of the L hamstring, L IC adductor, and L glute med to establish posterior rotation of the L innominate while maintaining L inlet adduction. His left hemi pelvic diaphragm ascended in this position while his right hemi diaphragm descended.

2. Seated Alternating Reciprocal Pull Backs with FAIR and Balloon
    - In this seated activity he alternated between stance and swing phase of each leg. This allowed each hemi diaphragm to achieve a stance phase position (ascension) and swing phase position (descension). The alternating and reciprocal activity of each diaphragm is crucial to have efficient respiratory mechanics. It also taught the patient to create spinal stability without using a high threshold strategy.
3. Standing Right Lunge with Bilateral Knee Flexion and Right Trunk Rotation
    - This activity uses the R glute max to push into L AFIR while going into R trunk rotation which inhibits the L AIC/R BC. The position of R AFER along with active R FAER mimics terminal swing and initial contact. It was key to teach the patient how to find his R arch to facilitate his R glute max and achieve L AFIR in this activity.

<u>Fifth Visit</u>

Subjective

- Patient reports increased stress at work over the last two weeks which has increased some of his symptoms. However, he only has symptoms 2-3 days/week and says he feels 95-100% on most days. He is happy with his progress and feels comfortable in his ability to effectively manage his symptoms when they occur. He would like to be discharged from active PT caseload after this treatment.

Objective

	Left	*Right*
Standing Reach Test	0 inches	
Standing Back Extension	Full and Pain free	
PRI Functional Squat	4/5	
Cervical Rotation	-	-
Cervical Sidebending	-	-
HG IR	90º	90º
HG ER	90º	90º
HG Flexion	170º	170º
Horizontal Abduction	45º	45º
Trunk Rotation	Limited	Limited
SLR	90º	95 º
Hip IR	45 º	45 º
Hip ER	40 º	40 º
Passive Abduction Raise Test	40 º	40 º
Adduction Drop Test	-	-
Hruska Adduction Lift Test	4/5	4/5

Assessment

- Patient continues to demonstrate adequate control of his pelvis and is able to manage his symptoms despite increased stress at work. He has decreased the use of his high threshold stabilization strategy throughout the day and is learning to utilize a more efficient strategy. He needs to be taught to alternate and reciprocate in an upright position prior to discharge.

Treatment

1. Seated Alternating Reciprocal Pull Backs with FAIR and Balloon
    - This activity continues to be used in order to maximize alternating positions of his hemi pelvic diaphragms in sitting.
2. Squat hang
    - Patient was taught this activity to use at the end of his workouts for back extensor inhibition and to stimulate parasympathetic activity for recovery. The position decreases the need of a high threshold strategy and helps him achieve bilateral ZOAs.
3. Retro Walk
    - This activity teaches the patient to alternate and reciprocate while being upright. His hemi pelvic/thoracic diaphragms alternate between positions of stance and swing as they do in the first activity. This activity could not be done while using a high threshold stabilization strategy. To move between the required reference centers with appropriate myokinematics requires a dynamic stabilization strategy only achieved through the alternating movements of the hemi pelvic/thoracic diaphragms.

Example: Critical Research Review (Part Three)

Title:
Developmental kinesiology: Three levels of motor control in the assessment and treatment of the motor system

Complete Reference:
Kobesova A, Kolar P. Developmental kinesiology: Three levels of motor control in the assessment and treatment of the motor system. J Bodyw Mov Ther. 2014;18;23-33

Article Summary
This paper describes the three levels of motor control present in humans as it relates to our overall function. The authors explain how motor control is organized at the brain stem, midbrain/subcortical, and cortical levels with each one having a specialized function. The brain stem is where primitive reflexes are initiated which allows neonates interact with their environment. As the child develops so does postural-locomotor function which is guided by the midbrain. It is during this period that core stability is formed through the function of the thoracic and pelvic diaphragms. After sagittal plane stability is adequate the child is able to cross midline through rolling (an ipsilateral pattern) and eventually to crawl (a contralateral pattern). Further along the developmental sequence goal oriented phasic movement is directed by the cortex. The cortex is where all sensory and system integration occurs to provide the appropriate motor output.

PRI Clinical Application
One of the main concepts of this paper is the core control performed by the pelvic and thoracic diaphragms during respiration. As this develops, the sagittal plane is made stable to allow for movement in the frontal and transverse planes. This follows the line of thinking in PRI where we reset the sagittal plane before teaching patients how to move in the frontal and transverse planes. We teach core stability first by facilitating the proper position of the pelvic and thoracic diaphragms which allows them to fulfill their respiratory and stabilizing roles. Initially, this is done by having the patient blow up a balloon in the 90/90 position with hamstring facilitation to posteriorly rotate the pelvis so the thoracic and pelvic diaphragms oppose each other. The eccentric abdominal control during nasal inhalation prevents the ribs from externally rotating and the lumbar spine from hyperextending. From this position the combined actions of the pelvic and thoracic diaphragms along with the entire circumferential abdominal wall stabilizes the low back. Once the patient repositions their pelvis and has control in the sagittal plane we begin to teach the patient how to move in the frontal and transverse planes. This is when the patient begins to learn to cross midline which is required to be able to alternate and reciprocate during gait, a contralateral movement pattern.

A function of the cortex is to integrate the inputs from all of the sensory systems to move the body in space with respect to gravity. This is why as clinicians we focus on using the appropriate reference centers for patients. These reference centers help the patient appropriately orient their body in space while also facilitating proper myokinematics.

PRI Clinical Limitations

For me, what separates PRI from every other school of thought in the rehab world is its stance on asymmetries along with the understanding of biomechanics. While this article addresses the importance of the thoracic and pelvic diaphragms for core control it does not explain the asymmetry in the diaphragms. This asymmetry makes stabilizing one side through a ZOA easier than the other. Additionally, the importance of rib mechanics/position for proper diaphragmatic movement during alternating and reciprocal activity was not addressed. Our ribs move with the movement of the thoracic diaphragm but ribs can also dictate how the thoracic diaphragm moves. If ribs are unable to achieve a position of internal rotation due to excessive inhalation no amount of flexion can allows the pelvic and thoracic diaphragms to oppose each other. Only through exhalation are the ribs able to internally rotate which allows the diaphragm to dome. This is what puts the thorax and pelvis in a neutral position. Our inherent asymmetries must be taken into consideration when analyzing movement and how to intervene.

