REFORMER 2

A DETAILED GUIDE FOR TEACHING PILATES

By Nora St. John

2019 Edition

Balanced Body Inc, Sacramento California

CREDITS AND GRATITUDE

This manual would not have been possible without the support of the following people and places:

- The Pilates elders, Eve Gentry, Kathy Grant, Carola Trier, Romana Kryzanowska, Ron Fletcher, Lolita San Miguel and Mary Bowen all of whom I have had the pleasure to know and work with.
- My teachers and mentors, Diana Herold, Michele Larsson, Elizabeth Larkam, Alan Herdman, Marie Jose Blom and all of my colleagues at St. Francis Hospital and Turning Point Studios.
- The teachers of all of the Balanced Body Master Instructors who so generously shared their knowledge and wisdom.
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IMPORTANT INFORMATION

This Manual is intended to be used as part of a Pilates teacher training program or for clients who are working under the supervision of a trained Pilates teacher. If you are using this manual to learn these Pilates exercises and you are not under the supervision of a trained Pilates teacher please keep in mind that the material presented is physically challenging and Balanced Body is not liable for any injuries caused by attempting these exercises without proper supervision. Balanced Body highly recommends that you get a thorough evaluation from a qualified health or fitness professional and work with a trained Pilates teacher in order to receive the maximum benefit from these exercises.

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BALANCED BODY EDUCATION

Welcome to the Balanced Body Pilates Instructor Training Program!

Balanced Body is your partner in mind body fitness. We work with the best educators in Pilates and related disciplines to provide learning opportunities that are stimulating, personal and deeply rooted in the art and science of movement. We look forward to working with you to develop your Pilates career and to bringing the benefits of Pilates to clients at fitness centers, studios and rehabilitation clinics around the world.

Balanced Body offers a full range of Pilates instructor training programs for Mat, Reformer, Trapeze Table, Chair and Barrels as well as continuing education through Pilates on Tour, Balanced Body workshops, Balanced Body education partners and Passing the Torch. We are committed to supporting your personal and professional growth now and in the future.

The Balanced Body Pilates program combines the traditional repertoire with contemporary exercises based on the latest advances in movement science and related disciplines. Our curriculum meets national guidelines and is designed to prepare you for the Pilates Method Alliance, national Pilates certification exam which can be taken upon completion of the full program.

Our teacher training program is one of the best in the world. Our Master Instructors are experienced, caring and passionate teachers committed to providing you with the best possible Pilates training.

REQUIREMENTS OVERVIEW

Balanced Body recognizes four levels of achievement within the Balanced Body curriculum:

- Balanced Body Pilates Mat Instructor
- Balanced Body Mat and Reformer Instructor
- Balanced Body Reformer Instructor
- Balanced Body Comprehensive Pilates Instructor

Each individual module (Mat 1, Reformer 1, etc.) includes a written and practical test. Certificates of completion will be issued after each module. After completion of additional personal practice, observation and teaching hours you will be recognized as a fully qualified Balanced Body Pilates Mat, Mat and Reformer, Reformer or Comprehensive Instructor and a certificate of completion will be awarded.

Balanced Body Instructor Training

PROGRAM STRUCTURE

Classroom Hours

Every course includes lectures, workouts, exercise demonstrations and practice teaching. Students are expected to learn and practice the exercises, practice teaching the exercises and understand the principles and history of the Pilates method.

ADDITIONAL REQUIREMENTS

In addition to the classroom hours, students are required to do additional personal practice sessions, observation hours and student teaching hours. To receive a certificate of completion, students must complete all of the requirements for their chosen program and pass a final written and practical exam. For the Reformer and Comprehensive programs, completion of a basic anatomy course is also required.

Personal Sessions

Students can count any classes or Pilates personal training sessions they have already taken. Developing and committing to a personal Pilates practice is an essential part of becoming an effective and inspiring instructor.

Observation Hours

Observation hours include watching experienced instructors, live or on video, teach group classes or private sessions. Observation is a great way to understand verbal and manual cueing, program sequencing and to hone your teaching skills.

Student Teaching Hours

Teaching hours include any Pilates teaching: either as an employee at a fitness center or studio, or for family and friends.

Anatomy

A basic understanding of anatomy provides a strong foundation for an effective Pilates instructor. Anatomy is required for the Reformer and Comprehensive programs and is highly recommended for the Pilates Mat program. This requirement can be fulfilled through Balanced Body's Anatomy in Three Dimensions or other musculoskeletal anatomy courses. Contact the Balanced Body office for more information. Students who have already taken a college level anatomy course or are a licensed health professional (MD, PT, AT, OT, etc.) can waive this requirement.

Balanced Body Pilates Mat Instructor

Prerequisites: 10 Pilates Mat Classes
Recommended: Anatomy and 6 months work experience in a related field.

REQUIREMENTS FOR COMPLETION

To become a fully qualified Balanced Body Pilates Mat Instructor, students must complete the following:

- Anatomy (strongly recommended)
- Balanced Body Movement Principles
  Course work, written & practical test (16 hours)
- Balanced Body Mat 1
  Course work, written & practical test (16 hours)
- Balanced Body Mat 2
  Course work, written & practical test (16 hours)
- Balanced Body Mat 3
  Course work, written & practical test (16 hours)
- Mat practical hours (70 hours total):
  - 20 Mat personal sessions
  - 15 observation hours
  - 35 student teaching hours
- Final written and practical exam

Total hours for completion of Pilates Mat program:
134 hours (not including anatomy)

Upon completion of all of the requirements, a certificate of completion as a Balanced Body Pilates Mat Instructor will be issued.

Balanced Body Pilates Mat and Reformer Instructor

Prerequisites: 10 Pilates Mat and 20 Pilates Reformer Classes
Recommended: 1 year work experience in related field

REQUIREMENTS FOR COMPLETION

To become a fully qualified Balanced Body Pilates Mat and Reformer Instructor, students must complete the following:

- Anatomy (must be completed prior to final test out)
- Balanced Body Movement Principles (if not included in their Pilates Mat course)
- Balanced Body Mat Instructor training or equivalent
- Balanced Body Reformer 1
  Course work, written & practical test (16 hours)
- Balanced Body Reformer 2
  Course work, written & practical test (16 hours)
- Balanced Body Reformer 3
  Course work, written & practical test (16 hours)
- Mat practical hours (70 hours total)
- Reformer practical hours (150 hours total):
  - 30 Reformer personal sessions
  - 30 observation hours
  - 90 student teaching hours
- Final written and practical exam

Total hours for completion of Mat and Reformer program:
332 hours (not including anatomy)

Upon completion of all of the requirements, a certificate of completion as a Balanced Body Pilates Mat and Reformer Instructor will be issued.

Balanced Body Pilates Reformer Instructor

Prerequisites: 20 Reformer Classes
Recommended: 1 year work experience in related field

REQUIREMENTS FOR COMPLETION

To become a fully qualified Balanced Body Pilates Reformer Instructor, students must complete the following:

- Anatomy (must be completed prior to final test out)
- Balanced Body Movement Principles (16 hours)
- Balanced Body Reformer 1
  Course work, written & practical test (16 hours)
- Balanced Body Reformer 2
  Course work, written & practical test (16 hours)
- Balanced Body Reformer 3
  Course work, written & practical test (16 hours)
- Reformer practical hours (150 hours total):
  - 30 Reformer personal sessions
  - 30 observation hours
  - 90 student teaching hours
- Final written and practical exam

Total hours for completion of Reformer program:
214 hours (not including anatomy)

Upon completion of all of the requirements, a certificate of completion as a Balanced Body Pilates Reformer Instructor will be issued.

Balanced Body Comprehensive Pilates Instructor

Prerequisites: 20 Pilates studio sessions
Recommended: 1 year work experience in related field

REQUIREMENTS FOR COMPLETION

To become a fully qualified Balanced Body Comprehensive Pilates Instructor, students must complete the following:

- Anatomy (must be completed prior to final test out)
- Balanced Body Mat Instructor training or equivalent
- Balanced Body Reformer Instructor training
- Balanced Body Trapeze Table/Cadillac or Tower (18 hours) or Apparatus 1 (14 hours) - Course work, written and practical test
- Balanced Body Chair (14 hours) or Apparatus 2 (12 hours) Course work, written and practical test
- Balanced Body Barrels (6 hours) or Apparatus 3 (12 hours) Course work, written and practical test
- Mat practical hours (70 hours total)
- Reformer practical hours (150 hours total):
- Apparatus practical hours (150 hours total)
  - 35 Apparatus personal sessions
  - 20 observation hours
  - 95 student teaching hours
- Final written and practical exam

Total hours for completion of Apparatus program:
188 hours (not including anatomy)

Total hours for completion of Comprehensive Pilates Instructor program:
520 hours (not including anatomy)

Upon completion of all of the requirements, a Certificate of Completion as a Balanced Body Comprehensive Pilates Instructor will be issued.

Balanced Body Bridge Program

Students who have completed a Pilates Instructor Training program through other organizations and are interested in obtaining a Balanced Body certificate of completion should contact the Balanced Body office to inquire about the Balanced Body Bridge program.

Final Exam

Once a student has completed all required Mat, Reformer and/or Apparatus course work and hours, they must pass a written and practical exam demonstrating their teaching ability before receiving their final certificate of completion. Exams will be regularly scheduled at Balanced Body host sites and at trade shows and conferences in the US and abroad.

If instructors are not able to attend a practical exam because it is too far to travel, testing out by video may be arranged.

Students do not need to test out individually for Mat, Reformer, and Apparatus. Students only need to test out when they have reached the highest level they intend to complete. For example, students completing only the Mat will test out after Mat, students completing Mat and Reformer will test out after Reformer and students finishing the comprehensive program will test out after they have completed all of the requirements.

THE PRACTICAL EXAM

The final test consists of a written exam and the observation of a session with a client or class. Once a student has completed all of their hours and is ready to test out, they send in an application (available at www.pilates.com) to the Balanced Body office. Balanced Body verifies the coursework and hours and provides the student with test outs available in their area.

During the practical exam the student will be assessed on the following skills:

- Correct set up and execution of the exercises
- Client safety
- Appropriate sequencing
- Appropriateness of the exercises to the client or class
- Understanding and application of the principles
- Cueing and the ability to communicate with the client or class

If the student does not pass on the first try, they will be informed of what they need to focus on in order to pass and a time line will be set up for completion.

The cost for completing the final certification exam will vary depend on the location and specific circumstances. The cost ranges between $150 and $350.

ADDITIONAL COSTS OF THE PROGRAM

All published prices for Balanced Body courses include the course and materials fee only. The cost of personal sessions and any costs associated with completing observation and student teaching hours are not included in the cost of the training program and are the responsibility of the student. Successful completion of the program does not guarantee employment.

NEED MORE INFORMATION?

If you need information regarding additional training, certificates of completion, continuing education or anything else, please contact Balanced Body at:

Contact Information
Balanced Body Education

Toll free: (800) PILATES (745-2837)
International: +1 (916) 386-6234
Fax: (916) 388-0609
E-mail: education@pilates.com
www.pilates.com

Al Harrison, Director of Education
al.harrison@pilates.com

Nora St. John, Director of Educational Programming
nora.stjohn@pilates.com

Thanks for joining us!

Pilates Mat Instructor Requirement Records

Mat Personal Sessions

20 hours required. Date and initial each session taken.

1		2		3		4		5	
6		7		8		9		10	
11		12		13		14		15	
16		17		18		19		20	

Mat Observation Hours

15 hours required. Date and initial each session taken.

1		2		3		4		5	
6		7		8		9		10	
11		12		13		14		15	

Mat Student Teaching Hours

35 hours required. Date and initial each session taken.

1		2		3		4		5	
6		7		8		9		10	
11		12		13		14		15	
16		17		18		19		20	
21		22		23		24		25	
26		27		28		29		30	
31		32		33		34		35	

Pilates Reformer Instructor Requirement Records

Reformer Personal Sessions

30 hours required. Date and initial each session taken.

1		2		3		4		5	
6		7		8		9		10	
11		12		13		14		15	
16		17		18		19		20	
21		22		23		24		25	
26		27		28		29		30	

Reformer Observation Hours

30 hours required. Date and initial each session taken.

1		2		3		4		5	
6		7		8		9		10	
11		12		13		14		15	
16		17		18		19		20	
21		22		23		24		25	
26		27		28		29		30	

Pilates Reformer Instructor Requirement Records (cont.)

Reformer Student Teaching Hours

90 hours required. Date and initial each session taken.

1		2		3		4		5	
6		7		8		9		10	
11		12		13		14		15	
16		17		18		19		20	
21		22		23		24		25	
26		27		28		29		30	
31		32		33		34		35	
36		37		38		39		40	
41		42		43		44		45	
46		47		48		49		50	
51		52		53		54		55	
56		57		58		59		60	
61		62		63		64		65	
66		67		68		69		70	
71		72		73		74		75	
76		77		78		79		80	
81		82		83		84		85	
86		87		88		89		90	

Pilates Apparatus Instructor Requirement Records

Apparatus Personal Sessions

35 hours required. Date and initial each session taken.

1		2		3		4		5	
6		7		8		9		10	
11		12		13		14		15	
16		17		18		19		20	
21		22		23		24		25	
26		27		28		29		30	
31		32		33		34		35	

Apparatus Observation Hours

20 hours required. Date and initial each session taken.

1		2		3		4		5	
6		7		8		9		10	
11		12		13		14		15	
16		17		18		19		20	

Pilates Apparatus Instructor Requirement Records, cont.

Apparatus Student Teaching Hours

95 hours required. Date and initial each session taken.

1		2		3		4		5	
6		7		8		9		10	
11		12		13		14		15	
16		17		18		19		20	
21		22		23		24		25	
26		27		28		29		30	
31		32		33		34		35	
36		37		38		39		40	
41		42		43		44		45	
46		47		48		49		50	
51		52		53		54		55	
56		57		58		59		60	
61		62		63		64		65	
66		67		68		69		70	
71		72		73		74		75	
76		77		78		79		80	
81		82		83		84		85	
86		87		88		89		90	
91		92		93		94		95	

APPLYING TO TEST OUT

Upon completion of all of the coursework and hours, go to www.pilates.com to download the application to test out. Copy these hours records and send them in with your application. Once Balanced Body has verified the information in your application, you will receive a list of test outs at locations near you. Contact the office for further information.

BALANCED BODY EDUCATION CONTACTS

Phone: (800) PILATES, (800) 745-2837, **Fax:** (916) 388-0609, **E-mail:** education@pilates.com

WHAT IS PILATES?

Pilates is an exercise system developed by Joseph Pilates to strengthen muscles, increase flexibility and improve overall health. Exercises are performed on a mat and on specially designed equipment. The Pilates system includes exercises for every part of the body and applications for every kind of activity. Created in the early part of the 20th century, Pilates was so far ahead of its time that it did not begin to achieve popular recognition until the first few years of the 21st century. Over 10 million people are now practicing Pilates in the United States and the numbers are growing every year.

WHY IS PILATES SO POPULAR?

Pilates focuses on engaging the mind with the body to create exercises that involve the whole body. Every exercise is performed with attention to the breath, proper form and efficient movement patterns. Pilates strengthens the core, improves balance, increases coordination and decreases stress. The exercises are relatively safe, low impact and appropriate for anyone from 10 to 100. Pilates focuses on learning to move better so the benefits are felt in everyday life.

Pilates is used in fitness centers, private studios, rehabilitation clinics and hospitals to improve the health and well being of clients from the recently injured to the super fit. As more and more people participate, Pilates continues to grow and evolve to meet the needs of anyone wanting to improve their ability to move with strength, ease and grace.

A BRIEF HISTORY OF JOSEPH H. PILATES AND THE DEVELOPMENT OF CONTROLOGY

Joseph Hubertus Pilates was born in Germany around 1883. He had rheumatic fever, asthma and rickets as a child and was plagued by a weak respiratory system. In order to improve his own health he began exploring ways to strengthen his body and his mind. Early on, Joe became intrigued by the classical notion of the ideal man who combined a well trained body with an equally well trained intellect. In pursuit of this goal he participated in boxing, fencing, wrestling and gymnastics with his father and brother. Germany was a fertile ground for these explorations at the turn of the 20th century with many ground breaking leaders in movement science, dance and psychology working there.

Joe was in England touring with a boxer when World War I broke out. He was held as a resident alien in an internment camp on the Isle of Man for the duration of the war. While in the camp he took it upon himself to lead his fellow detainees in a daily exercise program. According to Joe, when the influenza epidemic of 1918–1919 broke out, none of the inmates who followed his regimen got sick.

Joe's success with his group of inmates brought him to the attention of the camp leaders and he was given the job of an orderly at a hospital for wounded soldiers. He was put in charge of 30 patients and worked with them every day to exercise whatever they could move. This was in the days when western medicine was in its infancy and there were few treatments to offer patients other than surgery and morphine. Nursing during this time usually meant extended bed rest which lead to muscular atrophy, loss of aerobic capacity and a weakened immune system. Joe's exercises helped his patients to get better faster and helped them to fend off the secondary infections that killed so many people in similar circumstances.

Working as an orderly also led to the development of Joe's first piece of exercise equipment. Manually working out 30 patients every day was exhausting so Joe came up with the idea of attaching springs to the patient's bed frames and thus the first Cadillac was born! Now the patients could exercise themselves under Joe's supervision.

After Joe was released from the camps and returned to Germany, he was approached by the "brown shirts" (who were to become the Nazi party) to train their police force. Joe didn't want to have anything to do with them, so he left Germany on a boat for America and met his soon-to-be-wife Clara on the passage over. Clara was a nurse who became a true partner for Joe, working beside him in the studio everyday and taking care of any clients Joe didn't want to work with.

When Joe and Clara arrived in New York in 1926, they rented a small studio in the same building as the New York City Ballet on 8th Ave. and started teaching what Joe named "Contrology." Joe worked with clients from all walks of life but he made an especially strong impression on the dance community working with Ted Shawn, Ruth St. Denis, George Balanchine and many others who sent their injured dancers to Joe's for rehabilitation following injuries.

Joe was an inventor who was always working on developing new exercise equipment. He designed the Universal Reformer, the Wunda Chair, the Cadillac, the Ladder Barrel, the Spine Corrector and many other wonderful inventions during his lifetime. He made many of the machines himself and often designed them to fit a particular client. Many of Joe's original machines are still working today.

Joe had a dream of introducing his vision of mind-body fitness into every aspect of life, from elementary schools to military training, and, had he not been so far ahead of his time, it might have happened. Instead, he taught a small group of devoted teachers and students, a few of whom went on to continue the work and keep it alive until the rest of the world caught up with his revolutionary thinking. Joe spent many years talking to anyone who would listen about his work, but did not receive much recognition during his lifetime.

Joe's studio was destroyed by fire in 1967 and he died soon after that from complications of smoke inhalation. His wife Clara carried on the work until her death in 1977.

Amongst the primary teachers who carried on Joe's work after his death was **Romana Kryzanowska**, a ballet dancer who worked very closely with Joe and taught at his studio for many years. She started one of the first teacher training programs in the country and has trained hundreds of instructors to teach the work as Joe taught it to her. She was associated with the Pilates Guild for many years and currently teaches through Romana's Pilates.

Eve Gentry was a well known modern dancer who worked with Joe and Clara as a student and teacher for over 20 years before moving to Santa Fe, New Mexico and opening a studio there. Joe helped to rehabilitate Eve after a radical mastectomy and helped her to regain the full use of her arm and torso. Eve died in the late 1990s. Her work is carried on by Michele Larsson through Core Dynamics.

Ron Fletcher was a Martha Graham dancer who worked with Joe and Clara very late in their lives. Ron credits Clara with inspiring him to develop his unique work on the Step Barrel/Spine Corrector and to open a studio in Los Angeles on Rodeo Drive. Ron was the first teacher to bring Pilates to the West Coast and to introduce it to many famous actors and actresses. His work incorporated a more "dancerly" style and more complicated choreography into the original exercises. His work is carried on by the Ron Fletcher Program of Study and is known as Ron Fletcher Work.

Carola Trier trained with Joe and opened her own studio in New York where she taught until her death in the late 1990s. Her work is carried on by several senior students including Jillian Hessel in Los Angeles and Deborah Lessen in New York.

Kathleen Stanford Grant originally came to Joe with a knee injury she sustained as a dancer. She was one of only two students to be certified by Joe to teach Pilates. After dancing and choreographing for many years she started teaching at New York University where she taught a Mat class to the students and ran a small studio until her death in 2010.

Lolita San Miguel is a well known dancer and choreographer who was certified by Joe while she was dancing in New York. She moved to Puerto Rico and founded the Ballet Concierto de Puerto Rico, one of the island's premier dance companies where she incorporated Pilates into the training program for her dancers. Ms. San Miguel teaches Pilates workshops nationally and internationally and has produced several DVDs.

Mary Bowen was a comedian performing in New York when she first started working with Joe. She now combines Psyche and Pilates in her current life as a Jungian psychoanalyst and Pilates instructor at her studio in Northampton, MA and her office in Killingworth, CT. She has taken at least one Pilates session a week for over 50 years and continues to deepen her own understanding of the balance between mind and body.

Pilates has now become a household word thanks to the work of all of these first generation teachers and many others who kept the method alive after the death of Mr. Pilates. Without them, we would not have the wonderful exercise system we have today. We are grateful to all of them.

THE DEVELOPMENT OF BALANCED BODY EDUCATION

The Balanced Body Pilates instructor training was developed by Nora St. John, MS. who has been practicing Pilates since 1981 and teaching since 1989. She originally trained at St. Francis Memorial Hospital with Patrice Whiteside and Elizabeth Larkam and has studied the work with Alan Herdman, Eve Gentry, Michele Larsson, Romana Kryzanowska, Carola Trier, Kathy Grant, Lolita San Miguel and Karen Clippinger.. Nora has degrees in Biology, Dance and Traditional Chinese Medicine as well as certifications in Pilates, Oriental Bodywork and the Franklin Method.

The Balanced Body program combines the full bodied, athletic aspects of the original work with the refinement and anatomical understanding of the more contemporary schools of Pilates. Nora's background in movement science provides a strong foundation for the ongoing development of the Balanced Body Pilates instructor training program.

PILATES PRINCIPLES

"Physical fitness is the first requisite of happiness. Our interpretation of physical fitness is the attainment and maintenance of a uniformly developed body with a sound mind fully capable of naturally, easily, and satisfactorily performing our many and varied daily tasks with spontaneous zest and pleasure. To achieve the highest accomplishments within the scope of our capabilities in all walks of life, we must constantly strive to acquire strong, healthy bodies and develop our minds to the limit of our ability". **— Joseph Hubertus Pilates**

1) BREATHING

"Breathing is the first act of life, and the last. Our very life depends on it."

The breath is the essential link between the mind and the body. It draws our wandering mind back into our bodies and back to the task at hand. It is the foundation of our existence and the rhythm that accompanies us from birth to death. In Pilates the breath is integrated into every movement in order to focus our awareness on what we are doing, to improve the flow of oxygen through our bodies and to improve the capacity of our lungs.

2) CONCENTRATION

"... and always keep your mind wholly concentrated on the purpose of the exercises as you perform them."

To concentrate is to pay attention to what you are doing. To be present with and in control of the task at hand. Without concentration the exercises lose their form and their purpose. When teaching it is important to have a client do only as many repetitions as they can without losing their concentration. As Joe often said, "It is better to do five repetitions perfectly than 20 without paying attention."

3) CONTROL

To be in control is to understand and maintain the proper form, alignment and effort during an entire exercise. Pilates exercises are never done without engaging the mind to control the movements and the efforts that the body is making.

4) CENTERING

In Pilates all movement radiates outward from the center. Developing a strong, stable and flexible center is one of the defining features of this form of exercise.

5) PRECISION

Precision is the ability to perform exercises with optimum alignment, unconscious control and just the right amount of effort. Precision is the end product of concentration, control, centering and practice.

6) BALANCED MUSCLE DEVELOPMENT

"However, there is another important reason for consistently exercising all our muscles; namely, that each muscle may cooperatively and loyally aid in the uniform development of all our muscles."

Understanding, developing and maintaining correct alignment and form is essential to Pilates and over time will lead to balanced muscle development. With practice these principles become second nature and lead to improved posture, increased comfort and enhanced physical abilities.

7) RHYTHM/FLOW

All movements in Pilates are done with a sense of rhythm and flow. Flow creates smooth, graceful and functional movements. It decreases the amount of stress placed on our joints and develops movement patterns that integrate our body into a smoothly flowing whole.

8) WHOLE BODY MOVEMENT

Pilates is fundamentally about integration: integrating movement into a flowing whole body experience, integrating the mind and body to create clarity and purpose, integrating mind, body and spirit to create a life of balance.

9) RELAXATION

To be healthy in body and mind it is important to understand the balance between effort and relaxation. In Pilates we learn to use just the amount of effort needed to complete the exercise correctly, no more, no less. Learning to release unnecessary tension in our bodies helps us to find ease and flow in movement and in the rest of our lives.

PILATES INSTRUCTOR RESOURCE LIST

PILATES

Pilates' Return to Life Through Contrology
Joseph H. Pilates &
William John Miller
Originally published in 1945, republished in 1998 by Presentation Dynamics

The Pilates Body
Brooke Siler
Broadway Books, 2000

Pilates' Body Conditioning: A Program Based on the Techniques of Joseph Pilates
Anna Selby and Alan Herdman
Barron's Educational Series, Inc., 2000

Pilates
Rael Isacowitz
Human Kinetics, 2006

Movement Analysis Workbooks
Rael Isacowitz
BASI Books

Ellie Herman's Pilates Manuals
Ellie Herman
Ellie Herman Books, 2005

NATIONAL PILATES ORGANIZATION

Pilates Method Alliance,
pilatesmethodalliance.org

EQUIPMENT AND VIDEOS

Balanced Body
800-PILATES (745-2837)
pilates.com

MOVEMENT, ANATOMY AND IMAGERY

Anatomy of Movement
Blandine Calais-Germain
Eastland Press, 1985

Dance Anatomy and Kinesiology
Karen Sue Clippinger
Human Kinetics, 2006

Trail Guide to the Body, 4th edition
Andrew R. Biel
Books of Discovery, 2010

Manual of Structural Kinesiology, 15th edition
R. T. Floyd, Ed. D, A.T.C., C.S.C.S., and Clem W. Thompson Ph.D., F.A.C.S.M.
WCB, McGraw-Hill, 1998

Dance Kinesiology
Sally Sevey Fitt,
Schirmer Books, 1988

Anatomy Coloring Book
Wynn Kapit and Lawrence W. Elson,
Harper and Row, 1977

Muscle Testing and Function
Florence Peterson Kendall, P.T., F.A.P.T.A, Elizabeth Kendall McCreary and Patricia Geise Provance, P.T.
Williams and Wilkins, 1993

Atlas of Human Anatomy, 3rd Edition
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INTRODUCTION TO THE REFORMER

The Universal Reformer is the most versatile piece of equipment developed by Joseph H. Pilates. Using a simple wooden frame, a movable carriage, springs, a footbar and adjustable leather straps, Joe invented an exercise machine that addresses virtually every part of the body. From leg presses to abdominals to arm work to standing work, Joe developed exercises that can be used with clients of all kinds from the novice to the super fit.

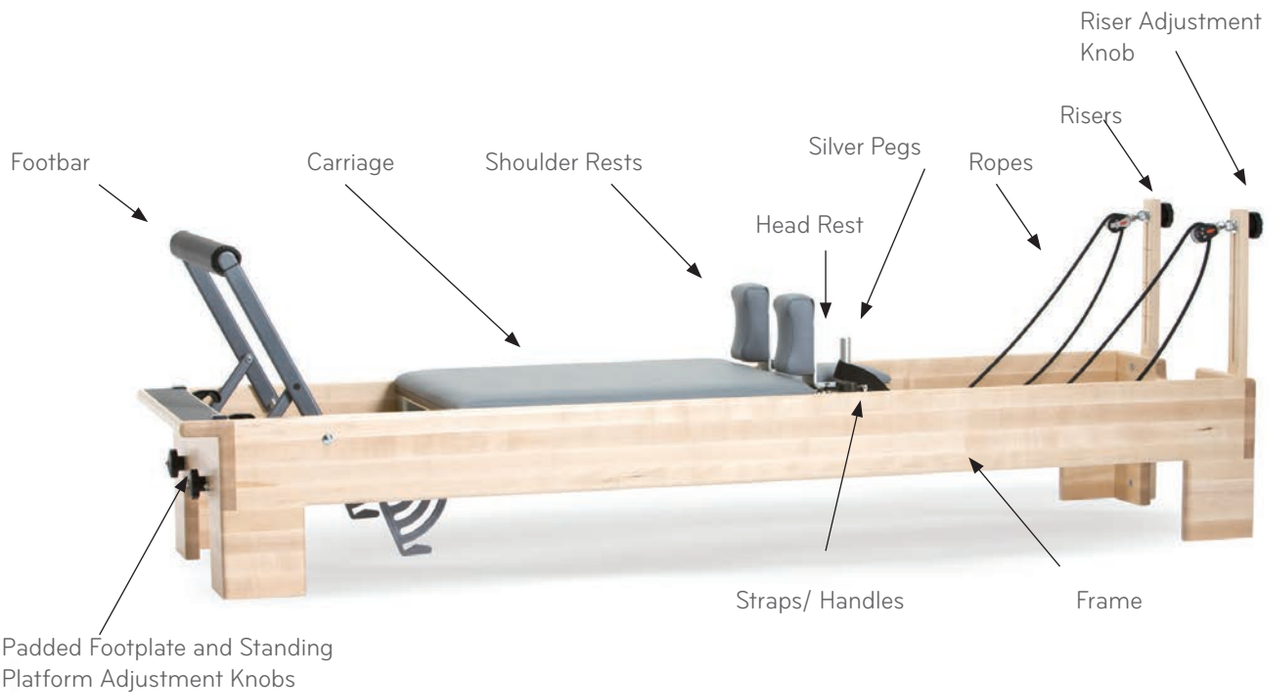
Springs of varying strengths provide resistance and support while the client pushes on the footbar, pulls on the straps, lies on the box or stands on the carriage. Starting with just the exercises that Joe invented there are over 50 different moves that can be varied to suit the client's needs and fitness level. Exercises vary from simple isolated movements of the arms and legs to complex exercises involving the whole body. A well designed program addresses the whole client. Reformer sessions provide a refreshing and energizing workout while improving strength, muscle tone, flexibility and coordination.

Balanced Body springs

REFORMER ANATOMY

For this manual we used a Balanced Body Studio Reformer with ropes and risers and an adjustable footbar. See diagram below for names of Reformer parts referenced in the text.

Many parts of the Reformer are adjustable for different exercises and different size clients. Balanced Body makes a full line of Reformers each of which provides a unique set of features. The following instructions include information and adjustments for all of the current models.



SPRING WEIGHT

The resistance or support the Reformer provides is based on the number of springs attached to the springbar. Spring weight guidelines listed in the manual are as follows:

1 spring indicates a light weight. Usually used for arm work.

2 springs indicates a light to moderate weight. Used for arm work, leg work and exercises where the carriage is providing support to the client.

2-4 springs indicates a moderate to heavy weight. Usually used for leg work.

All springs generally indicates that the carriage needs to be stabilized for the exercise. For example, all springs are used with the Short Box Abdominal series to keep the carriage from moving. All springs are also used to provide maximum resistance for stronger clients.

0 springs means the client will need to control the carriage without the support of the spring. Exercises where the client needs to control the carriage (Kneeling Abdominals, Elephant, Long Stretch series) are much harder with light or no springs.

Different spring configurations are indicated for each exercise in the manual. The settings listed are general guidelines. The instructor will adjust the springs to suit the individual needs of the client.

The springs can generally be attached in two different positions on the Reformer allowing the instructor to fine tune the resistance for each exercise.

ADJUSTING THE SPRINGBAR OR SPRING ATTACHMENTS

In the 'A' or first gear position

The spring is under a small amount of tension (pre-loaded) and thus provides more resistance during an exercise.

On the Studio, Infinity, and Ron Fletcher Reformers the springbar can be placed in one of two slots in order to adjust the spring tension. The "A" position is the slot closer to the frame of the Reformer.

On the Revo, Legacy, Allegro and One–Step Reformers, the springs are adjusted by placing them on two different positions on the bar, the hook or the button. The "A" position is achieved by attaching the spring to the button on the springbar.

In the 'B' or second gear position

The spring has no tension on it to begin and thus provides less resistance during an exercise.

On the Studio, Infinity, and Ron Fletcher Reformers, the springbar is moved into the slot closer to the carriage for the "B" position.

On the Revo, Legacy, Allegro and One–Step Reformers, the "B" position is achieved by attaching the spring to the hook on the springbar.

Springs on the 'A' or pre-loaded position

Springs on the 'B' or neutral tension position

SPRING PROGRESSIONS FOR THE STUDIO REFORMER® AND ALLEGRO®

Please note that these spring combinations represent the usual progression for a standard new machine and may vary slightly depending on the age and specific strength of your springs.

SPRINGBAR POSITIONS

'A': Heavier: When the spring bar is farther from the carriage or the springs are on the buttons.

'B': Lighter: When the spring bar position is closer to the carriage or the springs are on the hooks.

SPRING COLOR CODING

These color codes are standard for Balanced Body Reformers:

Y	**Yellow:** Super Light
B	**Blue:** Light
R	**Red:** Medium
G	**Green:** Heavy

Standard Springs

Light Weight: 1 spring

B	Blue
R	Red
G	Grn.

Medium Weight: 2-3 springs

BR	1 Blue, 1 Red
BG	1 Blue, 1 Grn.
RR	2 Red
RG	1 Red, 1 Grn.
RRB	2 Red, 1 Blue

Heavy Weight: 3-5 springs

RRR	3 Red
RRG	2 Red, 1 Grn.
RRRB	3 Red, 1 Blue
RRRG	3 Red, 1 Grn.
RRRGB	3 Red, 1 Grn., 1 Blue

Light Springs

Light Weight: 1-2 springs

Y	1 Ylw.
B	1 Blue
R	1 Red
YB	1 Ylw., 1 Blue
YR	1 Ylw., 1 Red

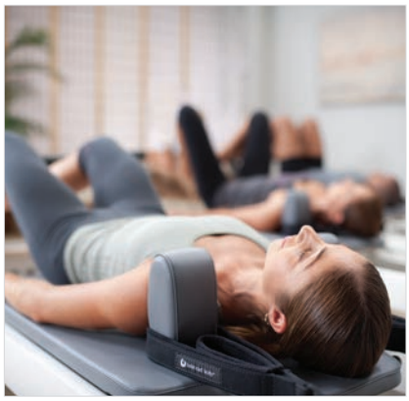
Medium Weight: 2-3 springs

BR	1 Blue, 1 Red
RR	2 Red
RBY	1 Red, 1 Blue, 1 Ylw.
RRY	2 Red, 1 Ylw.
RRB	2 Red, 1 Blue

Heavy Springs

Heavy Weight: 3-5 springs

RRR	3 Red
RRBY	2 Red, 1 Blue, 1 Ylw.
RRRY	3 Red, 1 Ylw.
RRRB	3 Red, 1 Blue
RRRBY	3 Red, 1 Blue, 1 Ylw.



Allegro 2, headrest flat

HEADREST

On most Reformers, the head rest has three positions, adjustable to optimize a client's position when lying down. For most clients, the goal is to align the ear over the center of the shoulder with the chin perpendicular to the carriage. Clients with deeper rib cages generally need a higher head rest position while clients with a shallow rib cage or a flatter upper back use a lower position. Towels can be used to fine tune the height. The head rest is adjusted by a notched kickstand. Head rest positions are noted in the text as follows:

Flat: The kickstand is folded away from the head rest and the head rest is level with the carriage.

Middle or 1/2 Way: The kickstand is supported on the middle notch and the head rest is elevated above the carriage.

Up: The kickstand is supported on the bottom and the head rest is elevated above the carriage.

FOOTBAR

The footbar can be adjusted both vertically and horizontally for various exercises and for different size clients. Adjusting the footbar is used most commonly for the leg and footwork exercises in order to position the client's knees and hips at approximately 90 degrees of flexion in the starting position. The footbar can also be adjusted to decrease the amount of flexion in the knees and hips for clients recovering from surgery or injuries. Adjustments can also be used to change the mechanics of other exercises.

GENERAL FOOTBAR ADJUSTMENT GUIDELINES

The Higher and/or Closer Footbar is generally used:

- For shorter clients.
- To increase hip and knee flexion.
- To increase lumbar flexion.

The Lower and/or Farther Footbar is generally used:

- For taller clients.
- To decrease hip and knee flexion.
- To decrease lumbar flexion.

VERTICAL ADJUSTMENTS

Studio and Ron Fletcher

The Studio and Ron Fletcher footbar has 3 vertical positions and is adjusted by moving the footbar kickstands.

High Position: Place the long kickstand in the springbar groove closest to the footbar end of the Reformer.

Low Position: Place the short kickstand in the springbar groove closest to the footbar end of the Reformer.

No Bar Position: Take the kickstands out of the springbar slot and lay the footbar down on the standing platform of the Reformer.

Allegro 1 vertical footbar settings

Revo, Legacy and One-step

The Revo, Legacy and One-step footbars are adjusted by placing the kickstand in one of the 3 notches inside the footbar end of the carriage frame.

Extra High Position: Place the the kickstand in the highest notch and slide the plastic holder under the slot to lock it in place.

High Position: Place the kickstand in the middle notch.

Low Position: Place the kickstand in the lowest notch.

No Bar Position: Take the kickstand out of the notch and lay the footbar down on the standing platform.

Allegro 2 vertical footbar settings

Infinity (2005 and earlier) and Allegro 1

The Infinity (2005 and earlier), and Allegro 1 footbars each have 4 footbar adjustments. The current Infinity has 5 adjustments, with a new vertical position added in 2006.

High position: Squeeze the clamps in order to disengage the pin from the hole in the plate. Move the pin into the highest hole and release the clamp.

Low position: Place the pin in the 2nd hole from the top on the plate.

Extra low position: Place the pin in the 3rd hole on the plate.

No bar position: Place the pin in the lowest hole on the plate.

Allegro 1 vertical footbar settings

Allegro 2

The Allegro 2 footbar has 4 footbar adjustments.

Vertical position: Holding the footbar in the center, disengage it by pulling it toward you and rotate it until it clicks into the vertical position.

High position: Pull the bar toward you and lower it into the high position.

Low position: Pull the bar toward you and lower it into the low position

No bar position: Pull the bar toward you and lower it as far as it will go.

Allegro 2 vertical footbar settings

The Footbar settings listed in the manual Include:

Extra High (available on the Infinity, Revo, Legacy, Allegro 2 and One-Step): Used for shorter clients and for clients with an increased lumbar curve or tighter backs for footwork. Or to increase the hip and knee flexion leading to increased effort.

High (available on all Reformers): This position or the Low position are the most common positions for most exercises on the Reformer.

Low (available on all Reformers): This is a standard position.

Extra Low (available on the Allegro and Infinity Reformers): This is an extra low position for taller clients or to decrease flexion of the hips and knees.

No bar: The bar is moved out of the way for certain exercises such as standing and prone work on the box.

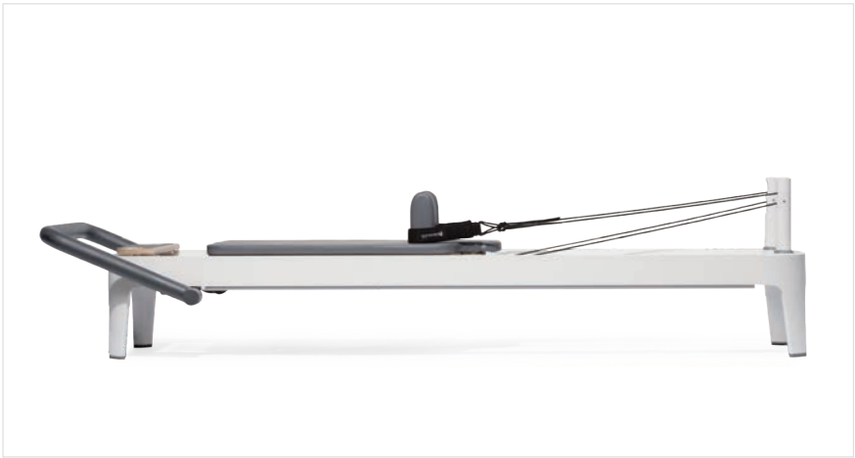
HORIZONTAL ADJUSTMENTS

Horizontal adjustments can be made with the footbar on the Infinity, Allegro 1 and Allegro 2 Reformers and with the springbar on the Revo Reformer in order to custom fit the Reformer for clients of different sizes and abilities. Horizontal adjustments change the distance between the carriage and the footbar without changing the height of the footbar. This adjustment is useful for taller and shorter clients and for clients with decreased hip or knee flexion due to an injury or surgery.

INFINITY, ALLEGRO 1 AND ALLEGRO 2

The Infinity footbar has 31 horizontal adjustments, the Allegro 1 footbar has 4 the Allegro 2 footbar has 9 and the Revo has 5. On the Infinity and Allegro 1, the horizontal adjustment is made by pulling the black knobs out of the holes at the bottom of the footbar and sliding the footbar into the desired position. On the Allegro 2, the footbar is pulled up and rotated toward the carriage until it is beyond the vertical position. The footbar is then slid into the desired position, pulled up and rotated back to the desired vertical adjustment.

Infinity Footbar™ has 31 horizonal adjustments



Allegro 2 has five horizontal adjustments

REVO FOOTBAR

The Revo and Legacy can be adjusted horizontally by changing the position of the springbar. In order to adjust the carriage, straddle the carriage facing the footbar or stand at the footbar end of the Reformer and pull the large metal handle up until the carriage can slide freely. Slide the springbar and the carriage into the new position and release the metal handle.

Studio reformer spring bar

ROPES AND STRAPS

The ropes are adjusted according to the demands of the specific exercise and the size of the client. To adjust the rope length on all Reformers except the Allegro 2 and machines with leather straps, pop the rope out of the cleats by looping a finger under the rope and pulling up. Pull the rope to the right length and press it back into the cleats. Many studios don't adjust the ropes at all and instead use a double loop strap which allows the client to have the ropes at two different lengths without having to adjust them. The settings called for in the manual are listed below.

On the Allegro 2, the ropes are adjusted by pulling the small lever on the side of the headrest to release the straps. The straps can then be pulled to the desired length and released.

The leather straps on the CenterLine, Ron Fletcher and Legacy are adjusted by either slipping the leather off the hook for the Legacy or changing the hole in the buckle for the Ron Fletcher.

Regular straps: The ropes are adjusted so the loop or handle the client is holding is gently taut on the shoulder rests. With the double loop straps, the client will hold the longer loop. Used for most exercises.

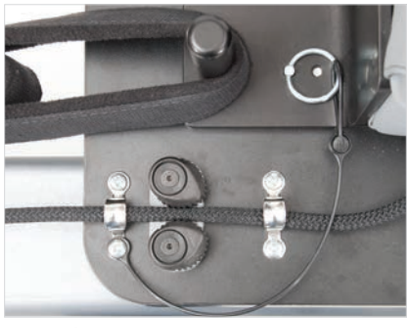
Short straps: The ropes are adjusted so the loop or handle the client is holding is gently taut on the silver pegs. With double loop handles the client holds the smaller loop. Used for rowing, some arm work.

Very short straps: The ropes are adjusted so that the loop or handle is about 5 inches shorter than the headrest. Used for kneeling arm work facing the straps.

Long straps: The ropes are adjusted so the loop or handle the client is holding is longer than the shoulder rest by the length of one cotton loop. Used for long spine stretch or for feet in the straps for clients with shorter hamstrings.

Leather straps for the CenterLine, Ron Fletcher and the Legacy

Ropes with double loops



Allegro 1 cleats

FOOTPLATE/JUMPBOARD ATTACHMENTS

Padded Footplates or Jumpboards are available for all of the Balanced Body Reformers. They are used for jumping exercises to train clients for power and strength as well as for providing a flat surface to mimic the mechanics of standing and walking.

Allegro 2 jumpboard

Studio jumpboard

Allegro 1 jumpboard

ATTACHING THE FOOTPLATE TO THE REFORMER

Studio and Ron Fletcher Reformers: Place the short kickstand in the springbar groove closest to the frame. Loosen the knobs on the outside of the footbar end of the Reformer and slide the footplate into the metal sleeve. The footbar should contact the wooden bar on the back of the footplate. Tighten the knobs to hold the footbar securely against the footplate.

Revo and Legacy Reformers: Place the footbar kickstand in the low position and slide the footplate into the metal strap. Tighten the knobs to hold the footbar securely against the footplate.

Infinity Reformer: Slide the footbar horizontally to the 4th hole from the footbar end and place the footbar in the 4th hole from the bottom on the vertical adjustment. Slide the footplate into the sleeve and tighten the knobs.

Allegro 1 Reformer (pre 2007): Slide the footbar horizontally to the 2nd hole from the carriage end and place the footbar in the 2nd hole from the top on the vertical adjustment. Slide the footplate into the metal sleeve and attach the bungee cords to the holes on the top of the wheel brackets or to the D rings in the footstrap loops.

Allegro 1 Reformer (2007 and later): Slide the footbar horizontally to the 2nd hole from the carriage end and place the footbar in the 2nd hole from the top on the vertical adjustment. Slide the footplate onto the wide metal hook on the outside of the Allegro frame. No bungees or extra adjustments are necessary.

Allegro 2 Reformer: Slide the square metal legs on the footplate into the holes in the Allegro 2 frame. No footbar adjustments or support are necessary.

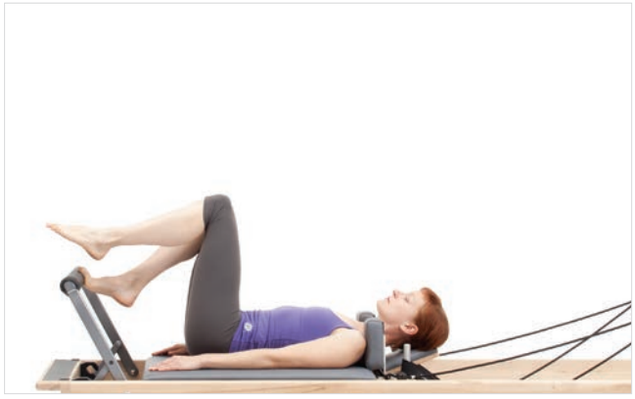
SINGLE LEG FOOTWORK

BEGINNING TO INTERMEDIATE • 10 REPS

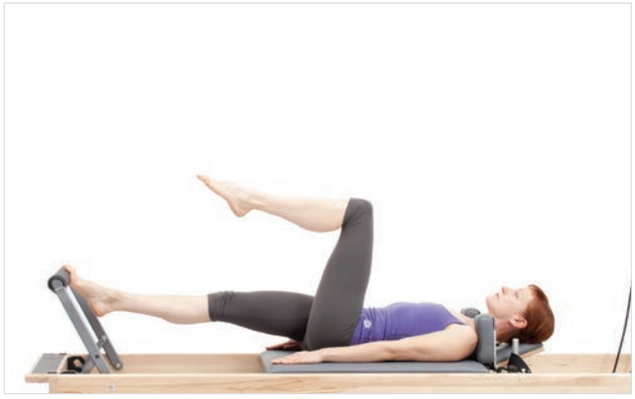
Springs: RB to RRR **Footbar Position:** High or low **Headrest:** As needed

STARTING POSITION

Lie supine on the carriage with the head on the headrest, the shoulders just below the shoulder rests and the foot on the footbar with the knee bent. The free leg is held in a chair position with the thigh at a right angle to the torso, the knee bent with the shin parallel to the carriage and the foot pointed. If working in external hip rotation (turn out), turn both legs out. Adjust the footbar as needed to create the correct starting position. (See introductory section).



1. Starting position. Supine on the Reformer with one foot on the footbar and the other leg in tabletop.



2. Straighten the standing leg.

MOVEMENT SEQUENCE

Exhale: Straighten the leg to push the footbar away. Keep the hips level, the low back neutral and the free leg in position.

Inhale: Return with control.

FOOTWORK VARIATIONS

Heels

Place the center of one heel on the footbar with the legs in parallel.

Toes

Place the ball of the foot on the footbar with the heel slightly raised and the legs in parallel or turn out.

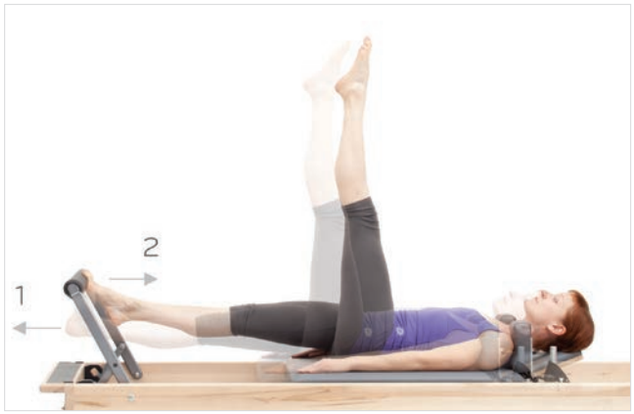
CHALLENGE

Free Leg

Straighten the free leg toward the ceiling as you push the carriage back.

Tendon Stretch (Flex/Releve)

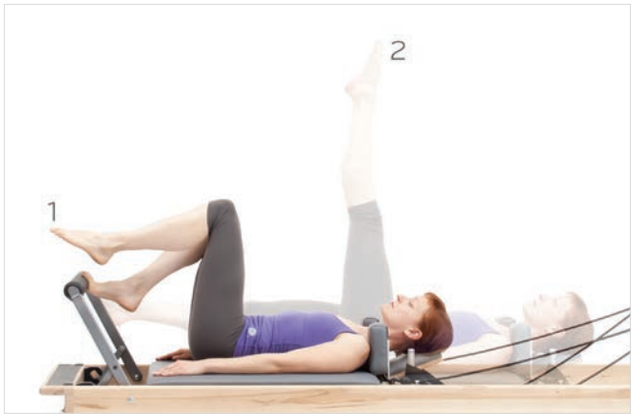
- Begin in parallel on the ball of the foot.
- Push the carriage back by straightening the standing leg and extend the free leg up to the ceiling.
- Keeping the pushing leg straight, lower the heel, raise the heel and bend the knee to return to the starting position.



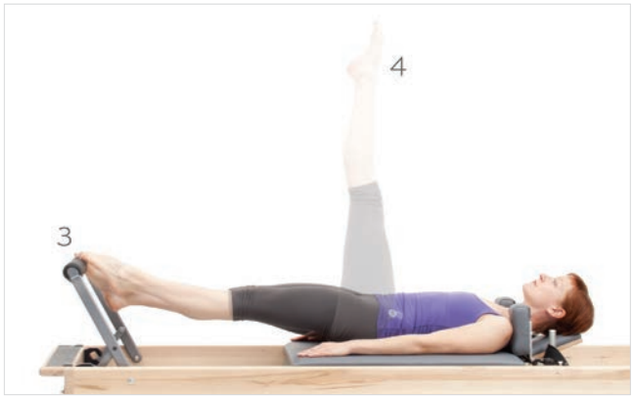
1. Tendon Stretch: Press the carriage back then lift and lower the heel.

Progressions Parallel

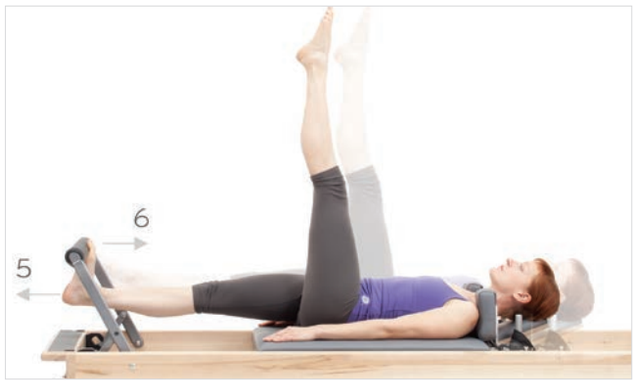
- Push the carriage back by straightening the standing leg and extend the free leg up to the ceiling.
- Lower the leg down to the bar and back up.
- Flex and point both feet and return to the starting position.



1. Progressions parallel. Straight the free leg up to the ceiling.



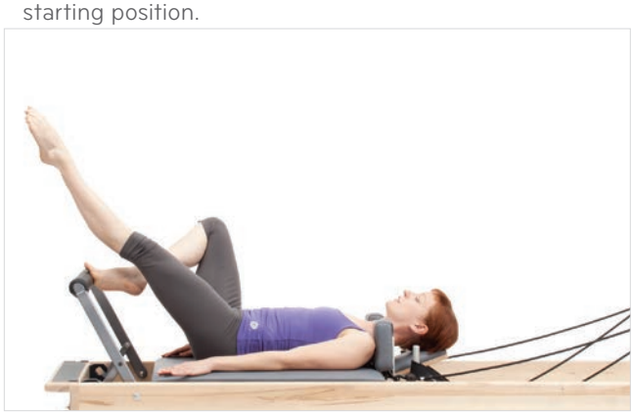
2. Lower the leg down to the bar and lift it back up.



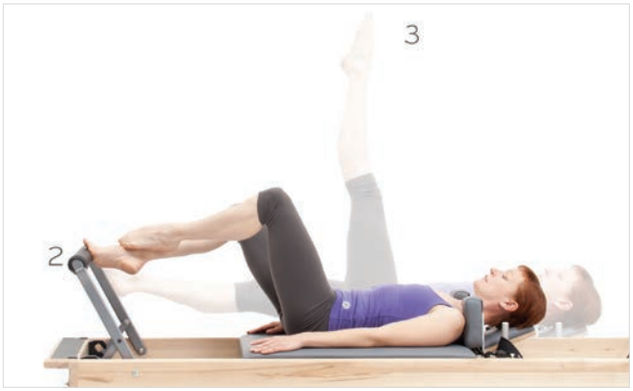
3. Flex and point both feet keeping the legs straight.

Progressions Turned Out

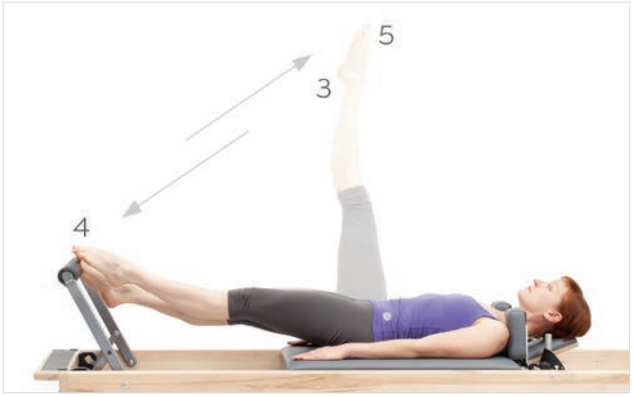
- Place the ball of the foot on the footbar with the heel slightly raised and the legs turned out. Straighten the free leg over the footbar with the foot pointed.
- Push the carriage back by straightening the standing leg while bending the knee of the straight leg and sliding the big toe along the lower leg before extending it up to the ceiling (passe developpe).
- Lower the free leg down to the bar and back up.
- Rotate the free leg out to the side without losing the stability of the pelvis. Flex and point both feet and then return to the starting position.



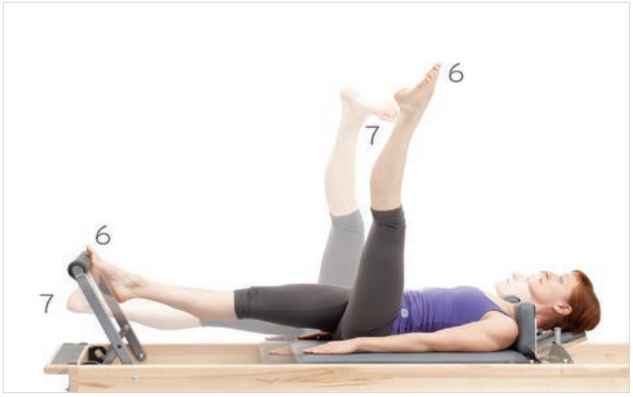
1. Progressions Turn Out starting position. One foot on the footbar with the leg turned out, other leg straight over the footbar.



2. Straighten both legs.



3. Lower top leg to the footbar and back up to the ceiling.



4. Rotate the top leg out to the side in 2nd position, flex both feet, then return to the starting position by bending both knees.

CUEING AND IMAGERY

- Maintain a level pelvis while working on one leg.
  - Reach the sit bone of the free leg toward the opposite heel.
  - Keep equal weight on the back of both hips.
- Engage the abdominals as you press back.
- Keep the standing hip, knee, ankle and foot in line.
  - Line up the inside of the hip bone (ASIS), the center of the knee cap, the middle of the ankle and the 2nd toe.
- Maintain the same back position throughout the exercise.
  - Imagine you are holding a glass of water on your stomach. Don't spill it!
  - Place your hands under your waist and keep even pressure on your hands throughout the exercise.

PURPOSE

- Strengthen the leg muscles including the internal and external rotators, quadriceps, hamstrings, abductors, adductors, calf muscles and ankle stabilizers.
- Balance the strength between the legs.
- Teach lumbopelvic stability.
- Correct hip, leg and ankle alignment.
- Increase circulation.

PRECAUTIONS

Knee, hip and ankle injuries or after knee or hip surgery: Limit carriage return with footbar adjustments or stopper blocks. Avoid if symptoms increase.

Sensitive feet: Pad the footbar or work with shoes on.

Low back, hip and sacroiliac joint injuries: Support the low back with a towel, wedge or roll. Avoid if symptoms increase.

Neck and shoulder injuries: Use sticky pads on the carriage and pad the shoulder rests to keep the shoulders from jamming into the shoulder rests.

Pregnancy: Elevate torso or avoid after 16 weeks.

FOOTWORK ON FOOTPLATE

BEGINNING • VARIABLE REPS

Springs: RR to RRRR | **Padded Footplate:** On | **Headrest:** As needed

STARTING POSITION

Lie supine on the carriage with the head on the headrest, the shoulders just below the shoulder rests and the feet on the footplate with the toes at the top of the plate and the knees straight. For one legged exercises hold the other leg in a chair position.

1. Starting position - Legs Parallel.

1. Starting position: Legs Turned Out, Heels together.

1. Starting position: Legs Turned Out, Heels wide.

MOVEMENT SEQUENCE

Knee Bends/Pliés

Inhale: Bend the knees, keeping the low back neutral and the heels on the board.

Exhale: Straighten the legs to return to the starting position.

1. Knee Bends/Plies. Bend the knees keeping the heels on the footplate.

STARTING POSITION VARIATIONS

- Legs parallel
- Single leg parallel
- Legs turned out and heels together (1st position)
- Single leg turned out
- Legs turned out and heels wide at the edges of the footplate. (2nd position)

VARIATIONS

Calf raises (Flex/Releve)

Bend the knees keeping the heels on the board. Straighten the knees and rise on to the balls of the feet keeping the ankles lined up over the 1st and 2nd toe. Lower the heels down to the board with the knees straight to start again. Parallel or turned out.

1. Calf Raises. Bend the knees keeping the heels on the footplate. Straighten the legs to rise onto the balls of the feet.

Roll through forward

Bend the knees as far as you can without lifting the heels, lift the heels without moving the carriage. Straighten the legs and lower the heels.

1. Roll through forward. Bend the knees then lift the heels without moving the carriage.

2. Straighten the knees, then lower the heels to return to starting position.

Roll through reverse

Begin with straight legs. Rise up onto the balls of the feet, bend the knees without lowering the heels, then lower the heels without moving the carriage and finish by straightening the legs.

CUEING AND IMAGERY

- Engage the abdominals before you press back.
  - Draw the navel toward the spine.
  - Draw the hip bones together.
- Keep the hips, knees, ankles and feet in line.
  - Ideally, the ASIS, center of the knee cap, middle of the ankle and 2nd toe are on one line.
- Maintain a neutral position of the pelvis and spine throughout the exercise.
  - Imagine holding a glass of water on your stomach. Don't spill it.
  - Place your hands under your waist and keep the pressure even throughout the exercise.
- Make the movement smooth and continuous. Don't bump at the bottom or the top.
  - Imagine a waterwheel continuously rotating.

PURPOSE

- Strengthen the leg muscles including the internal and external rotators, quadriceps, hamstrings, abductors, adductors, calf muscles and ankle stabilizers.
- Develop support for neutral spine.
- Teach lumbopelvic stability.
- Correct hip, leg and ankle alignment.
- Increase circulation.

PRECAUTIONS

Knee, hip and ankle injuries or after knee or hip surgery: Decrease knee and hip flexion by limiting carriage return with footbar adjustments or stopper blocks. Avoid if symptoms increase.

Sensitive feet: Pad the footbar or work with shoes on.

Low back, hip and sacroiliac joint injuries: Support the low back with a towel, wedge or roll. Avoid if symptoms increase.

Neck and shoulder injuries: Use sticky pads on the carriage and pad the shoulder rests to keep the shoulders from jamming into the shoulder rests.

Pregnancy: Elevate torso or avoid after 16 weeks.

JUMPING ON FOOTPLATE

INTERMEDIATE • REPS VARIABLE

Springs: RB to RR | **Padded Footplate:** On | **Headrest:** As needed

Running in Place

STARTING POSITION

Lie supine on the carriage with the head on the headrest, the shoulders just below the shoulder rests and the feet on the footplate with the legs straight.

MOVEMENT SEQUENCE

- **Breathing continuously:** Bend one knee and lift the heel off the footplate then straighten the leg and bend the other knee.
- Increase the pace until you are Running in Place on the footplate.
- Once you are comfortable with this, begin jogging in place shifting the weight from one foot to the other.

Jumping Preparation

STARTING POSITION

Lie supine on the carriage with the head on the headrest, the shoulders just below the shoulder rests and the feet on the footplate with the legs straight.

MOVEMENT SEQUENCE

Inhale: Keeping the legs straight, push off the board with your feet.

Exhale: Roll down through the feet without bending the knees.

Jumping

STARTING POSITION

Lie supine on the carriage with the head on the headrest, the shoulders just below the shoulder rests and the feet on the footplate with the legs straight. For one legged exercises hold the other leg in a chair position.

MOVEMENT SEQUENCE

Inhale: Bend the knees keeping the heels on the footplate to prepare.

Exhale: Straighten the legs and point the feet to jump off the plate.

Inhale: Roll down through the feet while bending the knees for a quiet landing.

LEG POSITION VARIATIONS:

- Parallel
- Turned out with heels together
- Single leg or double leg

1. Parallel starting position. Feet side by side, heels down on footplate.

1. Turned out starting position. Bring heels together and down.

1. Single leg starting position. One foot on the footplate with the other leg in tabletop.

JUMPING VARIATIONS

1 leg to 1 leg jumps

Take off from one leg and land on one leg. Straighten both legs as you change from one foot to the other. Land on the same leg or on the opposite leg.

2 leg to 1 leg jumps

Take off from both legs but land on one leg.

This can be done as a series. For example take off with both legs land on left, jump on left, land on both, jump on both, land on right.

2 leg to 2 leg jumps

Take off and land with both legs.

Inner thigh squeeze

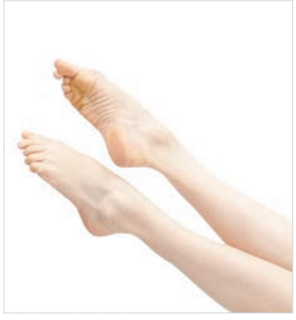
Squeeze the legs together at the top of the jump.

1. Jumping. Straighten both legs to push the carriage away from the footplate.

Ballet variations (Beats)

Add a series of leg crosses at the top of each jump.

1. Ballet variations (Beats). Cross one leg over the other.



2. Switch the legs.

CUEING AND IMAGERY

- Engage the abdominals as you press back.
- Stay up as long as possible
- Keep the knees lined up over the toes.
- Maintain the same position of the back throughout the exercise.
  - Don't arch the back or press the ribs forward.
- Make the movement smooth and continuous.
- Land quietly.
  - Imagine you are a cat landing from a jump.
  - Listen to the noise the board makes as you jump and keep it as quiet as possible.
- Get the heels down on the landing.
  - Keep the feet toward the top of the footplate.
  - Roll through the feet from the toes to the ball of the feet to the heels.

PURPOSE

- Strengthen the abdominals.
- Strengthen the leg muscles including the internal and external rotators, quadriceps, hamstrings, abductors, adductors, calf muscles and ankle stabilizers.
- Teach lumbopelvic stability.
- Teach jump mechanics.
- Correct hip, leg and ankle alignment in a challenging exercise.
- Increase circulation.

PRECAUTIONS

Knee, hip and ankle injuries or after knee or hip surgery: Make sure the client is cleared by their doctor. Start with light weight and minimal reps. Progress slowly.

Sensitive feet: Pad the footbar or work with shoes on.

Low back, hip and sacroiliac joint injuries: Support the low back with a towel, wedge or roll. Avoid if symptoms increase.

Neck and shoulder injuries: Use sticky pads on the carriage and pad the shoulder rests to keep the shoulders from jamming into the shoulder rests.

Pregnancy: Elevate torso or avoid after 16 weeks.

COORDINATION

INTERMEDIATE • 6 REPS EACH

Springs: R to RB | **Footbar:** No bar | **Straps:** Regular

Prerequisites: Ability to do the Hundred on Mat or Reformer | **Headrest:** As needed

STARTING POSITION

Lie supine on the carriage with the head between the shoulder rests. Place the knees at 90 degrees and the hands in the straps with the upper arms parallel to the carriage and the elbows bent. The low back should stay stable throughout the exercise in either a neutral, supported neutral or imprinted position depending on the client.

MOVEMENT SEQUENCE

Exhale: Assume the Hundred position. Choose the leg position based on the ability to maintain the stability of the back. Beginners, straighten the legs toward the ceiling, as you get stronger, lower the legs toward the carriage.

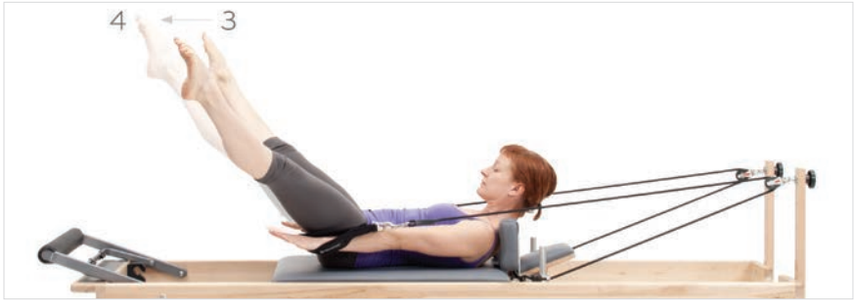
Inhale: Open and close the legs no wider than the hips while keeping the torso lifted and the head up.

Exhale: Bend the knees into the chest.

Inhale: Lower the head and return the arms to the starting position.

1. Starting position. Knees and elbows bent, upper arms on the carriage.

2. Straighten the arms and legs and lift the torso to the 100's position.



3. Open and close the legs before returning to the starting position.

VARIATIONS

Starfish

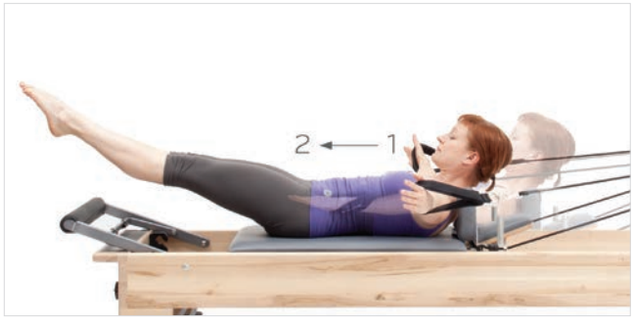
From the Hundred position, open the legs and arms out to the sides together and return to the starting position. The carriage will move. The head can remain up or lower with each repetition.

1. Starfish. Open both the legs and arms to the sides.

VARIATIONS (CONT.)

Iron Cross

From the Hundred position, keep the legs in place as the arms move out to the sides and back to the hips 10 times. Keep the arms below shoulder height. Keep the head and torso up and the back stable. The carriage will move.



1. Move both arms to the sides and back to the hips.

One Leg (Level 3)

From the Hundred position, alternately open each leg out to the side and return it to the center. Keep the hips steady on the carriage. Alternate sides several times and roll down.

1. Open right leg to the side and return to the center.

2. Open left leg to the side and return to the center.

CUEING AND IMAGERY

- Engage the abdominals before beginning the exercise.
  - Draw the navel in toward the spine, draw the ribs down to lift the torso up as the legs lower into position.
- Breathe into the sides and back of the ribs while maintaining a scooped abdomen.
  - Inhale into the ribs, exhale and hollow the abdominals more deeply.
- Lower the legs only as far as the back can stay stable.
  - Instructor monitor the position as the student lowers the legs.
  - Use a pad under the back to support the neutral position and keep the back on the pad.
- Keep the chest open and the shoulders away from the ears.
  - Feel the tips of the shoulder blades on the carriage.

PURPOSE

- Strengthen the abdominals, hip flexors, latissimus dorsi and adductors.
- Increase thoracic flexibility.
- Teach pelvic stability.
- Increase coordination.
- Learn to connect the arms to the core.

PRECAUTIONS

Low back, hip and sacroiliac joint problems: Keep the knees bent at 90 degrees.

Neck and shoulder injuries: Support the upper body with pillows or a wedge.

Pregnancy: Avoid after 16 weeks.

Avoid with osteoporosis, active lumbar disc injuries and sciatica.

SHORT SPINE MASSAGE

ADVANCED • 6 REPS

Springs: BR to RR **Footbar:** Any **Straps:** Regular

Prerequisite: Adequate hamstring flexibility, comfortable with spinal flexion. **Headrest:** Down

STARTING POSITION

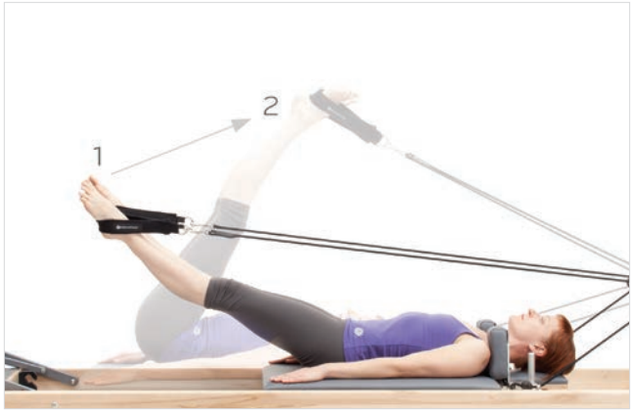
Lie supine on the carriage with the head between the shoulder rests and the straps on the arches of the feet. Lower the legs to approximately 45 degrees of hip flexion.

MOVEMENT SEQUENCE

Exhale: Flex the hips as far as the hamstring flexibility will allow without lifting the sacrum off the carriage. Press the upper arms into the carriage, reach the feet overhead and roll the spine off the mat going no higher than the top of the scapulae.

Inhale: Turn the legs out and bend the knees without lowering the torso.

Exhale: Roll the spine down one vertebra at a time and press the legs out to return to the starting position.



1. Starting position, legs at 45 degrees. Flex the hips keeping the sacrum on the carriage.

2. Flex the hips and roll the torso off the carriage.

3. Turn out the legs and bend the knees with torso lifted. Roll the spine down.

4. Press the legs out to the starting position.

MODIFICATION

No roll up

Begin with the legs straight and the hips at about 45 degrees of flexion. With the legs parallel, flex the hips keeping the legs straight and the sacrum and low back on the carriage. When you have come as far as you can with the hips on the carriage, bend the knees and push the legs out to the starting position.

CUEING AND IMAGERY

- Do not roll up past the top of the scapulae.
  - Instructor monitor for safety.
  - Cue client not to roll up onto the neck.
- Press the upper arms into the carriage to stabilize the torso.
  - Imagine you are on a bed of sand, press your upper arms into the sand as you roll up.
- As you roll down, don't press the legs out until the back is anchored on the carriage.
  - Feel the waistband touch the carriage before the legs start to push out.
  - The abdominal scoop leads the roll down not the legs.
- Roll symmetrically down the back.
  - Imagine you are wearing a striped shirt, place each stripe down on the carriage in sequence.
  - Imagine your spine is a string of beads, place each bead down individually.
  - Instructor monitor and cue as needed.

PURPOSE

- Strengthen abdominals.
- Strengthen the hamstrings and gluteus maximus.
- Increase flexibility of the spine and hamstrings.
- Improve spinal alignment.
- Develop balance in the spinal musculature.

PRECAUTIONS

Avoid with osteoporosis, low back injuries, neck injuries, pregnancy, high blood pressure, eye problems and overweight clients.

To modify, do the exercise without the roll up.

STOMACH MASSAGE

INTERMEDIATE • 6 REPS

Springs: RBB to RRR **Footbar:** Low **Carriage:** Sit on pad or sticky mat

Prerequisite: Adequate hamstring flexibility, ability to tolerate hip and lumbar flexion.

STARTING POSITION

Sit just behind the sit bones as close to the front edge of the carriage as your flexibility will allow. Place the feet on the footbar in V feet position with the balls of the feet on the bar, the heels lifted and together and the legs turned out. Place the hands in the appropriate position for the variation being performed. Use a sticky pad under the hips to keep from sliding.

MOVEMENT SEQUENCE

Exhale: Engage the abdominals and straighten the legs to press the carriage back.

Inhale: Lower the heels under the bar, rise up on to the balls of the feet and return to the starting position.

ARM AND TORSO VARIATIONS

Flat back (Level 2)

Use heavier weight for this variation.

Reach the arms up and circle them around to place the hands behind the body on the shoulder rests with the chest up and the head in line with the torso. Perform the exercise maintaining the position of the torso. Clients with wide shoulders can place the hands on the corners of the carriage if the shoulder rests are too narrow.

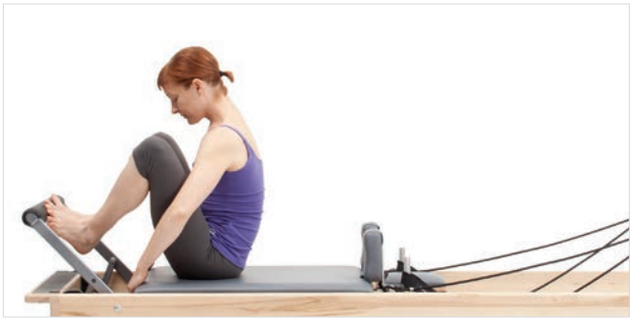
1. Starting position. Sit close to the end of the carriage with the feet on footbar in V position, hands on shoulder rests and torso straight.

2. Press the carriage back, drop the heels under the bar and lift the heels up while maintaining a flat back.

Round back (Level 2)

Use heavier weight for this variation.

Reach the arms up to the ceiling and circle them around and forward to hold the front edge of the carriage. Lift the abdominals up and round the back keeping the shoulders down. Perform the exercise maintaining the position of the torso.



1. Starting position. Sit close to the end of the bed with the feet on footbar in V position, hands on front of carriage and back rounded.

2. Press the carriage back, drop the heels under the bar and lift the heels up while maintaining a round back.

MODIFICATION

Back support

To provide back support for a beginner or provide back support so a pregnant client can do footwork without lying supine:

- Place the sitting box on its long side between the client and the shoulder rests. Have the client sit with their back against the box.
- Place the Pilates Arc over the shoulder rests with the high slope facing the footbar. The client's sacrum will be against the front edge of the Arc.
- Place a 10" to 15" ball in front of the shoulder rests to support the lower back.

1. Back support modification.

CHALLENGES

Reach (Level 3)

Use lighter weight for this variation.

Reach the arms forward, out to the side in 2nd position or up to the ceiling in 5th position. Perform the exercise maintaining the position of the torso.

1. Reach the arms overhead and maintain torso and arm position as the legs move.

Twist (Level 3)

Use lighter weight for this variation.

With the arms forward, straighten the legs as the torso rotates to one side. Bend the knees as the torso returns. Repeat to the opposite side.

1. Simultaneously straighten the legs, open the arms and rotate the torso.

Single leg (Level 4)

Use lighter weight for this variation.

Place one foot on the footbar and reach the opposite leg under the footbar. Straighten and bend the standing leg. Keep sit bones evenly weighted on the carriage.

1. Press the carriage out with one leg while maintaining torso and arm placement.

CUEING AND IMAGERY

- Stay seated just behind the ischial tuberosities (sit bones).
- Keep lifting up and out of the hips.
  - Maintain a slight flexion of the spine by engaging the abdominals to create as much length in the spine as possible.
  - Imagine a partner is holding your hips and lifting them off the legs as they straighten and bend.
- Maintain a slight amount of lumbar flexion.
  - Instructor use fingers on the lumbar spinous processes to cue a slight curve.
- Keep the head in line with the spine.
  - Cue the eye focus to adjust the alignment of the head.

PURPOSE

- Strengthen the abdominals and the torso.
- Strengthen the legs including the quadriceps, hamstrings, adductors and calves.
- Better flexibility in lumbar spine, hamstrings and calves.
- Improve leg alignment.
- Teach scapular stabilization.

PRECAUTIONS

Low back and sacroiliac joint issues: Avoid if lumbar flexion increases symptoms.

Knee issues: Sit farther away from the footbar to decrease knee flexion or avoid if symptoms increase.

Tight hamstrings, weak torsos, pregnancy: Support the back with any of the modifications listed above.

Avoid with osteoporosis.

LONG BOX BACK STROKE

INTERMEDIATE • 6 REPS

Springs: R to RB	**Box:** Long box	**Straps:** Regular
Prerequisite: Coordination	**Footbar:** None	

STARTING POSITION

Lie supine on the long box with the head toward the straps and the legs in chair position. The head is off the box and lifted up with the chin slightly tucked. Hold the straps with the palms facing the thighs and thumbs hovering above the mid chest. The elbows are bent and out to the side of the body.

MOVEMENT SEQUENCE

Inhale: Reach the arms and legs up toward the ceiling.

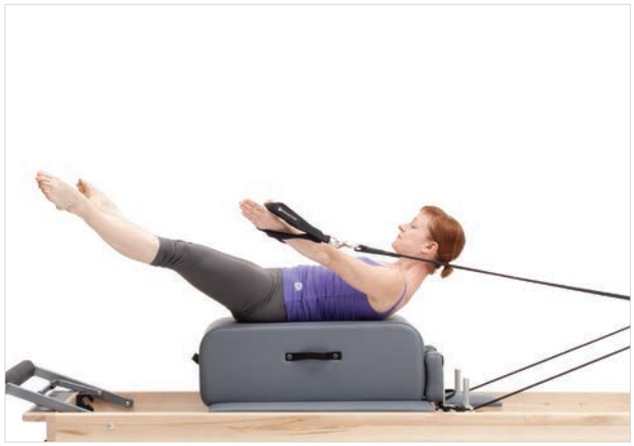
Exhale: Circle the arms and legs out to the side and then down and around into the 100's position.

Inhale: Bend the knees back into the chair position.

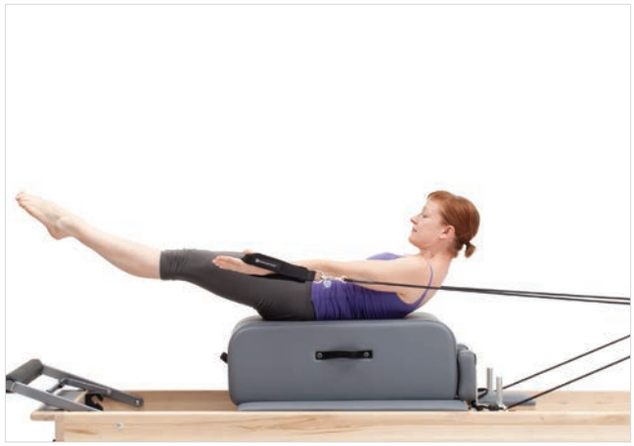
Exhale: Return the arms to the starting position.

1. Starting position. Lie supine on box with the knees over the hips, the head lifted and the hands at mid chest, palms toward thighs.

2. Reach the arms and legs up to the ceiling.



3. Open and circle the arms and legs.



4. Continue to circle the arms to the hips and bring the legs together.

CUEING AND IMAGERY

- Teach the exercise on the mat first.
- Engage the abdominals before beginning the exercise.
  - Draw the navel in toward the spine first then lift the torso and lower the legs.
- Breath into the sides and back of the ribs while maintaining a scooped abdomen.
  - Inhale into the ribs, exhale and hollow the abdominals more deeply.
- Lower the legs only as far as the back can stay stable.
  - Instructor monitor the position as the student lowers the legs.
  - Use a pad under the back to support the neutral position and keep the back on the pad.
- Keep the chest open and the shoulders away from the ears.
  - Feel the tips of the shoulder blades on the carriage.

PURPOSE

- Strengthen the abdominals, hip flexors, latissimus dorsi and adductors.
- Increase thoracic flexibility.
- Teach pelvic stability.
- Increase coordination.
- Learn to connect the arms to the core.

PRECAUTIONS

Low back, hip and sacroiliac joint problems: Keep the knees bent at 90 degrees.

Neck and shoulder injuries: Avoid with active cervical and lumbar disc injuries and sciatica.

Pregnancy: Avoid after 16 weeks.

Avoid with osteoporosis.

LONG BOX BREAST STROKE

INTERMEDIATE • 3 REPS

Springs: R to RR **Box:** Long box **Footbar:** None

Prerequisite: Comfortable prone, Reformer Pulling Straps **Straps:** Regular

STARTING POSITION

To get into the position, hold one strap in each hand, place the closest hand and leg on the box, lower the torso and lift the other leg onto the box. Lie prone on the box with the chest over the front edge and the knees off the back end. Straighten the arms so the hands are level with the hips. Use a sticky pad to keep from sliding off the box.

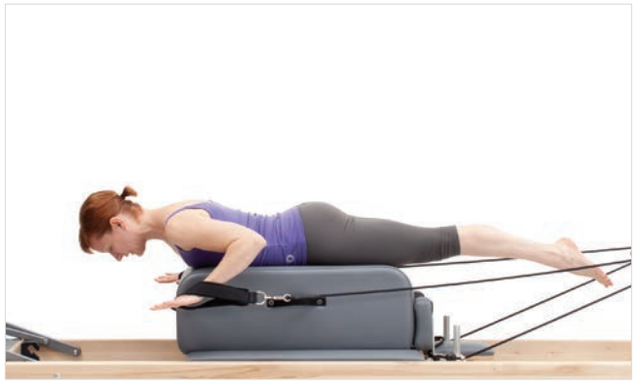
Instructor note: Press the client's feet down as they rise into extension to increase the back extension.

MOVEMENT SEQUENCE

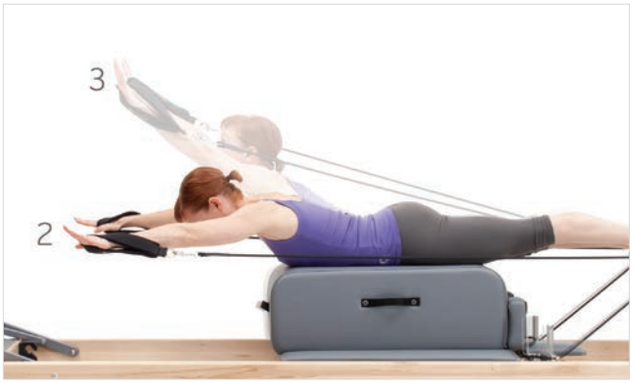
Exhale: Bend the elbows and bring the straps to the shoulders then press them overhead.

Inhale: Circle the arms forward and up toward the ceiling while lifting the torso off the box into back extension.

Lower the torso back on to the box to return to the starting position.



1. Bend the elbows to bring the straps to the shoulders.



2. Press the straps overhead. Reach the arms forward and up to lift the torso into extension.

MODIFICATIONS

Arms only (Level 2)

Bend the elbows and press the straps overhead as the arms straighten without lifting the torso up. Bend the elbows and return to the starting position.

1. Bend the elbows and press the straps overhead. Bend the elbows and return to the starting position keeping the torso steady.

Baby Breast Stroke (Level 2)

Bend the elbows and press the straps overhead. Open the arms out to the sides and circle down to the hips to return to the starting position without rising into extension.

CUEING AND IMAGERY

- Engage the abdominals to begin.
  - Lift the abdominals off the box.
- Slide the shoulder blades down to extend the back.
  - Imagine the shoulder blades sliding down the back into your back pockets.
- Keep the shoulder blades down as the arms reach overhead.
  - Don't wear your shoulders as earrings.
- Engage the gluteals and hamstrings to decompress the lower back.
  - Press the hips into the box.
- Keep the legs together.
  - Imagine you are holding a $100 bill between your knees, don't drop it!
  - **Instructor cue:** Place a ball between the thighs just above the knees or at the ankles.

PURPOSE

- Strengthen spinal extension.
- Strengthen gluteus maximus and hamstrings.
- Strengthen deltoid, rotator cuff and shoulder girdle.
- Increase back extension flexibility.
- Increase shoulder flexibility.

PRECAUTIONS

Clients with limited range of motion in back extension: Instructor holds client's feet as the client lifts up.

Men: If this is uncomfortable, try a pad under the pelvis or under each of the hip bones.

Pregnancy: Avoid after 12 weeks.

Avoid with active shoulder injuries and back problems that do not tolerate extension.

LONG BOX SWIMMING

INTERMEDIATE • 20 REPS

Springs: All | **Box:** Long box | **Footbar:** No bar

Prerequisite: Mat Swimming

STARTING POSITION

Lie prone on the long box facing in either direction with the abdominals supported, the legs straight and together and the arms reaching overhead at a diagonal.

MOVEMENT SEQUENCE

As on the Mat, lift one arm and the opposite leg out and up. Alternate sides while maintaining a balanced effort through all four limbs. Begin slowly and increase the tempo to increase the challenge. Breathe in for several kicks then out for several kicks depending on tempo.

CUEING AND IMAGERY

- Engage the abdominals to support the back.
  - Lift the abdominals off the box to begin.
  - Imagine there is lava flowing under your belly, keep it up!
- Reach out through the limbs rather than up toward the ceiling.
  - Imagine your limbs are reaching to the walls of the room.
- Keep the rhythm even through all four limbs.
  - Don't rock the boat.
- Keep the hip bones on the mat and the pelvis steady.
  - Imagine you are holding a glass of water on your sacrum, don't spill it!

1. Starting position. Lie face down on box facing the footbar with arms overhead and legs extended and together.

2. Lift one arm and the opposite leg.

3. Switch the arms and legs.

PURPOSE

- Strengthen spinal extensors.
- Strengthen gluteus maximus and hamstrings.
- Increase back extension flexibility.
- Increase pelvic stability.

PRECAUTIONS

Shoulder injuries: Client must tolerate shoulder extension otherwise avoid.

Back injuries: Client must tolerate back extension.

Pregnancy: Avoid after 12 weeks.

Men: If this is uncomfortable, try a pad under the pelvis or under each of the hip bones.

SHORT BOX OBLIQUE ABDOMINALS

INTERMEDIATE TO ADVANCED • 3–6 REPS

Springs: All **Box:** Short box **Footbar:** None **Other:** Pole

Straps: Ankle strap **Prerequisite:** Reformer Roll Downs, Trapeze Table Roll Downs

STARTING POSITION

Sit on the short box facing the footbar with the feet under the ankle strap. Make sure there is at least 6 inches between the back of the hips and the back edge of the box. Hold a 3 foot pole or weighted bar level with the bottom of the sternum with the elbows straight. Bend the knees and place the feet on the standing platform to facilitate torso flexion for clients with tight low backs or hamstrings. Straighten the legs to increase the flexibility of the hip flexors for clients with looser backs and hamstrings.

Twist (Level 1)

MOVEMENT SEQUENCE

Exhale: Engage the abdominals, lightly engage the gluteals and roll down maintaining a slight flexion of the lumbar spine.

Inhale: Rotate the torso to one side, keeping both hips anchored on the box and the center of the bar in line with the center of the chest.

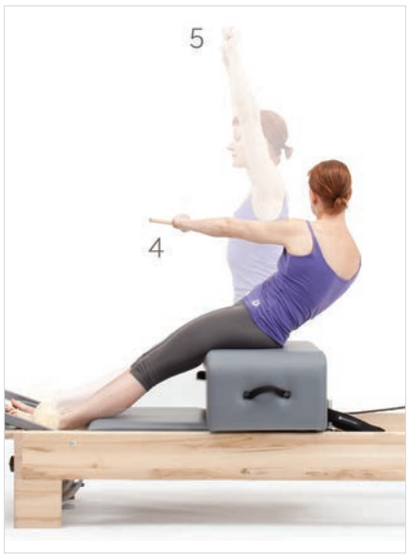
Exhale: Return to center.

Inhale: Rotate to the other side.

Exhale: Return to the center and roll back up.

1. Starting position. Sit tall with the arms straight in front of the chest. Roll down.

2. Rotate the torso to the left.



3. Rotate the torso to the right, return to center and roll up to the starting position.

Spear a Fish (Level 2)

MOVEMENT SEQUENCE

Inhale: Engage the abdominals and lift the bar overhead.

Exhale: Rotate the torso to one side, round the back and roll back keeping the torso in rotation. Keep both sit bones anchored.

Inhale: Lift the outside sit bone to stack the hips and rotate the torso to the side in a lengthened position.

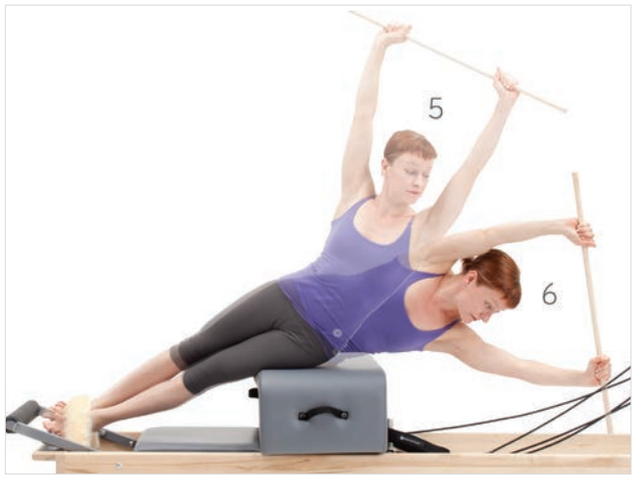
Exhale: Laterally flex the torso with the arms overhead and into the well.

Inhale: Bring the torso back up keeping the rotation of the spine until you are centered on the sit bones then return the torso to the center.

Repeat to the other side.

1. Starting position. Sit tall with the bar overhead.

2. Rotate the torso left and roll back with sit bones anchored.



3. Roll up and over onto left hip and reach torso over box toward the well.

4. Lift torso back with hips stacked. Anchor right sit bone and rotate back to starting position.

Around the World (Level 3)

MOVEMENT SEQUENCE

Exhale: Engage the abdominals, lightly engage the gluteals and roll down maintaining a slight flexion of the lumbar spine.

Inhale: Rotate the torso to the left keeping the pole parallel to the ground and no higher than chest level.

Exhale: Bring the bar up and over the head as the torso moves through the center and rotates to the right. Bring the bar back to the level of the chest.

Inhale: Bring the torso back to the center.

Exhale: Roll up to the starting position.

Repeat starting to the right.

1. Starting position. Seated tall with arms in front of chest. Roll down.

2. Rotate to one side and lift the arms up overhead.

3. Roll through the center and to the other side with the arms overhead. Bring the bar back to the center of the chest.

4. Bring the torso back to the center and roll back to the starting position.

CUEING AND IMAGERY

- Engage the abdominals to begin.
  - Suck in the low abdominals as if you were zipping on a pair of tight pants.
- Roll back only as far as the back stays slightly rounded.
  - Instructor monitor by feeling the lumbar spinous processes.
- Keep the legs together.
  - Hold a towel or a ball between the legs.
- Keep the shoulders away from the ears.
  - Hold the bar level with the chest not the nose.
  - Slide the shoulders down into the back pockets.
- Rotate the torso to move the arms.
  - Keep the center of the chest in line with the center of the bar.

PURPOSE

- Strengthen the oblique abdominals for torso rotation.
- Teach torso rotation.
- Increase back flexibility.

PRECAUTIONS

Low back and sacroiliac joint issues: Avoid if lumbar flexion or rotation increases symptoms. Bend the knees to facilitate flexion. Limit the range of motion in the roll back if flexion increases symptoms. Keep the low back from going into extension.

Neck injuries: Limit the range of the roll back to keep the neck symptom free.

Shoulder injuries: Cross the arms across the chest rather than holding the bar or limit the range of motion in the shoulders and use a light bar.

Pregnancy: Caution after 16 weeks.

Avoid with osteoporosis.

SHORT BOX ADVANCED ABDOMINALS

ADVANCED • 3–4 REPS

Springs: All	**Box:** Short box	**Footbar:** None
Straps: Ankle Strap	**Other:** Pole	**Prerequisites:** Reformer Roll Downs, Trapeze Table Roll Downs

Fire Baton

STARTING POSITION

Sit on the short box facing the footbar with the feet under the ankle strap. Make sure there is at least 4 inches between the back of the hips and the back edge of the box. Hold a 3 foot pole or weighted bar level with the chest with the elbows straight.

STARTING POSITION VARIATIONS

Bend the knees and place the feet on the standing platform to facilitate torso flexion for clients with tight low backs or hamstrings. Straighten the legs to increase the flexibility of the hip flexors for clients with looser backs and hamstrings. For taller clients, the box can be placed over the shoulder rests or the carriage can be adjusted to be farther from the footbar.

MOVEMENT SEQUENCE

Inhale: Reach the arms up to the ceiling holding the bar.

Exhale: Lean forward with a flat back over the legs as far as the hamstrings will allow. Flex the spine and continue to roll forward reaching the bar towards the feet.

Inhale: Scoop the abdominals in deeply and tuck the tail under. The bar will slide up the legs.

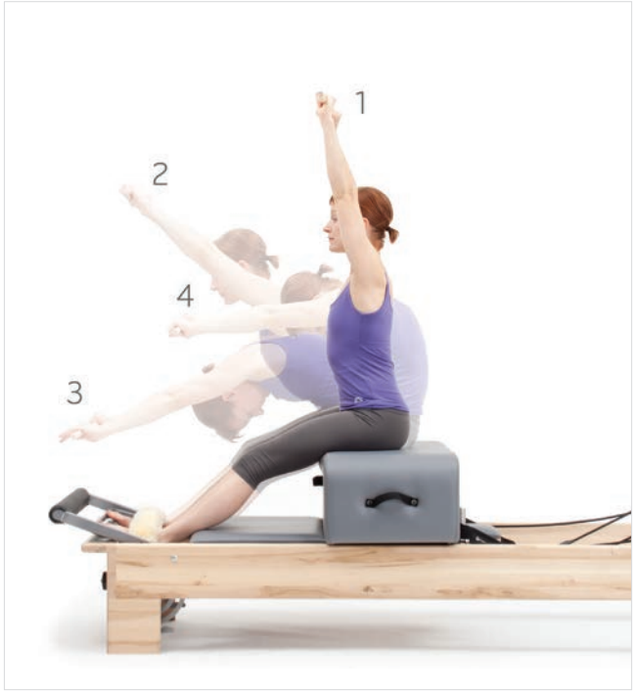
Exhale: Reach forward into a flat back and come back up to the starting position.

Inhale: To prepare.

Exhale: Engage the abdominals and roll back.

Inhale: Extend the back into the well reaching the bar over the head.

Exhale: Return the bar to hip level, tuck the chin into the chest and roll back up until the bar is overhead.



1. Lift the bar to the ceiling, flex at the hips and lean forward with a flat back. Round the back scooping up and in.

2. Reach toward the feet and roll up to seated with arms overhead. Roll down and into the well with the bar overhead.

MODIFICATION

Preparation (Arch and Curl)

To prepare for this exercise you must first develop the ability to move the pelvis independently of the femurs. To do that, start from position 2 above, lean forward shifting the weight forward of the sit bones and flex the hips maintaining a flat back as long as possible. When you have gone as far as the hamstrings will allow, round the back and reach the bar toward the feet. Pull the abdominals in, roll the pelvis back until you are behind the sit bones and reach the arms up to the ceiling to begin again.

No back extension

For an easier version, Fire Baton can be done without extending backwards into the well. (Stop at photo 6)

3. Bring the bar back to the hips, tuck the chin into the chest and roll up.

CUEING AND IMAGERY

- Engage the abdominals and draw the sit bones together to begin.
- Fold at the hip joint not at the low back as you move forward.
  - Bend your knees if the hamstrings are too tight to allow the hips to flex.
  - Roll forward of the sit bones in the forward phase and roll back of the sit bones in the roll down phase.
- Create a smooth flow between each phase of the exercise.
  - Connect the dots.
  - Imagine you are a wave rolling forward and rolling backward.
- Keep the legs together and aligned.
  - Imagine you are holding a $100 dollar bill over a street grate. Don't lose it!
  - Place a ball above the knees or at the ankles to keep the inner thighs engaged.
- Keep the shoulders away from the ears.
  - Slide the shoulder blades into your back pockets.

PURPOSE

- Teach balanced strength between the abdominals and the back extensors.
- Strengthen abdominals.
- Strengthen the back muscles.
- Stretch the low back, hamstrings and abdominals.

PRECAUTIONS

Low back and sacroiliac joint issues: Avoid if lumbar flexion increases symptoms. Bend the knees to facilitate flexion. Limit the range of motion in the roll back if extension increases symptoms.

Neck injuries: Limit the range of the roll back and avoid going into full extension.

Shoulder injuries: Cross the arms across the chest rather than holding the bar or limit the range of motion in the shoulders and use a light bar.

Pregnancy: Avoid after 16 weeks.

Avoid with osteoporosis.

SHORT BOX MERMAID

INTERMEDIATE • 3 REPS

Springs: All | **Box**: Short Box | **Footbar:** None

Strap: Ankle strap | **Prerequisite:** Reformer Mermaid, ability to laterally flex comfortably

STARTING POSITION

Sit on the short box with the torso facing sideways. Bend the front knee and rest it on the box. Straighten the other leg and hook the foot under the ankle strap. Open the arms out to the sides.

MOVEMENT SEQUENCE

Inhale: Prepare and sit tall.

Exhale: Lean away from the ankle strap. Continue to exhale as you lean over into the well, laterally flexing the spine and stretching the top rib cage. Bring the bottom arm in front of the torso as you stretch over.

Inhale: Lift the torso back to the starting position with the arms wide.

Exhale: Stretch the torso toward the footbar with the top arm reaching in an arc overhead and the bottom arm reaching forward.

Inhale: Return to the starting position.

MODIFICATION

Hand support

Decrease the stretch by resting the bottom hand on the headrest or on the floor as you stretch to the side.

1. Lean over into a Side Stretch position, hooking the foot under the strap for support.

2. Continue to lean over reaching the top arm overhead. Lift the torso up and stretch to the other side.

CHALLENGE

Rotation variation

From the Side Stretch position, lift the torso into a straight line with the arms overhead, rotate the torso toward the floor keeping both hip bones facing front and reach the arms to the sides. Rotate back to the front with the torso in one long line, arms overhead. Rotate the torso to the ceiling opening the arms to the sides, rotate back to the front and return to sitting before stretching to the other side

1. From the Side Stretch position, reach the arms overhead.

2. Rotate the torso toward the well with the arms out to the sides. Return to the Side Stretch position with the arms overhead.

3. Rotate the torso toward the ceiling with the arms out to the sides. Return to the starting position before stretching to the other side.

Side sit ups

From the side stretch position, lift the torso up toward the ceiling 3 to 5 times before coming back up to the sitting position. The arms can be crossed across the chest, reaching out to the sides or reaching overhead to increase the challenge.

CUEING AND IMAGERY

- Engage the abdominals to begin.
  - Scoop the abdominals as the arms reach out to the sides.
- Keep the head, torso and pelvis aligned.
  - Imagine your torso is sandwiched between plates of glass. Stretch over staying within the glass.
- Keep the shoulders away from the ears.
  - Don't wear your shoulders like earrings.
- Rotate the torso to move the arms.

PURPOSE

- Strengthen the abdominals including internal and external obliques.
- Strengthen the lateral torso including latissimus dorsi, quadratus lumborum, psoas, gluteus medius and minimus.
- Increase lateral torso flexibility.
- Teach spinal rotation.

PRECAUTIONS

Low back and sacroiliac joint issues: Avoid if lateral flexion or rotation increases symptoms. Limit the range of motion in lateral flexion to begin.

Neck injuries: Support the neck with the bottom arm.

Pregnancy: Caution after 12 weeks.

Avoid with osteoporosis.

SHORT BOX CLIMB A TREE

ADVANCED • 2–3 REPS EACH SIDE

Springs: All

Box: Short

Footbar: None

Strap: Ankle strap

Prerequisite: Ability to extend lumbar, adequate hamstring flexibility, Reformer Advanced Abdominals

STARTING POSITION

Sit on the short box with at least 4 inches between the back of your hips and the edge of the box. Place one foot under the ankle strap with the leg straight, bend the free knee and pull it into the chest with the hands behind the thigh and the elbows wide. Keep both hips facing forward, both sit bones on the box and the low back as straight as possible.

MOVEMENT SEQUENCE

Exhale: Engage the abdominals and roll back as you straighten the bent leg and walk the hands down the leg until the low back is on the box.

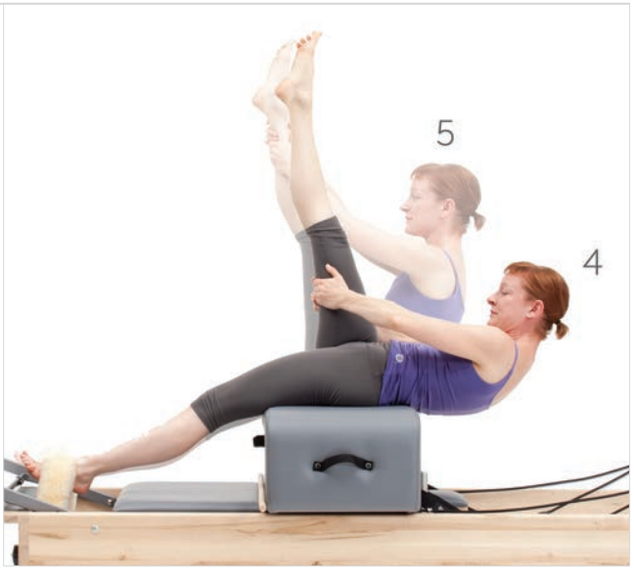
Inhale: Maintain the abdominal engagement as the spine extends into the well.

Exhale: Tuck the chin into the chest and walk the hands up the leg. Curl the torso back up to the starting position with the free leg straight.

Roll down and up 3 times with the first leg before switching sides. Keep the pelvis as level as possible.

Finish by holding the leg up, taking the hands out to the sides and holding the position without letting the low back round or the torso shrink.

1. Roll down as the leg straightens. Extend back into the well reaching the arms overhead.



2. Reach the hands to the thigh and tuck the chin in to roll the torso up while walking the hands up the leg.

MODIFICATION

No roll back variation

Walk the hands down the leg but don't roll back into the well. Walk the hands back up to finish.

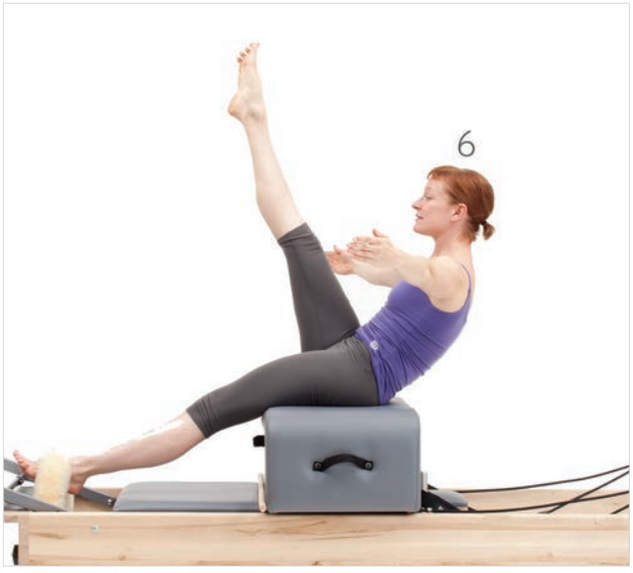
Long box variation

Sit on the long box rather than the short box and don't roll back into the well. This provides more support the fo the lower back during the roll down.

CHALLENGE

Arm extension

From the back extension position, take the hands off the leg and extend them into the well. Bring the chin into the chest and reach the arms to the leg to walk back up.



3. Finish by taking the hands off the leg.

CUEING AND IMAGERY

- Keep the hips level and anchored.
  - Glue both sit bones to the box.
  - Imagine you have headlights on your hip bones, keep the car going straight ahead.
- Keep the abdominals engaged.
  - Keep the scoop, especially as you go back into the extension.
- Tuck the chin in first before rolling up.
  - Imagine you are holding an orange between your chin and your chest first, then roll up.
- Sit on the box with 4 inches behind the hips.
- Keep the shoulders down and the arms wide.
  - When the hands are behind the leg, pull down on the leg to anchor the shoulders.

PURPOSE

- Strengthen the abdominals.
- Strengthen the back extensors.
- Increase hamstring flexibility.
- Teach pelvic stability.

PRECAUTIONS

Back injuries: Client must tolerate back extension or limit exercise to first part of roll back only.

Limited hamstring flexibility: Keep the free knee bent if necessary.

Pregnancy: Avoid after 16 weeks.

Avoid with osteoporosis.

KNEE STRETCH KNEES OFF – JACKRABBIT

ADVANCED • 4–8 REPS

Springs: RB to RR | **Footbar**: High | **Prerequisite:** Reformer Knee Stretch

STARTING POSITION

Kneel on the Reformer facing the footbar with the feet against the shoulder rests and the hands on the footbar. Maintain a long,neutral back with the head in line with the spine. Lift the knees off the carriage.

MOVEMENT SEQUENCE

Exhale: Engage the abdominals and press the carriage away while maintaining a flat back. Keep the knees as close to the carriage as possible to increase the challenge. Keep the shoulders and upper body in the same position throughout the exercise.

Inhale: Flex the hips to return the carriage to the starting position. Don't bang the carriage into the stoppers.

CHALLENGES

Single leg

Lift one leg off the shoulder rest and reach it straight back in line with the hip. Press the carriage out with one leg while maintaining the stability of the pelvis.

Single arm/single leg

Lift one arm off the footbar and reach it out to the side. Lift the opposite leg off the shoulder rest and reach it straight back in line with the hip. Press the carriage out maintaining the stability of the torso.

1. Starting position. Feet against the shoulder rest and the hands on the footbar. Lift the knees off the carriage, maintaining a long, flat back.

CUEING AND IMAGERY

- Engage the abdominals before moving the legs.
- Maintain the position of the shoulders and upper body during the exercise.
  - Widen the scapulae away from the spine by pressing into the bar.
  - Imagine the shoulder blades are slippery bars of soap and slide them down the back.
  - Keep the arms straight.
- Keep the head in line with the spine.
  - Use the focus of the eyes to direct the head.
- Maintain the position of the back.
  - Instructor feedback is essential here. Tell the client when they have gone as far as they can go.
- Keep the hips, knees and ankles in line throughout the exercise.
  - Press through the ball of the foot on the shoulder rest.
  - Use a small ball between the lower thighs to keep the alignment and decrease pressure on the knees.
- Keep the knees close to the carriage.

PURPOSE

- Strengthen quadriceps, hamstrings and gluteals.
- Strengthen abdominals.
- Strengthen the shoulder including the serratus anterior, lower trapezius, pectoralis major, rotator cuff, triceps and anterior deltoid.
- Increase pelvic stability.
- Increase scapular stability.

PRECAUTIONS

Shoulder, arm and wrist injuries: Grip the footbar with the hands and roll the wrists forward to decrease the flexion of the wrists. Decrease the weight or avoid if symptoms increase.

Low back injuries: Begin with a small range of motion in hip flexion and extension or avoid if symptoms increase.

Knee injuries: Pad the knees, place a small ball between the lower thighs or avoid.

Pregnancy: Caution after 16 weeks.

2. Press the carriage back.

ARABESQUE & SINGLE LEG ELEPHANT

INTERMEDIATE • 6–8 REPS

Springs: RB to RR **Footbar:** High **Prerequisite:** Elephant

Arabesque

STARTING POSITION

Place one foot against the shoulder rest with the ball of the foot on the carriage and the heel on the shoulder rest (as if in high heels). Extend the free leg toward the ceiling behind you. The extended leg is in external rotation. The carriage is in contact with the bumpers.

MOVEMENT SEQUENCE

Inhale: Press the carriage back and lower the free leg until the legs come together.

Exhale: Engage the abdominals and pull the carriage in as the free leg reaches back up toward the ceiling.

1. Arabesque. One foot at shoulder rest, the other leg lifted in external rotation. Lower the free leg while pushing out the carriage.

Single Leg Elephant

STARTING POSITION

Place one foot against the shoulder rest with the ball of the foot on the carriage and the heel on the shoulder rest as if in high heels. Extend the free leg behind you keeping it parallel to the ground. The carriage is in contact with the bumpers.

MOVEMENT SEQUENCE

Exhale: Bend the knee of the free leg and bring it in toward the chest as you press the carriage back. Keep the standing leg straight.

Inhale: Draw the carriage in as you reach the free leg back out to the starting position.

1. Single Leg Elephant. Free leg lifted to hip height and parallel to the floor. Press the carriage out and bend the knee to the chest. NOTE: Photo is incorrect. In position 1 the free leg should be parallel to the floor with the hip in parallel, not in external rotation.

MODIFICATIONS

Forearm support

Place the sitting box across the frame of the Reformer at the footbar end. Support it with the footbar or place it between the carriage and the footbar so it is secure and will not tip or slide. Place the forearms or the palms on the box.

CUEING AND IMAGERY

- Engage the abdominals before moving the legs.
- Reach the free leg out long behind you.
  - Imagine your leg reaches all the way to the edge of the room.
- Keep the head in line with the spine.
  - Use the focus of the eyes to keep the head in line.
- Maintain the position of the shoulders and upper body during the exercise.
  - Keep the elbows straight, slide the shoulders down the back and widen the shoulder blades.

PURPOSE

- Strengthen the abdominals.
- Strengthen the hip extensors including the hamstrings, gluteus maximus and external rotators.
- Strengthen the scapular stabilizers.
- Increase hamstring and calf flexibility.

PRECAUTIONS

Shoulder, arm and wrist injuries: Use sitting box modifications, grip the footbar to take the pressure off the wrists or avoid if the arms won't tolerate being flexed above shoulder height or if symptoms increase.

Tight hamstrings: Increase the height of the footbar or work with the standing leg slightly bent.

Low back injuries: Limit the range of motion of the leg.

Knee injuries: Avoid hyperextending the knees.

Pregnancy: Caution after 16 weeks.

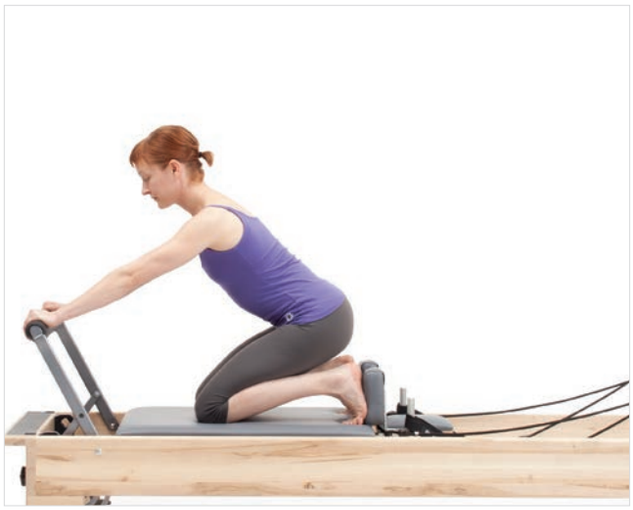
DOWN STRETCH

INTERMEDIATE • 5 REPS

Springs: RB to RR **Footbar:** High or low **Prerequisite:** Reformer Knee Stretch

STARTING POSITION

Kneel on the Reformer facing the footbar with the feet against the shoulder rests and the hands on the footbar. Bring the hips back over the heels with the back flat and the head in line with the spine.



1. Starting position. Kneel on the reformer with the feet against the shoulder rests and hands on the footbar.

MOVEMENT SEQUENCE

Exhale: Press back with the legs, keeping the knees on the carriage.

Inhale: Engage the core and press the hips forward as you extend the spine to form a long curve from the knees to the head. The carriage will move forward as the back extends.

Exhale: Keep the core engaged to maintain the shape of the body as the carriage moves back.

Inhale and **Exhale:** Inhale to move the carriage in and exhale to press the carriage back 5-8 times.

Exhale: Move the carriage back and bend the knees to return to the starting position.

2. Extend the hips and press the carriage back creating a long, gently curved line between the knees and the head.

3. Maintaining the supported extension of the spine, move the shoulders to bring the carriage toward the footbar.

MODIFICATION

One at a time

Return to the starting position after each repetition rather than holding the position as you move the carriage in and out.

CUEING AND IMAGERY

- Maintain a consistent curve in the torso throughout the exercise.
  - Imagine you are a big wagon wheel rolling forward and back.
  - Press the hips forward to create the arch in the back.
- Maintain the core support throughout the exercise.
  - Draw the navel to the spine to support the low back.
- Keep the head in line with the spine.
  - Keep the eyes looking up to the ceiling to keep the back arched.
- Maintain the position of the shoulders and upper body during the exercise.
  - Widen the scapulae away from the spine by pressing into the bar.
  - Slide the shoulder blades into your back pockets.
  - Keep the arms straight.

PURPOSE

- Strengthen the back extensors.
- Strengthen the shoulder including the serratus anterior, lower trapezius, pectoralis major, rotator cuff, triceps and anterior deltoid.
- Increase scapular stability.

PRECAUTIONS

Shoulder, arm and wrist injuries: Grip the footbar with the hands and roll the wrists forward to decrease the flexion of the wrists. Decrease the weight or avoid if symptoms increase.

Low back injuries: Client must tolerate spinal extension.

Knee injuries: Pad the knees, place a small ball between the lower thighs or avoid.

Pregnancy: Caution after 16 weeks.

SEMI CIRCLE

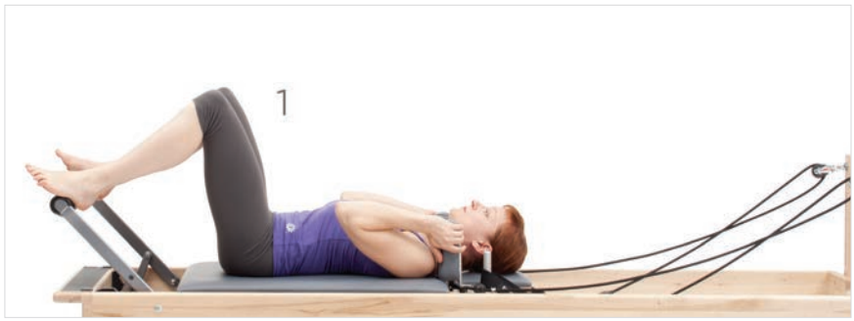
ADVANCED • 3 REPS EACH WAY

Springs: RR on the outside hooks **Footbar:** Low

Prerequisite: Mat Cat Cow, Reformer Pelvic Lift, strong arms and wrists, adequate back flexibility

STARTING POSITION

Place the heels on the low footbar in wide (2nd) position or in Pilates "V" with the knees bent and the legs turned out. Place the hands on the front of the shoulder rests with the fingers pointing toward the sides of the Reformer. Press the hips up toward the ceiling and push the carriage away by pressing the hands into the shoulder rests and walking the shoulder blades down the carriage until the arms are straight. The pelvis will be off the carriage, over the well of the Reformer.



1. Lie supine on carriage with the heels on the low footbar in wide 2nd position and hands on the shoulder rests.

MOVEMENT SEQUENCE

Exhale: Beginning with the tailbone, curl the pelvis up toward the ceiling until the weight is between the shoulder blades and the back is extended.

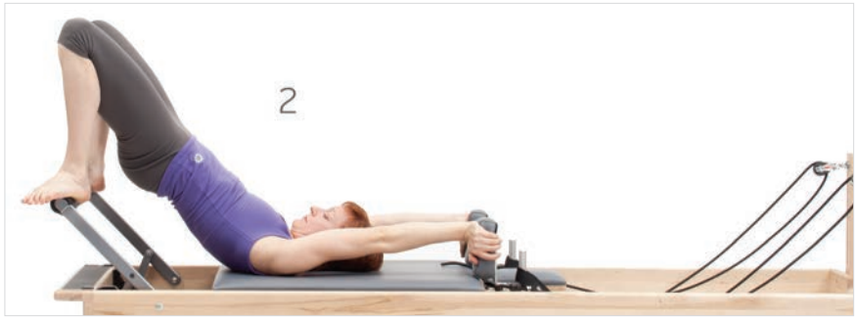
Inhale: Straighten the legs, press the hips up and push the carriage back.

Exhale: Roll the hips down into the well starting with the upper back.

Inhale: Bend the knees to return to the starting position.

Repeat 3 times in each direction.

To reverse, start with the pelvis in the well, press back with the legs, roll the hips up into a bridging position, bend the knees in and roll the pelvis back down into the well.



2. Press the hips up to the ceiling and slide the torso down towards the footbar by straightening the arms.

3. Press the legs back keeping the hips lifted. Roll the torso down into the well with the legs extended.

CUEING AND IMAGERY

- Move smoothly and continuously like a wave through the exercise.
  - Curl one vertebra at a time.
- Do not roll onto the neck.
  - Roll up only as far as the top of the shoulder blades.
- Keep the shoulders down.
  - Keep steady pressure into the shoulder rests.
  - Keep the shoulders away from the ears.
- Keep the elbows straight.

PURPOSE

- Strengthen the abdominals and spinal extensors.
- Strengthen the shoulders including the triceps and scapular stabilizers.
- Increase spinal mobility.
- Increase hip flexor flexibility.
- Teach spinal articulation and sequencing.

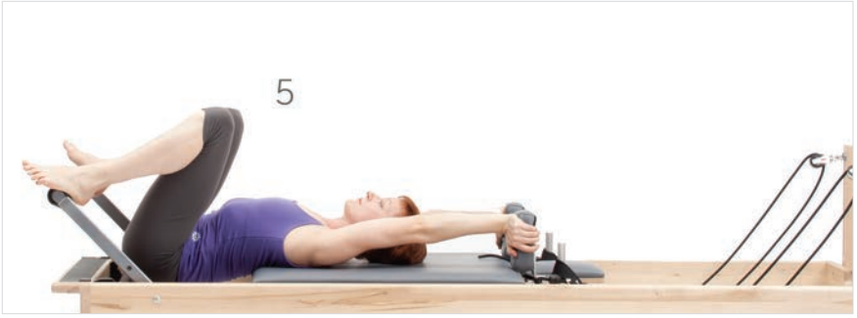
PRECAUTIONS

Back injuries: Client must be comfortable with spinal flexion and extension. If not avoid.

Pregnancy: Avoid after 16 weeks.

Avoid with neck, shoulder, arm and wrist injuries.

Avoid with osteoporosis.



4. Bend the knees to bring the carriage back towards the footbar keeping the hips in the well.

5. Roll the hips up and press the carriage out to start again.

CHEST EXPANSION & KNEELING ARM CIRCLES

INTERMEDIATE • 4–6 REPS

Springs: B to RB **Footbar:** No bar **Straps:** Short

Prerequisite: Comfortable in kneeling position with the hips off the heels

Chest Expansion

STARTING POSITION

Kneel on the carriage facing the straps with the knees against the shoulder rests. Hold the straps in the hands or hold on to the ropes in order to begin with the arms slightly in front of the hips. The palms should be facing the front of the torso.

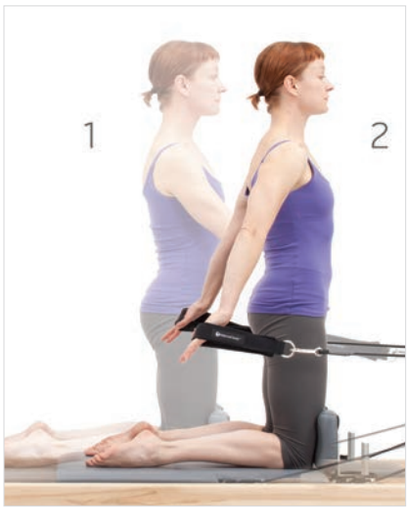
MOVEMENT SEQUENCE

Inhale: Pull the straps back just past the hips with the elbows straight. Reach the hands toward the floor to keep the shoulders down and the chest wide.

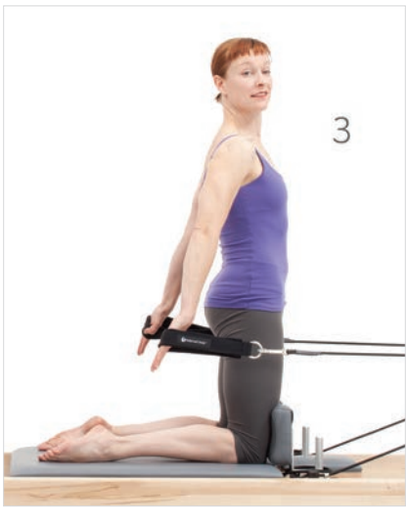
Exhale: Turn the head to the right.

Inhale: Turn the head to the left.

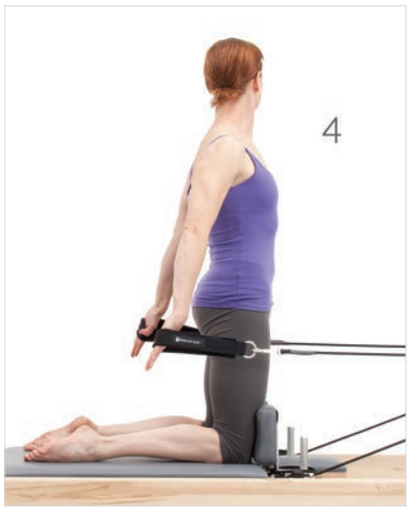
Exhale: Return the head to the center and release the arms to the starting position. Switch the direction the head rotates to each time



1. Chest Expansion starting position. Pull the straps back past the hips.



2. Look to the right.



3. Look to the left.

Kneeling Arm Circles

STARTING POSITION

Use a lighter weight for the Kneeling Arm Circles.

Kneel on the carriage facing the footbar with the feet between the shoulder rests. Hold the straps with the hands at the hips and the palms facing forward.

1. Kneeling Arm Circles starting position. Kneeling facing the footbar, straps in hands.

2. Reach the arms forward.

3. Circle the arms forward and around to the starting position.

MOVEMENT SEQUENCE

Inhale: Pull the straps forward with the elbows straight.

Exhale: Circle the arms out to the side and around to the starting position. Can be done in both directions.

MODIFICATION

Sitting version

For beginners or students with knee injuries, sit on the carriage either cross legged, kneeling with the hips on the heels or with the legs out in front of the body.

CHALLENGE

Advanced kneeling

For Chest Expansion, place one foot on the head rest with the hip and knee flexed at 90 degrees. For Kneeling Arm Circles, slide the back leg between the shoulder rests and place the front foot on the carriage. This increases the balance and stability challenge of the exerrcise.

CUEING AND IMAGERY

- Stabilize the position before moving the arms.
  - Pull the abdominals in, engage the buttocks and press the hips forward slightly before the arms move.
  - Don't break at the hips.
- Keep the chest open, the shoulders away from the ears and the eyes looking straight ahead.
  - Reach the hands down as if you are trying to touch the floor as the arms pull back.
- Keep the wrists straight.

PURPOSE

- Strengthen the posterior shoulder muscles including the posterior deltoid, teres major, latissimus dorsi and triceps.
- Strengthen the anterior shoulder muscles including the anterior deltoid, pectoralis major, rotator cuff and latissimus dorsi.
- Increase torso stabilization.
- Increase neck mobility.

PRECAUTIONS

Shoulder, arm and wrist injuries: Keep the weight light and make sure the arms don't go so far back that the shoulders roll forward. Keep the wrists straight. Avoid if symptoms increase.

Knee injuries: Pad the knees, sit on the carriage or avoid.

KNEELING SIDE ARMS

INTERMEDIATE TO ADVANCED • 4-6 REPS EACH SIDE

Springs: Y to RB **Footbar:** No bar **Straps**: Regular with handles

Prerequisite: Torso stability in kneeling, Reformer Seated Arm Work, Chest Expansion

Pull Across

STARTING POSITION

Kneel on the Reformer facing sideways with the knees slightly away from the shoulder rests. Hold the front strap with the arm closest to it. For an easier version, place the knee against the shoulder rest with the legs hip width apart. For more challenge, bring the knees away from the shoulder rest with the legs together.

MOVEMENT SEQUENCE

Exhale: Pull the strap across the body keeping the arm rounded and the hand level with the bottom of the sternum.

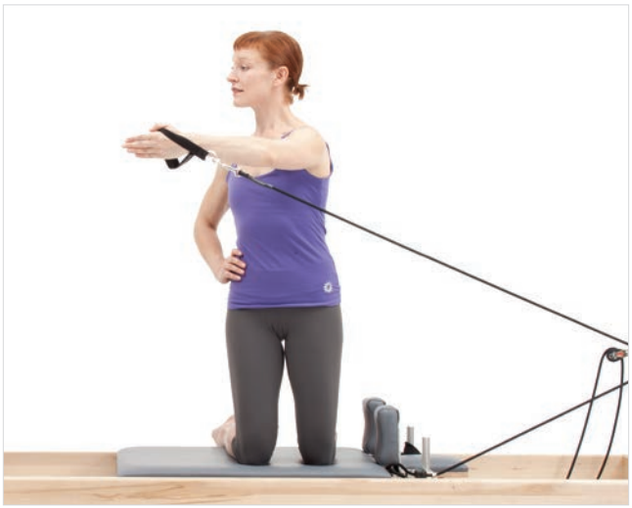
Inhale: Return the arm to the starting position. Do not rotate the torso or twist the shoulders.

1. Pull Across. Bring the strap from the side of the body to in front of the chest.

CHALLENGE

Rotations

Rotate the torso toward the footbar as you pull the strap across. Initiate the rotation from the torso only or include the hips for a movement that is applicable to rotational sports.



1. Pull Across with Rotation. Rotate the torso as the arm pulls the strap across the midline.

Overhead Press

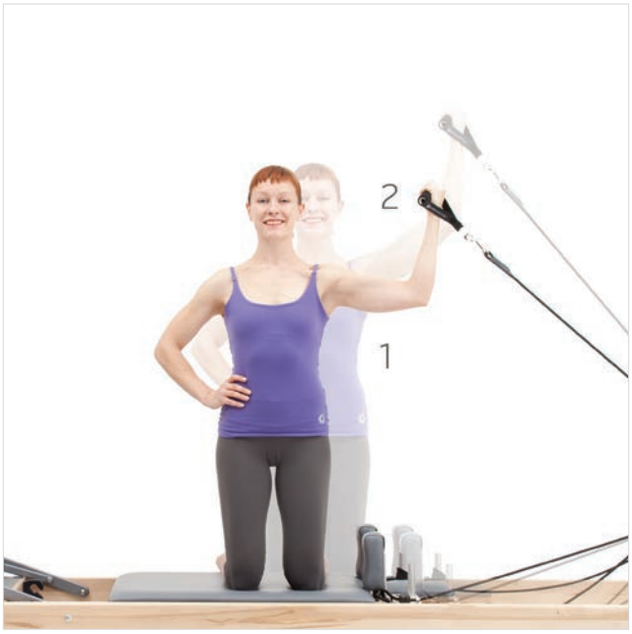
STARTING POSITION

Take hold of the strap with the hand that is closest to it. Hold the strap with the elbow bent and the hand level with the shoulder. Place the other hand on the hip with the elbow out to the side.

MOVEMENT SEQUENCE

Inhale: Engage the abdominals and press the strap straight up to the ceiling without shifting the position of the torso.

Exhale: Return to the starting position.



1. Overhead Press. Begin with the arm to the side and the elbow bent. Press the strap overhead.

CHALLENGE

Side Bend

Laterally flex the spine as you reach the arm overhead. Keep the hips and shoulders facing straight ahead.

High 5th

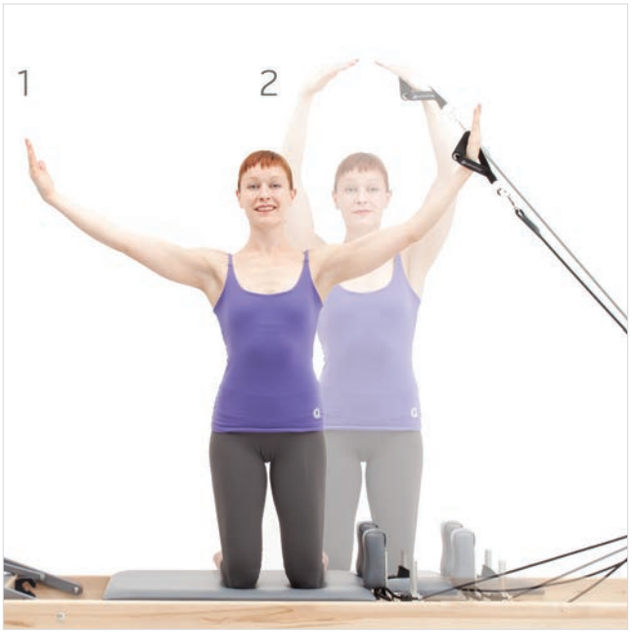
STARTING POSITION

Take hold of the strap with the hand that is closest to it. Begin with both arms out to the side in 2nd position with the elbows round.

MOVEMENT SEQUENCE

Inhale: Reach the arms overhead.

Exhale: Return to the starting position.



1. High 5th. Begin with the arms above shoulder height and the palms facing the ceiling. Bring the hands together above the head.

Draw a Sword

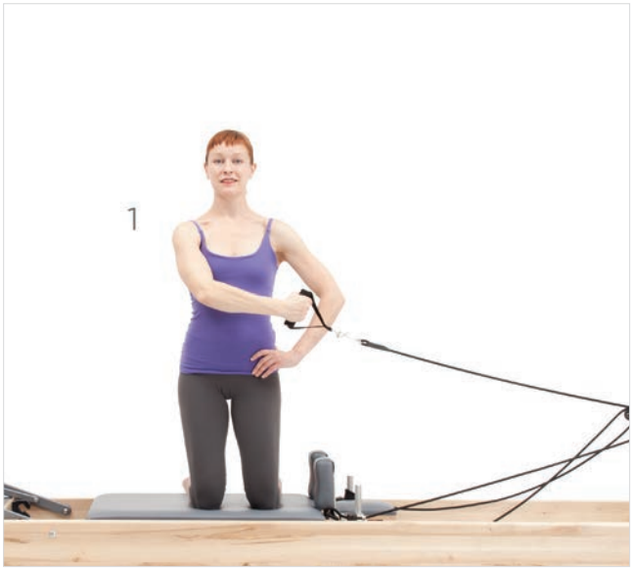
STARTING POSITION

Take hold of the strap with the hand that is farthest from it. Begin the exercise with the hand holding the strap in front of the opposite hip bone. Place the other hand on the hip with the elbow out to the side.

MOVEMENT SEQUENCE

Inhale: Pull the strap across the body and extend the arm out to the side. Imagine you are drawing a sword out of a scabbard.

Exhale: Return to the starting position by bending the elbow and reaching the hand holding the strap back to the opposite hip.



1. Draw a Sword starting position. Kneeling facing side, hold strap with the hand farthest away from the pulleys.

2. Pull the strap across the body leading with the elbow and extend the arm.

Side Bend Press

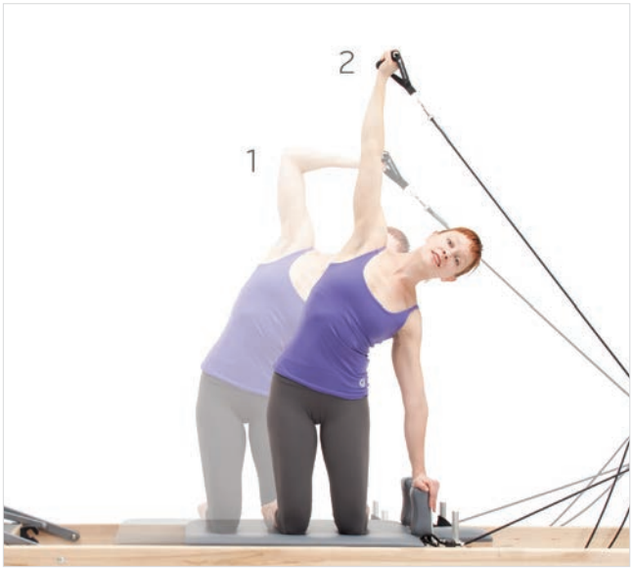
STARTING POSITION

Move the knees far enough away from the shoulder rest so the hand can rest on the shoulder rest with the spine laterally flexed but without the hips flexing. Take hold of the strap with the hand that is farthest from it. The elbow is bent and the forearm is above the head. The palm can be facing the floor or the ceiling.

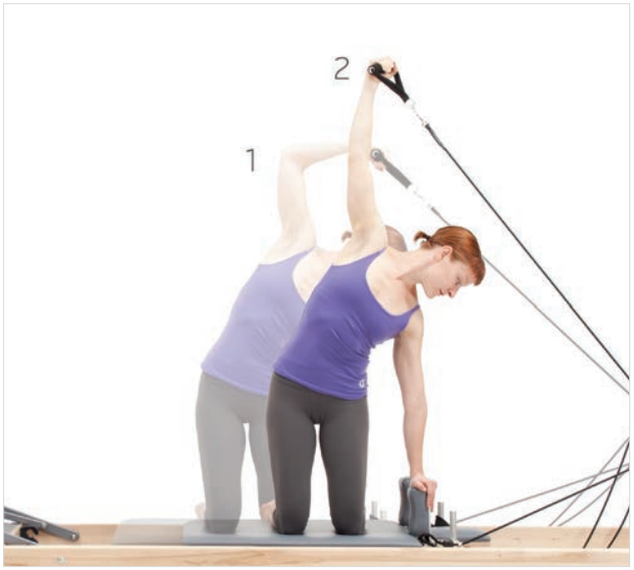
MOVEMENT SEQUENCE

Exhale: Press the strap toward the ceiling by straightening the elbow.

Inhale: Return to the starting position by bending the elbow. Keep the upper arm steady as the elbow straightens and bends.



1. Side Bend Press. Hold the strap with the palm facing up and head in line with the spine. Press the strap away.



2. Alternate starting position. Hold strap with palm facing down and head facing the shoulder rests. Press the strap away.

CUEING AND IMAGERY

- Stabilize the position of the torso before moving the arms.
  - Pull the abdominals in, engage the buttocks and press the hips forward slightly before the arms move.
  - Don't break at the hips.
- Keep the chest open, the shoulders away from the ears and the eyes looking straight ahead.
- Keep the wrists straight.

PURPOSE

- Strengthen the arm and shoulder muscles including the brachialis, biceps, triceps, pectoralis major, latissimus dorsi, rotator cuff and deltoid.
- Strengthen the scapular stabilizers including the serratus anterior, trapezius and rhomboids.
- Increase torso stabilization.
- Improve standing posture.

PRECAUTIONS

Shoulder, arm and wrist injuries: Keep the weight light, keep the wrists straight and avoid if symptoms increase.

Knee injuries: Pad the knees, sit on the carriage or avoid.

ROWING FRONT I - SITTING TALL

INTERMEDIATE • 4-5 REPS

Springs: B to RB **Footbar:** Any bar **Straps:** Regular

Prerequisite: Ability to sit up with legs straight out from hips

STARTING POSITION

Sit on the carriage facing the footbar with the back of the hips against the shoulder rests and the legs extended. Sit up on the sit bones without rounding the back. Place the straps around the thumbs and bend the elbows until the hands are just in front of the shoulders. The ropes should be between the arms and the sides of the torso.

MOVEMENT SEQUENCE

Inhale: Push the straps up on a diagonal with the straps at eye level and the thumbs pointing toward the floor.

Exhale: Lower the hands to the carriage then circle the arms up overhead.

Inhale: Circle the arms out to the sides and bring the hands back to the carriage.

Exhale: Return to the starting position.

MODIFICATIONS

Tight hamstrings

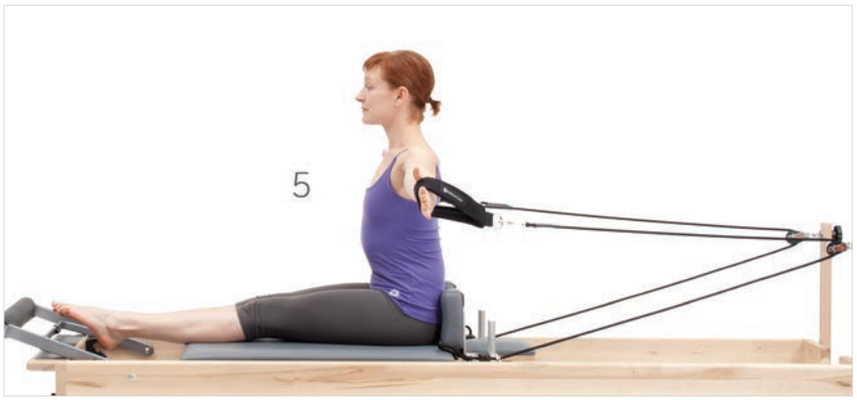
Sit cross legged on the carriage or sit on a pad or towel.

Polishing

Push the straps out level with the bottom of the sternum, circle the arms out and around to return to the starting position. Imagine you are polishing a large table.

1. Seated tall with elbows bent, palms down. Straighten the arms to chest level.

2. Rotate the thumbs toward the carriage and lower the arms. Reach the arms to the ceiling.



3. Circle the arms to the sides and return to the start position.

CUEING AND IMAGERY

- Engage the abdominals before moving the arms.
  - Zip up the abdominals then push the straps.
- Stay upright on the sit bones.
  - Stay on the top of the mountain.
- Keep the chest open, the shoulders away from the ears and the eyes looking straight ahead.
- Keep the ribs in place as the arms circle.
  - Imagine your back is resting against a tree. Keep the back of the ribs on the tree as the arms circle.
- Keep the wrists straight.

PURPOSE

- Strengthen the shoulder muscles including the pectoralis major, latissimus dorsi, rotator cuff and deltoid.
- Strengthen the scapular stabilizers including the serratus anterior, trapezius and rhomboids.
- Strengthen abdominals and hip flexors.
- Stretch hamstrings.
- Increase torso stabilization.
- Improve coordination.

PRECAUTIONS

Shoulder, arm and wrist injuries: Keep the weight light. Keep the arms below shoulder height. Avoid if symptoms increase.

Low back injuries: Keep the pelvis over the ischial tuberosities to maintain a neutral spine and pelvis throughout. Avoid if sitting is uncomfortable.

Tight hamstrings: Sit on a pad, bend the knees or sit cross legged to keep the pelvis over the ischial tuberosities rather than behind them.

ROWING FRONT II – BENDING DOWN

INTERMEDIATE • 4 REPS

Springs: B to RB **Straps**: Regular with handles

Prerequisite: Reformer Rowing Front I, ability to sit up with legs straight out from hips

STARTING POSITION

Sit on the carriage facing the footbar with the back of the hips against the shoulder rests and the legs extended. Sit up on the sit bones without rounding the back. Place the strap around the thumb and the back of the hands on the carriage.

MOVEMENT SEQUENCE

Inhale: Engage the abdominals, reach the arms forward and curve over the legs as if leaning over a ball.

Exhale: Scoop the abdominals in and stack one vertebra on top of the next to return to sitting tall with the arms reaching forward level with the chest.

Inhale: Lower the hands to the carriage and raise the arms back to chest height.

Exhale: Reach the arms over head and circle them around to return to the starting position.

MODIFICATION

Tight hamstrings

Sit cross legged on the carriage or sit on a pad or towel.

CHALLENGE

Torso reach

If the hamstrings and low back are flexible enough, from position 3, reach the torso forward flexing at the hips. Don't round the back.

CUEING AND IMAGERY

- Engage the abdominals before moving the arms.
- Stay upright on your sit bones.
- Keep the abdominals in as you bend forward as if leaning over a ball.
- Keep the chest open, the shoulders away from the ears and the eyes looking straight ahead.
- Keep the ribs in place as the arms circle.
- Keep the wrists straight.

1. Seated tall with arms at sides. Roll the spine down and reach the arms forward.

2. Stack the torso back up.

PURPOSE

- Strengthen the shoulder muscles including the pectoralis major, latissimus dorsi, rotator cuff and deltoid.
- Strengthen the scapular stabilizers including the serratus anterior, trapezius and rhomboids.
- Strengthen abdominals and hip flexors.
- Stretch hamstrings, back and latissimus dorsi.
- Increase torso stabilization.
- Improve coordination.

PRECAUTIONS

Shoulder, arm and wrist injuries: Keep the weight light. Keep the arms below shoulder height. Avoid if symptoms increase.

Low back injuries: Keep the pelvis over the ischial tuberosities to maintain a neutral spine and pelvis throughout. Avoid if sitting is uncomfortable.

Tight hamstrings: Sit on a pad, bend the knees or sit cross legged to keep the pelvis over the ischial tuberosities rather than behind them.

3. Lower the hands to the carriage. Circle the arms up overhead and around.

CORKSCREW

ADVANCED • 3 REPS EACH WAY

Springs: All	**Footbar:** No bar
Headrest: Down	**Prerequisites:** Mat Corkscrew

STARTING POSITION

Lie on the carriage with the head between the shoulder rests, the hips at 90 degrees of flexion and the hands holding onto the silver pegs or the shoulder rests of the Reformer.

MOVEMENT SEQUENCE

Exhale: Roll the pelvis up until the legs are parallel to the ground as in a Roll Over on the mat.

Inhale: Slightly rotate the torso to one side and roll down on that side of the back.

Exhale: At the bottom of the Roll Down, swing the legs and center the hips before rotating the torso to the opposite side and rolling up on that side. Center the hips at the top before starting again. Repeat evenly in both directions.

1. Start with legs above hips and hands holding silver pegs. Roll up with the legs parallel to the ground.

2. Rotate the torso to one side of the spine. Roll down on the side of the spine.

MODIFICATIONS

No roll over

Circle the hips without rolling the back off the carriage.

CUEING AND IMAGERY

- Don't roll up on to the neck.
  - Stop at the top of the shoulder blades.
- Return to the center line at the midpoint of each circle.
  - Feel equal weight on both sides of the back when the legs come to the circle.
- Focus on the movement of the spine rather than the legs.
  - Rotate the spine very slightly to rotate the torso.
- Move smoothly and with control.

PURPOSE

- Increase spinal flexibility.
- Increase torso control.
- Scapular stabilization.
- Coordination.

PRECAUTIONS

Avoid or limit inversion exercises with pregnancy, osteoporosis, low back injuries, neck injuries, high blood pressure, eye problems and overweight clients.

3. Swing the legs through the center.

4. Rotate to the other side and roll up to start again.

Teaching a Reformer Class or Personal Training Session

The Reformer is a very versatile piece of equipment with a wide array of exercises to choose from. Designing a session for a class or personal training session can be daunting to the new instructor. Here are a few things to keep in mind as you plan your classes.

Pilates is intended to be a full body workout that addresses all the key muscle groups and movements in a 1 hour session. Include exercises from each of the following groups for a well rounded session.

- Abdominals/Spinal Flexion
- Back Muscles/Spinal Extension
- Spinal Rotation
- Lateral Spinal Flexion
- **Hips, Legs and Feet including:**
  - Quadriceps
  - Hamstrings
  - Adductors
  - Abductors
  - Plantar Flexion
  - Dorsiflexion
- **Shoulders and Arms including:**
  - Scapular Stability
  - Scapular Mobility
  - Anterior Shoulder and Arm (pushing and elbow extension exercises)
  - Posterior Shoulder and Arm (pulling and elbow flexion exercises)
  - Deltoid (pushing overhead)
  - Latissimus Dorsi (pulling down)
- **Flexibility for key muscle groups including:**
  - Spinal Extensors
  - Torso Rotators
  - Lateral Torso
  - Hamstrings
  - Hip Flexors
  - Hip Adductors
  - Posterior Calf Muscles
  - Chest Muscles
  - Shoulder Muscles

Real life happens in a variety of positions so help your client prepare for it by including exercises in:

- Supine
- Prone
- All fours
- Sitting
- Standing
- Side lying

At the end of this lecture and in each manual are a variety of workouts based on both classical and contemporary Pilates styles. Each workout is designed to address the key muscle groups and body positions. Pick one and teach it to several people until you get comfortable with the sequences, machine set up and variations that each client will present. Once you can teach that program without referring to the book, pick another one. As your familiarity with the system grows, you start to find connections and variations that suit you and your clientele.

Changing from one exercise to the next can be simple or complicated depending on the sequences you choose. For example, setting up the box involves getting off the machine, getting the box and placing it on the machine along with adjusting springs or ropes. This can cause the session to lose momentum so don't do this transition more than once in a class. Choosing a series of exercises that involve a minimum amount of adjusting helps to create flow and keep the energy up. See how few changes you can make and still cover all the body positions and exercises.

Transitions are an opportunity for staying present and efficient with your movements. In a well-taught class, the transitions are just part of the exercise rather than an opportunity to space out so don't be afraid of transitions, just be conscious of where they are and how to make them as smooth as possible. Consider choreographing spring changes, box changes and footbar adjustments and cueing the transitions as you cue the exercises.

In a private or duet session you can set up the equipment for the client and transitions are not quite as important as they are when teaching a class.

Pilates can involve a lot of detail and sometimes instructors can lose the forest for the trees. Focus on what you can fix easily, let the rest go and have faith that if you follow the program, the body will change.

REFORMER SEQUENCES

INTRODUCTORY SESSION

The introductory session provides a full bodied workout while introducing the key Pilates principles of breathing, pelvic and scapular stability, abdominal strengthening and alignment. It also covers several of the basic body positions used on the Reformer. Beginning or modified versions can be used for exercises such as feet on the straps and sitting arm work. Depending on the clientor class, this is about what you will get through in a first session.

REFORMER EXERCISES

Introduction
- Springs
- Footbar
- Straps/ropes

Warm-up
- Breathing
- Bridging for back flexibility and stability
- 100 prep with feet on footbar
- Find neutral in supine

Footwork
15x each
- Heels
- Toes
- Wide
- Running in Place

Abdominal Work 1
100s prep or 100: 10 preps or 2 sets of 50

Leg Work
Feet in straps (flexible hamstrings) or knees in straps (tight hamstrings): 10x each
- Leg Lowers
- Circles
- Scissors
- **Hamstring Stretch:** hold for 30 seconds
- **Adductor Stretch:** hold for 30 seconds

Abdominal Work 2:
Choose 1
- **Roll Downs:** 6 sets
- **Kneeling:** 6 to 8 sets

Arm Work
Choose 1 or 2: 6-10x each
- **Seated on box or carriage:** Biceps, Triceps, Serve a Tray, Hug a Tree
- **Supine on carriage:** Triceps, Posterior Deltoid Pull, Arm Circles

Lunge
4 to each side, 3 moving, hold the 4th

Mermaid
With the feet on the floor, 4 to each side

Finish
Sit on the side of the Reformer, lean forward to stretch the back. Stack the spine back up and rise to standing.

Intermediate 1: Classical Order

This program is the classical order as it was taught by Romana Kryzanowska and Eve Gentry. It includes a variety of positions and exercises and is great for an overall workout.

WARM UPS ON THE MAT, STANDING

- Breathing with arm lifts (inhale lift the arms, exhale lower)
- Knee bends or plies (focus on leg alignment, posture, abdominal control)

REFORMER EXERCISES

Breathing supine

Bridging for back flexibility and stability

Find neutral in supine

Footwork: 10x each
Full sequence: Toes, Heels, V-feet, Wide

100's: 1 set

Coordination: 6x

Short Spine Massage: 6x

Hug a Tree: 10x

Stomach Massage: 6x each
- Round back
- Chest up

Short Box Abdominals: 3-4x each
- Round Back or Flat Back
- Oblique
- Climb a Tree

Long Stretch Series: 4x each
- Long Stretch
- Up Stretch
- Down Stretch

Elephant: 6x

Semi-Circle: 6x each direction

Long Spine Massage: 3x each direction

Knee Stretch
- Round: 10x slowly
- Flat: 15x faster
- Knees Off: 4–8x

Running in Place: 25x

Pelvic Lift: 10x

Standing: 6x each side, each variation
- Knees Straight
- Knees Bent

Rowing Front 1 & 2: 4x

Mermaid: 3x
- Finish: Sit on the side of the Reformer, lean forward to stretch the back. Stack the spine back up and rise to standing.

Intermediate 2: Strong Backs

Strong Backs takes the classical order and adds long box Pulling Straps and Swan to add back extension into the program. It also takes out the Short and Long Spine Massages to decrease the stress on the spine in flexion. The leg stretch series is added to increase flexibility.

WARM UPS ON THE REFORMER, SUPINE

- Breathing
- Abdominal warm up: Hundred prep or other
- Bridging or Knee Circles to loosen lower back
- Establish neutral starting position

REFORMER EXERCISES

Footwork: 10x each
- Full sequence
- Toes, Heels, Flex/Relevé, V-feet, Wide
- Single leg

Coordination or variations: 2 sets 6x each set

100's: 1 set

Feet in straps: Full sequence 4-6x each
- Lowers, Circles, Scissors
- Hamstring stretch: 45 seconds each side with contract release
- Adductor stretch: 45 seconds with contract release
- Piriformis stretch: 45 seconds each side with contract release

Long box
- Pulling Straps 1 & 2 – 6x each

Short Box Abdominals
- Round or Flat Back: 4x
- Oblique: 4x to each side
- Mermaid: 3–4x each side

Long box
- Overhead Press: 10x each arm position
- Swan - 6x

Knee Stretch
- Round: 10x slowly
- Flat: 15x faster
- Knees off: 4–8x

Pelvic Lift: 10x

Long Stretch series: 4x each
- Long Stretch
- Up Stretch
- Down Stretch

Elephant: 6x
- Single Leg Elephant: 6x each side

Arm Work Facing Back: 10x each
- Kneeling on carriage: Biceps, Triceps, One Arm Twist Back, Rows

Arm work facing front: 8x each
- Kneeling on carriage: Hug a Tree, Serve a Tray, Salutes

Standing: 6x each side, each variation
- Knees straight
- Knees bent or variations

Lunge: 4x moving, 1 hold

Mermaid: 4x each side

Intermediate 3: Progressing towards the advanced work

Progressing Towards the Advanced Work adds challenging abdominals such as the long box Teaser and Climb a Tree as well as Kneeling Arm Work to challenge the core and upper body stability.

WARM UPS ON THE REFORMER, SUPINE

- Breathing
- Abdominal warm up: Hundred prep or other
- Bridging or Knee Circles to loosen lower back
- Establish neutral starting position

REFORMER EXERCISES

Footwork: 10x each
- Full sequence
- Toes, Heels, Flex Releve, V-feet, Wide
- Single leg
- Progressions

Coordination or variations: 2 sets 6x each set

100's: 1 set

Feet in straps
- Full sequence 4-6x each
- Lowers, Circles, Scissors
- Hamstring stretch: 45 seconds each side with contract release
- Adductor stretch: 45 seconds with contract release

Long box
- Pulling Straps 1 & 2: 6x each
- Backstroke: 6x
- Teaser: 3x

Short Box Abdominals
- Round or Flat Back : 4x
- Oblique: 4x to each side
- Climb a Tree: 3x each side
- Mermaid: 3–4x each side

Long box
- Overhead press: 8x double arms, 2 sets of 4x single arm
- Swan: 6x

Knee stretch
- Round: 10x slowly
- Flat: 15x faster
- Knees Off: 4–8x

Pelvic Lift - 6x
- Single leg: 2 sets of 4x each

Long Stretch series: 4x each
- Long Stretch
- Up Stretch
- Down Stretch

Elephant - 6x
Single Leg Elephant: 6x each side

Arm Work Facing Back - 10x each
Kneeling on carriage: Biceps, Triceps, Twist Back, Rows

Kneeling Side Arms: 8x each
- Pull Across
- Draw a Sword
- High 5th

Thigh stretch: 6x

Standing: 6x each side, each variation
- Knees straight
- Knees bent or variations

Lunge: 4x moving, 1 hold

Mermaid: 4x each side

Intermediate 4: All legs, all the time

All Legs, All the Time combines a full body workout with a special emphasis on the lower body. Jumping is added for leg strength, core stability and aerobic conditioning. Single leg work is added to the Footwork, Pelvic Lift and Elephant to increase the work on the legs.

WARM UPS STANDING

- Breathing with arm lifts (inhale lift the arms, exhale lower): 6 reps
- Knee bends or plies (focus on leg alignment, posture, abdominal control): 10 reps
  - Back upright
  - Torso over (squats)

REFORMER EXERCISES

Footwork: 10x each
- Single leg only
- Toes, Heels and Progressions

Coordination or variations: 2 sets 6x each set

100's: 1 set

Feet in straps: Full sequence 4-6x each
- Lowers with magic circle
- Circles, Scissors, Frogs

Long box
- Pulling Straps 1 & 2: 6x each
- Backstroke: 6x

Short Box Abdominals
- Round or Flat Back - 4x
- Oblique - 4x to each side
- Mermaid - 3–4x each side

Long box
- Overhead press: 8x double arms
- Swan: 6x
- Swimming: 50x

Knee stretch
- Round: 10x slowly
- Flat: 15x faster
- Knees Off: 4–8x

Pelvic Lift - 10x
Single Leg: 3 sets 4x each side

Long Stretch series: 4x each
- Long Stretch
- Up Stretch

Elephant : 6x
Single Leg Elephant: 6x each side

Jumping on footplate
- Two legs to two legs
  - Parallel: 15x
  - Turned out: 15x
- One leg to one leg: 15x
  - With variations (2 right, 2 left, 4 right, 4 left, :parallel and turned out)

Standing: 6x each side, each variation
- Knees straight
- Knees bent or variations
- Parallel
- Turned out

Feet in straps: stretching sequence
- Hamstring stretch: 45 seconds each side with contract release
- Adductor stretch: 45 seconds with contract release
- Piriformis stretch: 45 seconds each side with contract release

Lunge: 4x moving, 1 hold

Mermaid: 4x each side

Intermediate 5: Cranking up the core

Cranking Up the Core adds additional abdominals and core stability exercises to make the center strong and powerful. This is great for clients who like to work hard and who have sleepy abdominals. The jumping is added to keep the energy up and the focus on stability and core strength.

WARM UPS ON THE MAT OR REFORMER

- Breathing
- Bridging or Knee Circles to loosen lower back
- Knee drops to each side
- Mat abdominal series
  - Single Leg Stretch, Double Leg Stretch, Single Straight Leg Stretch

REFORMER EXERCISES

Footwork: 10x each
- Full sequence
- Toes, Heels, Flex Releve, V-feet, Wide
- Single leg
- Progressions

Coordination or variations: 2 sets 6x each set

100's: 1 set

Feet in straps:
- Full sequence: 4-6x each
- Lowers, Circles, Scissors
- Hamstring stretch: 45 seconds each side with contract release
- Adductor stretch: 45 seconds with contract release

Long box
Pulling Straps 1 & 2–6 reps each

Short Box Abdominals
- Round or Flat Back: 4x
- Oblique: 4x to each side
- Advanced: 3x
- Mermaid: 3–4x each side

Long box
- Backstroke: 6x
- Overhead Press: 8x double arms
- Swan: 6x
- Swimming: 50x

Knee Stretch
- Round: 10x slowly
- Flat: 15x faster
- Knees Off: 4–8x

Bridging/Pelvic Lift: 10x

Long Stretch series: 4x each
- Long Stretch
- Up Stretch
- Down Stretch

Elephant: 6x very light springs
Single Leg Elephant: 6 each side

Arm Work Facing Back: 10x each
Kneeling on carriage: Biceps, Triceps, Twist Back, Rows

Arm work facing front: 8x each
Kneeling on carriage: Hug a Tree, Serve a Tray, Salutes

Jumping on footplate
- Two legs to two legs
  - Parallel: 15x
  - Turned out: 15x
- One leg to one leg: 15x
  - With variations (2 right, 2 left, 4 right, 4 left, parallel and turned out)

Lunge: 4x moving, 1 hold

Mermaid: 4x each side

Intermediate 6: Beautiful arms

Beautiful Arms focuses on upper body work and more complicated choreography. It is great for golfers, tennis players and office workers who need to gain flexibility and strength in the upper body.
This program can be done to lyrical music with an emphasis on continuity and smooth transitions.

WARM UPS ON THE MAT AND REFORMER

- Standing: Shoulder Shrugs and Arm Circles
- Supine on the Reformer
  - Breathing
  - Abdominal warm up: Hundred prep or other
  - Bridging or Knee Circles to loosen lower back
  - Establish neutral starting position

REFORMER EXERCISES

Footwork: 10x each
- Full sequence
- Toes, Heels, Flex Releve, V-feet, Wide
- Single leg

Coordination or variations: 2 sets 6x each set

100's: 1 set

Feet in straps:
- Full sequence: 4-6x each
- Lowers, Circles, Scissors
- Hamstring stretch: 45 seconds each side with contract release
- Adductor stretch: 45 seconds with contract release

Long box
- Pulling Straps all four versions: 6x each

Short Box Abdominals
- Round or Flat Back: 4x
- Oblique: 4x to each side
- Mermaid: 3–4x each side

Long box
- Overhead Press: 8x double arms, 2 sets of 4x single arm
- Swan: 6x

Knee Stretch
- Round: 10x slowly
- Flat: 15 reps faster
- Knees Off: 4–8 reps

Pelvic Lift: 10 reps

Long Stretch series: 4x each
- Long stretch
  - Add 6 Push Ups to last rep
- Up Stretch

Elephant: 6 reps

Arm Work Facing Back: 10x each
Kneeling on carriage: Biceps, Triceps, Twist Back, Rows

Kneeling Side Arms: 8x each
- Pull Across
- Draw a Sword
- High 5th

Thigh Stretch: 6x

Semi Circle: 4x each direction

Short Spine Massage: 6x

Standing: 6x each side, each variation
Knees straight or bent, add arm variations

Lunge: 4x moving, 1 hold

Mermaid: 4x each side

Intermediate 7: Focus on flexibility

Focus on Flexibility adds a variety of dynamic stretches to the program for overall flexibility. This is a great program for tighter clients or to add into a regular routine as a feel good bonus after a long hard week or after a competition. Older clients often appreciate how improving their flexibility makes them more comfortable in everyday activities.

WARM UPS ON THE MAT AND REFORMER

- Standing
  - Bend the knees and roll down one vertebra at a time until the hands reach toward or are on the floor
  - Straighten and bend knees 4 times. Bend one knee and then the other 4 times
- Supine on the Reformer
  - Breathing
  - Abdominal warm up: Hundred prep or other
  - Low back release: knee circles and bridging
  - Establish neutral starting position

REFORMER EXERCISES

Footwork: 10x each
- Full sequence
- Toes, Heels, Flex Releve, V-feet, Wide
- Single leg
- Progressions

Coordination or variations: 2 sets 6x each set
Add adductor stretch with legs open and torso reaching toward the feet

100's: 1 set
Add neck release with circles and head nods

Feet in straps
- Full sequence: 4-6x each
- Lowers, Circles, Scissors
- Focus: slow tempo, full range of motion
- Hamstring stretch: 45 seconds each side with contract release
- Adductor stretch: 45 seconds with contract release
- Piriformis stretch: 45 seconds with contract release

Rowing Front 1 and 2: 6x
Focus: scapular mobility, back and hamstring flexibility

Roll Downs: 8x
Focus: back flexibility

Short Box Abdominals
- Begin with arch and curl prep on box
- Round or Flat Back: 4x
- Oblique: 4x to each side
- Mermaid: 3–4x each side

Long Box
- Swan: 6x

Knee Stretch
- Round: 10x slowly
- Flat: 15x faster
- Knees off : 4–8x

Pelvic Lift: 10x

Elephant: 6x
Walking: 8x

Semi Circle: 4 x each direction

Short Spine Massage: 6x

Standing: 6x each side, each variation
- Knees straight
- Knees bent or variations

Lunge: 4x moving, 1 hold

Mermaid: 4x each side

Intermediate 8: For clients with limited spinal flexion

This program is appropriate for clients with limited tolerance for spinal flexion due to osteoporosis and certain back issues. It is a relatively safe full body workout for clients who can't do much flexion.

WARM UPS ON THE MAT AND REFORMER

- Standing arm lifts inhale arms up, exhale arms down
  - Plies and squats
- All fours on the Reformer or Mat
  - Breathing
  - All fours abdominals
- Reformer Footbar Stretch
  - Holding on to footbar, walk feet back until the hips are at 90 degrees and you can hang on the footbar.
  - Bend and straighten the knees and gently arch and curl the spine to loosen the low back.
- Supine on the Reformer
  - Breathing
  - Establish neutral starting position

REFORMER EXERCISES

Footwork: 10x each
- Full sequence
- Toes, Heels, Flex Releve, V-feet, Wide
- Single leg
- Progressions

Kneeling Abdominals: 8x

Feet in straps: Full sequence 4-6x each
- Lowers, Circles, Scissors
- Focus: slow tempo, full range of motion
- Hamstring stretch: 45 seconds each side with contract release
- Adductor stretch: 45 seconds with contract release
- Piriformis stretch: 45 seconds with contract release

Knee Stretch Single Leg: 10x each side
- Flat Back
- Round Back if tolerated

Bridging: 10x
Try flat back version rather than spinal articulation

Long Stretch: 4x each

Arm Work Facing Back: 10x each
Kneeling on carriage: Biceps, Triceps, Twist Back, Rows

Arm Work Facing Front: 8x each
Kneeling on carriage: Hug a Tree, Serve a Tray, Salutes

Standing: 6x each side, each variation
- Knees straight
- Knees bent or variations

Long Box (if client can be prone)
- Pulling Straps: 6x each
- Full sequence
- Overhead Press: 8x double arm
- Swan: 6x

Lunge: 4x moving, 1 hold

Mermaid: 4x each side

Intermediate 9: For pregnant clients after 4 months

This is a safe, full body workout for pregnant clients who can't be supine for more than a few minutes and may have limited spinal flexion.

WARM UPS ON THE MAT AND REFORMER

- Standing arm lifts, inhale arms up, exhale arms down
  - Plies and squats
- All fours on the Reformer or Mat
  - Breathing
- All Fours Abdominals
- Reformer Footbar Stretch
  - Holding on to footbar, walk feet back until the hips are at 90 degrees and you can hang on the footbar
  - Bend and straighten the knees and gently arch and curl the spine to loosen the low back

REFORMER EXERCISES

Stomach Massage for leg work
- Flat back: 20x
- Use ball or box behind back for support if necessary. Vary foot positions to get more leg work.

Kneeling Abdominals: 8x
- Single Leg: 6x

Feet in straps (limit time to < 5 minutes)
- Full sequence: 4–6x each
- Lowers, Circles, Scissors

Short Box Abdominals (gently!)
- Round or Flat Back: 4x
- Oblique 4x to each side
- Mermaid: 3–4x each side (use hand support on Headrest, careful last 2 -3 months)

Knee Stretch
- Curved: 10x slowly
- Flat: 15x faster
- Knees off: 4–8x (maybe)

Pelvic Lift: 10x

Long Stretch: 4x
Add push ups

Elephant: 6x
Single leg elephant: 6x side

Arm Work Facing Back: 10x each
Kneeling on carriage: Biceps, Triceps, Twist Back, Rows

Arm Work Facing Front: 8x each
Kneeling on carriage: Hug a Tree, Serve a Tray, Salutes

Lunge: 4x moving, 1 hold

Mermaid: 4x each side

Jump Board Sequences for the Beginning of Class

Jump Board sequences can be incorporated into a Reformer session in a number of different ways. To maintain the flow of the class it is easiest to put it in at the beginning or the end. At the beginning it can be used to warm up the legs by doing the Footwork and/or Single Leg Footwork exercises and then adding some light jumping to get the body warmed up. At the end it can be used to amp up the cardio work and the intensity to finish the program off with a bang.

BEGINNER LEVEL

Footwork: 10x each

- Parallel leg position
  - Bend and stretch (heels on)
  - Calf raises (flex/releve)
  - Roll-through forward (6x)
  - Roll-through reverse (6x)
  - Single leg progressions parallel (4x each leg)
- Turned out leg position
  - Bend and stretch (heels on)
  - Calf raises (Flex/releve)

Jumping: 6–10x each

- Parallel
- Running in place
- Finish with Running in Place on the footbar to stretch out the calves before going on to the abdominals

INTERMEDIATE LEVEL

Footwork: 10x each

- Parallel leg position
  - Bend and stretch (heels on)
  - Bend and stretch (heels up)
  - Roll-through forward (6x)
  - Roll-through reverse (6x)
  - Single leg progressions parallel (4x each leg)
- Turned out leg position
  - Bend and stretch (heels on)
  - Bend and stretch (heels up)
  - Calf raises (Flex/releve)
  - Single leg progressions (4x each leg)

Jumping 6–10x each

- Parallel
  - Jumping preparation
  - Running in place
  - 1 Leg to 1 Leg Jumps
- Finish with Running in Place on the Footbar to stretch out the calves before going on to the abdominals

Jump Board Sequences for the end of Class

BEGINNER LEVEL

Footwork: 10x each

- Parallel leg position
  - Calf raises (flex/releve)
  - Roll-through Forward (6x)
  - Roll-through Reverse (6x)
- Turned out leg position
  - Calf Raises (Flex/releve)

Jumping: 6–10x each

- Parallel
- Jumping preparation
  - Running in Place
  - 1 Leg to 1 Leg Jumps
  - 2 Leg to 1 Leg Jumps (alternating legs)
  - 2 Leg to 2 Leg Jumps
- Finish with Elephant with the hands on the jump board to stretch out the calves before finishing with a lunge.

INTERMEDIATE LEVEL 1

Footwork: 10x each

- Parallel leg position
  - Calf Raises (flex/releve)
  - Roll-through forward (6x)
  - Roll-through reverse (6x)
- Turned out leg position
  - Calf Raises (Flex/releve)

Jumping: 6–10x each

- Parallel
  - Jumping preparation
  - Running in Place
  - 1 Leg to 1 Leg Jumps
  - 2 Leg to 1 Leg Jumps (alternating legs)
  - 2 Leg to 2 Leg Jumps
- Turned out
- 1 Leg to 1 Leg Jumps
  - 2 Leg to 1 Leg Jumps (alternating legs)
  - 2 Leg to 2 Leg Jumps

Finish with Elephant with the hands on the jump board to stretch out the calves before finishing with a lunge.

INTERMEDIATE LEVEL 2

Footwork: 10x each

- Parallel leg position
  - Calf Raises (flex/releve)
  - Roll-through Forward (6x)
  - Roll-through Reverse (6x)
- Turned out leg position
  - Calf Raises (Flex/releve)

Jumping: 6–10x each

- Parallel
  - Jumping preparation
  - Running in Place
  - 1 Leg to 1 Leg Jumps series
    - 8x right leg, 8x left leg
    - 4x right leg, 4x left leg
    - 2x right leg, 2x left leg
  - 1x each leg 4x
  - 2 Leg to 1 Leg Jumps (alternating legs)
  - 2 Leg to 2 Leg Jumps (alternating between parallel and turned out)
- Turned out
  - 2 Leg to 1 Leg Jumps (alternating legs)
  - 2 Leg to 2 Leg Jumps
    - add Adductor Squeeze
    - add Beats

Finish with Elephant with the hands on the jump board to stretch out the calves before finishing with a lunge.

PILATES AND LOW BACK PAIN

Pilates is often recommended for clients with low back pain because of its emphasis on core strength and stability. Whether you work in a fitness center, studio or rehabilitation facility, you will work with clients with low back pain. Pilates principles and exercises, carefully and appropriately applied can be very helpful for many clients with back pain. Pilates exercises carelessly taught can cause or exacerbate back pain. This workshop will focus on several simple principles and techniques you can use to help your clients prevent, decrease or eliminate back pain.

YOUR SCOPE OF PRACTICE AS A PILATES INSTRUCTOR

As a Pilates instructor you cannot legally diagnose or treat specific injuries or illnesses because it is not within your scope of practice. Only licensed medical professionals such as physicians and chiropractors can legally diagnose and treat. The information in this section is provided to assist you in working safely with clients who were diagnosed by someone else and is not intended as a substitute for medical care.

Pilates instructors cannot diagnose and treat clients but we can observe movement patterns, assess alignment, posture and stability and provide exercise programs for improving our clients physical well being. The information in this section will help you to make better choices in your programs for clients with low back pain.

A WORD ABOUT NEUTRAL PELVIS AND NEUTRAL SPINE

According to modern biomechanical research, the functional stabilization muscles of the spine work most efficiently when the spine and pelvis are in a neutral position. This concept underlies the modern Pilates idea of the placement of the core or powerhouse. From a more traditional Pilates perspective, the most important part of this statement is the word stabilization. Traditional Pilates emphasis on the navel to the spine and the spine to the mat helps clients to stabilize their low back by using the external support of the mat. Where both of these concepts come together is in the idea of stabilization.

Understanding stabilization of the spine means expanding our narrow definitions of the proper placement of the back and looking into how the forces that act on the spine can be balanced front to back and side to side for each client in each exercise. One image I like to use is that the spine is like a sandwich which must be supported equally by the anterior and posterior muscles regardless of whether it is in flexion or extension. This same principle applies when balancing the forces on the spine in side bending and rotation.

A WORD OF ADVICE

Regardless of your perception of what your client's ideal alignment should look like, never forget that your client is a unique individual with unique structural challenges who may need to start a long way from the ideal and may never reach it. Remain open and responsive to the needs of your client and you will be successful with whatever issues they may present.

GENERAL PRECAUTIONS WHEN WORKING WITH CLIENTS WITH BACK ISSUES

The following common diagnoses are important to understand as they can be associated with specific protocols or issues. There is a list of common diagnoses along with their usual symptoms, definition and exercise principles at the end of this lecture.

Nerve symptoms: If the client is having nerve symptoms in the back, hip or leg area (i.e. tingling, numbness, burning pain, sharp shooting pains, loss of function in the limb or loss of bowel or bladder control), they need to be under a doctor's supervision. If a client you are working with suddenly develops any of these symptoms send them to a medical practitioner immediately for an evaluation. If you are working with a client who occasionally gets nerve symptoms, your goal is to do your best never to exacerbate them. The most important first step is to try to find a position of the back and pelvis that causes the least irritation of the nerve and to work in a way that doesn't cause the nerve to flare up during or after the session. Nerve symptoms are most commonly caused by disc injuries, spinal stenosis or muscle spasms.

Disc injuries and degenerative disc disease (DDD): Disc injuries most commonly cause pain when they protrude toward the back of the spine and put pressure on the nerves that run through the spinal canal. In general spinal flexion increases disc pressure while a neutral spine or spinal extension decreases disc pressure. Supported neutral and neutral are the best positions to start these clients in.

Spondylolisthesis and spondylolysis: This is a condition where one vertebra slides forward on the vertebra below it (spondylolisthesis) or the vertebra fractures and becomes unstable (spondylolysis). In both of these situations the vertebrae are at risk for sliding anteriorly and pinching the spinal cord in the process. Work in neutral or with a slight posterior tilt, avoid spinal extension and avoid loading the front of the spine with the psoas in hip flexion as in Mat Double Leg Lowers, 100 and Reformer Feet in the Straps.

Spinal stenosis, arthritis and degenerative joint disease: All of these conditions involve deterioration of the joints of the spine either through the development of bone spurs in the canals that the nerves go through or through bone spurring on the body of the vertebra. Work in neutral or with a slight posterior tilt and avoid spinal extension with this condition.

UNDIAGNOSED BACK PAIN

As a Pilates instructor many clients will come to see you with symptoms of low back pain. In many cases they will not have a diagnosis and they may not consider the pain significant enough to seek professional care. You will often be the first person someone sees and being able to differentiate symptoms you can deal with from ones that may indicate a serious condition is an important skill to develop. As a beginning instructor it is important to understand your limits and to refer any clients you have concerns about to an experienced MD, DC, PT or other practitioner.

As a simple guideline, the client's description of their pain should give you an indication of the severity of the condition. In general, pain described as stiffness, mild soreness or an aching feeling that comes and goes and doesn't significantly limit activities of daily living is pain you can probably work with safely.

Any pain described as burning, sharp and constant or that radiates down into the gluteals, leg or foot or that significantly limits ADL should be diagnosed before you do much work with them. If you are lucky the medical professional will provide the client and you with a diagnosis that is thorough and accurate. If you begin working with a client and find that their diagnosis is not consistent with their symptoms or if the pain gets worse or changes significantly, have the client return to their medical professional for another examination or refer them to another practitioner.

WORKING WITH CLIENTS WITH BACK PAIN

Understanding what a client can and can't do in all areas of their lives will tell you a lot about how to begin working with them. Here are several questions you need to ask when working with clients with back pain or any other injury:

- What are their limitations?
- Can they stand, sit, rotate, flex, extend and laterally bend their spine?
- What positions are they comfortable in?
- Standing, sitting, supine, prone, side lying, all fours
- What makes their symptoms worse? Better?
- Resting, moving, walking, driving, sitting?
- Are they seeing any other health care practitioners?
- MD, PT, DC, Massage therapist etc.
- What is their daily activity level?
- Office worker, dancer, stay at home mom, soft ball coach
- What are their goals?
- Pain free in daily activities? Return to skiing? Return to golf?
- What are your limitations?

If you are a Pilates instructor without any other medical credentials it is important to remember that you are not legally able to diagnose or treat your clients. Your only tool is understanding and correcting movement patterns and postural imbalances.

SOME COMMON CAUSES OF LOW BACK PAIN AND TIPS FOR PREVENTION

Establish Your Client's Most Comfortable Working Position

One of the first things to figure out with a client with back problems is what position is best for their back when they are in supine, prone, side-lying, sitting and standing. Some clients need to learn to work in neutral while others may be better with a slight anterior or posterior pelvic tilt. Finding the best position is not simply a matter of asking the client what feels the most comfortable when they first lie down or move into a position. It requires working with the client to see what position they can maintain without causing pain during or after the session.

Movement Principle:
Help the client to understand and maintain their optimum position.

- Introduce the principle in the first session and keep working on it.
- Teach the client to monitor themselves in daily activities and to report back if they are feeling better or worse.
- Use external props to support the optimum position until they gain the strength to hold it on their own.
- Sticky pads (to support a neutral position)
- Lumbar rolls (to support a neutral position or lumbar extension)
- Sacral wedges (to support lumbar flexion)

LACK OF STABILITY OF THE SPINE AND PELVIS

If a client is lacking basic stability of the spine and pelvis they will be more likely to have or to develop low back pain. The spine is designed to be mobile within a strong and balanced muscular and ligamentous framework. Injuries, imbalances or hypermobility in the spine can lead to excessive wear and tear on any of the spinal structures. Stability exercises are intended to recreate the balanced support system of the spine and to train the body to provide the appropriate level of support for any activity the client engages in.

In Pilates, the exercises that create the greatest challenge to the stability of the back include any supine exercise where the legs move away from the torso. For example: Toe Taps, the 100 and Mat Abdominal Series, Teaser and Feet in Straps. These exercises require the spinal stabilizers to maintain the position of the back against the pull of the psoas on the front of the spine. If the client is not successful, the psoas will pull the vertebrae forward and can cause pain or discomfort. These exercises which are so fundamental to Pilates can be difficult or unsafe for many people. Creating modifications, eliminating them or teaching your clients to perform them safely should be one of the first goals of your teaching.

Movement Principle:
Develop spinal and pelvic stability (see notes in Pilates Movement Principles section)

Introduce the principle in the first session and keep working on it.

Use external supports to stabilize the back and pelvis and to provide tactile feedback until the client is strong enough to do it on their own. For example:

- Your hands
- Their hands
- Sticky pad or roll
- The floor
- Sacral wedges
- Bed wedge

Keep exercises simple until the client understands how to maintain stability during the exercise. Add challenges only as quickly as they can do them safely.

Practice Exercises:
See notes in the Pilates Movement Principles section for a complete list.

- Marching
- Toe Taps
- All Fours Opposite Arm Leg Lift
- Bridging
- Mat 100
- Leg Circles
- Reformer Feet in Straps

Anterior Pelvic Tilt Leading to Tight Back and Anterior Hip Muscles

An anterior pelvic tilt leads to shortness in the muscles that support the spine and hips, particularly the psoas, hip flexors, spinal extensors, latissimus dorsi and quadratus lumborum. Shortening of these muscles creates compressive forces on the spine that can contribute to low back pain and spinal injuries. This pattern is usually accompanied by an increased lumbar lordosis that acts to increase the strength required by the abdominals to flex the spine and balance the tension of the back. Using our sandwich metaphor, the bread on the back of the sandwich is thicker and working harder than the bread on the front of the sandwich due to structural limitations.

Movement Principle:
Loosen the hip and back muscles and strengthen the abdominals and hamstrings to balance the muscular forces on the spine.

Exercises:
Begin with gentle stretching and release work for the back and hips in order to create enough range of motion in the spine to maintain a neutral position.

HAMSTRING AND LOW BACK STRETCHES

Mat
- Cat/Camel
- Bridging
- Leg Circles
- Roll Ups (use the low back support)
- Spine Stretch
- Rolling like a Ball

FEET IN STRAPS STRETCHES

Reformer
- Bridging
- Roll Downs
- Rowing Front 2

HIP FLEXOR STRETCHES

Mat
Lunges

Reformer
- Lunges
- Splits

LATISSIMUS DORSI/LATERAL TORSO STRETCHES

Mat
- Pinwheel,
- Spine Stretch Side
- Saw

Reformer
- Mermaid
- Cleopatra
- Short Box Mermaid

SPINAL ROTATION

Mat
- Telescope
- Pinwheel
- Saw

Reformer
- Seated Arm Work Facing Front or Back: Twist
- Mermaid
- Cleopatra
- Short Box Mermaid

Continue with Dynamic Stretching of the Back Extensors and Strengthening of the Abdominals:

Mat
- Abdominal series
- Roll Up

Reformer
- Roll Downs
- 100
- Short Box Abdominals
- Short Spine Stretch
- Bridging

Posterior Pelvic Tilt Leading to Inhibition of the Back Extensors

A posterior pelvic tilt is often accompanied by tight abdominals, tight hamstrings, long hip flexors and long back extensors. Excessive strength or shortness of the abdominals and hamstrings can decrease the ability of the back extensors to support the back. In the average studio clientele this is occasionally seen in tall thin individuals or in clients of Asian ancestry.

Exercise Principle: Teach client to maintain a neutral position of the pelvis in all positions. Maintain an appropriate length of the abdominals and hamstrings, teach the client hip flexion in sitting and strengthen the back extensors and hip flexors.

ASSESSMENT:

- Assess psoas and hip flexor length with table stretch
- Assess strength with the seated hip flexor test (sitting with hips at 90 degrees of hip flexion, lift the leg)
- Assess hamstring flexibility
- Assess abdominal strength

PRACTICE EXERCISES:

Sitting
Pelvic rock

Mat
Cobra/Swan

Reformer
- Long Box Cobra with hands on bar
- Down stretch
- Lunge variations
- Breaststroke

Ladder Barrel
Swan

Muscle Spasms of the Quadratus Lumborum, Iliopsoas and Deep Hip Rotators

Spasms in any of these muscles are common causes of acute and chronic low back pain. When theses muscles are in spasm they limit the ability of the back to work effectively. In general, roller, ball or manual release techniques are much more effective than simple stretching in relieving spasms. If you are not skilled at release techniques, send your client to a hands-on practitioner (physical therapist, massage practitioner, osteopath, chiropractor) who can assist them. In working with clients with muscle spasms it is important to release the spasm and restore normal motion before working to strengthen the area. Once the area is released, it is important to restore the strength and balance of the muscles to prevent another spasm.

When looking for the root cause of a muscle spasm, it is important to do a thorough assessment of pelvic and spinal alignment and muscle imbalances and work to balance the structure of the spine and pelvis as best you can.

Exercise Principle: Release the spasm in the area before working on it.

Practice Exercises:

FOAM ROLLER RELEASES

Quadratus Lumborum Release

Focus: Releasing the lower back muscles particularly the quadratus lumborum and lumbodorsal fascia.

Precautions: Be careful with clients who can't rotate their spines.

Exercise Sequence: Begin lying on the side with the head supported by the bottom arm, the top leg flexed to 90 degrees at the hip and knee and resting on the roller with the bottom leg straight. Use the top hand to put gentle pressure on the quadratus lumborum which is deep to the narrowest point of the waist. Move the top leg forward and back over the roller allowing the hip and low back to rotate while putting pressure on the quadratus lumborum. This is an excellent exercise for anyone who is prone to muscle spasms in this area as well as clients with SI joint instability and low back pain and stiffness.

HIP FLEXOR STRETCH

Focus: Releasing the hip flexors while stabilizing the back.

Precautions: Be careful with clients with back pain and anterior hip pain. Start slowly and pad the roller if needed. The better the client is at using their abdominals to support their back in this position the more comfortable it will be.

Exercise Sequence: Begin lying supine with the knees bent and the roller against the back of the thighs, lift the hips and roll the roller under the sacrum into a comfortable position. Bend one knee into the chest and extend the other leg straight toward the floor. To increase the stretch, tilt the pelvis posteriorly and walk the foot farther away from the hip.

Straighten the knee of the non-stretching leg to add a hamstring stretch.

GLUTEAL AND PIRIFORMIS RELEASE

Focus: Releasing tension and fascial adhesions in the gluteal muscles and deep external rotators.

Precautions: Clients must be able to support themselves in the position and must be able to tolerate spinal flexion. Be careful with shoulder, neck, wrist and low back injuries.

Exercise Sequence:

Sit on the roller with the roller under the buttocks, the knees bent with the feet flat on the floor and the hands on the ground behind the roller. Cross the right ankle over the left knee and shift the weight on the roller to the right buttock. Use the left leg to roll the roller over the gluteals and the deep rotators. Repeat on the other hip.

ILIOTIBIAL BAND AND LATERAL CALF MASSAGE

Focus: Releasing the Iliotibial band from the underlying lateral hamstring and vastus lateralis muscles.

Precautions: Client must be able to hold the position comfortably and safely. Back, neck shoulder and wrist injuries can limit a client's ability to do this exercise.

Exercise Sequence: Place the roller under the side of the thigh and support the torso with the arms to roll the roller up and down the iliotibial band. Avoid rolling over the greater trochanter and the lateral side of the knee joint. To target the lateral calf the client can move the roller below the knee and roll over the lateral calf.

Small Ball Releases

GLUTEAL AREA RELEASE

Focus: To release tight spots in the gluteal area. This can be very effective for treating piriformis syndrome and for relieving some symptoms of low back, SI joint and sciatic problems.

Precautions: Be careful not to put pressure on the bony areas around the hip especially the SI joint and the coccyx. When treating nerve symptoms from sciatica or piriformis syndrome, it is extremely important that the symptoms do not increase with the pressure from the ball, if they do then stop the release immediately. If clients are using this at home tell them that this should not increase their symptoms and if it does they need to discontinue it until they see you again.

Exercise Sequence: The hip sequence can be done standing against a wall or lying supine. It can be difficult to get enough pressure on the ball for this area so have the client experiment to see what position works best for them.

A good sequence is to start with the ball between the sacrum and the ilium and to move the ball along the lateral edge of the sacrum first then across the area between the sacrum and the greater trochanter starting at the upper edge of the ilium and working down all the way to the space between the ischial tuberosity and the greater trochanter. Stop and breathe into any areas that feel tight and stuck.

Structural or Muscular Imbalances between the Two Sides of the Spine

Lack of symmetry between the two sides of the spine can lead to uneven stress on the vertebrae and imbalanced use of the muscles and can eventually lead to pain. Whether the lack of symmetry is due to scoliosis or is simply uneven muscle development is important to assess in the initial stages. Not all clients that you work with will know that they have a scoliosis. If you have questions about whether a client might have it they should get evaluated by an appropriate medical practitioner. To correct the imbalances it is important first to understand the imbalances as well as you can through alignment assessments and muscle testing. Once you understand the issues, work to realign the body as best you can and to work on specific muscle imbalances as needed.

Exercise Principle: Teach the client to work evenly across the midline of the torso.

ASSESSMENTS

- Assess for scoliosis by having the client do a forward bend from standing and noting the differences in muscular development and bony alignment on each side of the spine. Make notes of the apex of the curves and rotations.
- Visually and manually assess the muscles on either side of the spine.
- Assess the hips for imbalances, rotations, high hips.
- Assess strength of and imbalances in the lateral systems: oblique abdominals, torso rotation, torso lateral flexion, adductors and abductors.

Exercises: The general principle with scoliosis is to stretch the inside of the curve, strengthen the outside of the curve and maintain as balanced an alignment as possible in every exercise. This is much easier said than done.

There are several excellent courses on Pilates and Scoliosis and if this topic is of interest to you, continue your learning through one of these workshops.

If the imbalances are muscular rather than structural, Focus on single leg or single arm exercises as much as possible in order to activate the less developed side. To activate one side of the erector spinae or multifidi, balance on the leg or arm of the less developed side and/or rotate away from the less developed side. Make the client work in as balanced a way as possible through cueing, padding, manual and tactile feedback. Don't push for too fast a change.

STRATEGIES FOR SENSITIVE CLIENTS

Very often when working with clients with back problems they will be very limited in what they can do for a long time. They may not be able to hollow comfortably or to stretch certain areas. Keeping an open and creative mind is essential here. If the problem area cannot be used then work peripherally, use the arms or the legs if they can't do much with the torso. Understand that in many cases simply getting them moving any part of their body will help to increase their strength, improve their circulation and increase their confidence. As they begin to do things with their bodies that don't hurt them they will begin to trust themselves and you and will begin to ask for more challenges. Facilitating this process is your primary role. Keep working within their comfort zone and you will be able to build a trust that will allow them to do more than they might have thought possible.

Can't tolerate compression: No closed chain leg and foot work, use Trap and Chair instead, stretch in between exercises, Hanging, Supine Arm Stretch on Trap with pull through, Hanging prone on ball or Barrel.

Can't tolerate leg work: Focus on arm work, use implicit rather than direct abdominal strengthening. Do Mat quad isometrics, foot work if necessary.

Prefers flexion: Use wedge, keep back on mat rather than using neutral position.

Prefers neutral or extension: Use lumbar support in supine work and in hamstring stretches at first. This is particularly common in disc injuries and sciatica.

Can't tolerate one position for long: Keep them moving from standing to sitting to lying down. Have them get up and move in between exercises in order to loosen up and check in.

Move slowly, keep the client as comfortable as possible. Allow the body to heal itself.

Common problems of the Back and Trunk

ACUTE MUSCLE SPASMS

Symptoms:
The client will usually describe the pain as sharp, localized and usually unilateral and it will typically limit their movement in certain positions. Muscle spasms, usually come on after a sudden movement in flexion and rotation or engaging in a new activity or overdoing a normal activity. The pain can be quite intense and the client can be unable to straighten up during the episode.

Definition:
The muscles most commonly involved in spasms in this area include the quadratus lumborum, erector spinae, psoas and piriformis muscles. Typically these spasms resolve quickly although pain in the area may persist for several days. Instructing the client in self care release techniques and working with the client on correcting the underlying imbalance can be very effective at preventing a reoccurrence. The sooner the client gets the initial spasm released, the quicker they will recover completely. Muscle spasms can be caused by a variety of underlying pathologies including disc injuries, degenerative joint disease, facet joint syndrome or may be due simply to muscular trauma from overworking. Once the initial episode has calmed down or if spasms tend to recur it may be valuable to look for any underlying imbalances and to make sure they have an accurate diagnosis from a medical practitioner.

Exercise Principles:
- Identify the muscle or muscles involved through palpation, observation and client feedback. In the lumbar area
- Consider the psoas as a potential culprit even though it is hard to see or feel.

Release the holding pattern:
- Teach self release techniques using the roller, small balls or self massage
- Refer them to a hands on practitioner
- Identify positions and gentle exercises that release the spasm such as pelvic clock
- Support the area using wedges, lumbar roll, towels, pillows, knee support, neck roll, balls
- Gentle stretching: pain free ROM hamstring., Form 4, psoas, ITB strumming, roller
- Gentle strengthening with a balanced pelvis and without over working the effected area
- Progressing to fuller ROM and increased resistance as the client can tolerate it

Contraindications:
Avoid strong muscular stretching and strong contractions in the area. Moderation is the key to success.

LUMBAR SPRAIN, STRAIN AND FACET SYNDROME

Symptoms:
All of these syndromes can share similar symptoms of low back soreness and pain that is localized, usually unilateral and comes on after over doing a given activity such as gardening, playing sports or lifting grandchildren or after a car accident or other trauma. Often all of these will play a role in the injury so they are included together here.

Definition:
Sprains involve damage to the ligaments that hold the vertebra together, strains involve damage to the muscles of the back and facet joint syndrome occurs when adjacent facet joints become stuck to each other or develop dysfunctional movement patterns. All of these injuries can lead to localized pain and inflammation which can develop into scar tissue if the initial injury is not handled well.

Exercise Principles:

- The first principle here is to decrease any acute inflammation in the area. This may involve icing, anti-inflammatory medication or manual work by a PT, DC or CMT. In our practice we need to make sure that the client is doing their best to minimize their inflammation by icing after sessions and following the advice of their medical practitioner.
- The next or concurrent step is to maintain as much activity as the client can comfortably handle. Keeping the area moving gently can limit scar tissue and keep the injury from becoming chronic.
- In your assessment you need to understand what ranges of motion are comfortable and uncomfortable. With facet syndrome, extension is typically the moist uncomfortable position. With strains and sprains it depends on where the injury is located.
- Start with releasing any holding patterns or compensations: manual releases, roller or ball massage, gentle range of motion exercises, pelvic clock
- Support the area as needed for comfort: wedges, lumbar roll, towels, pillows, knee support, neck roll, balls.
- Focus on exercises that maintain as much range of motion for the client as is comfortable.
- Work on moving the rest of the body if the back is too tender. Remember that moving increases circulation and can speed the healing process.
- Progress to fuller ROM and increased resistance as the client can tolerate it

Contraindications:

Avoid strong muscular stretching and strong contractions in the area until the inflammation has subsided. Moderation is the key to success.

DEGENERATIVE JOINT DISEASE, OSTEOARTHRITIS, SPINAL STENOSIS

Symptoms

Symptoms of DJD can vary from none to severe. Often the first symptoms are stiffness or soreness in the joint which is worse with inactivity but gets better with movement. If the degeneration of the joint is severe it can lead to pain in certain ranges of motion or it can put pressure on a nerve causing radiculopathy or nerve impingement. The pain can be caused by the bones jarring against each other, from the nerves that are being pressed or from muscular compensations caused by protecting the body from pain or from limited ranges of motion. Pain from arthritis will often be delayed so pay attention to how the client feels at the time and how they feel one and two days later. Check to see if the client is using ice, heat or anti-inflammatory medications.

Definition

DJD is characterized by degenerative bony changes on X-ray. These changes can consist of bone spurring between the vertebra, narrowing of the nerve outlets called spinal stenosis or fusion of the vertebra. The causes of these changes seem to be related to wear and tear on the joints and previous trauma although some research indicates that chronic infections or auto immune reactions may also play a role. Spondylosis, osteoarthritis and bone spurs are other names for degenerative changes.

Exercise Principles

Treatment depends to some extent on the nature of the symptoms. If nerve pain is involved treat as for disc injuries or radiculopathy. If there is no nerve pain:

- Encourage full comfortable range of motion but avoid joint compression. Use the apparatus to support non-weight bearing range of motion.
- Teach core strengthening and pelvic stabilization. This can help to decompress the bones that may be putting pressure on each other.
- Add some traction type exercises into the program. For example trap hip traction, circles with the knees in the straps, trap hanging stretch or instructor pull.

Contraindications: Avoid compression in the affected area, be cautious with end ROM.

SCOLIOSIS

Definition:
Scoliosis indicates any atypical curvature of the spine. It can occur at any level of the spine or at multiple levels and be mild, moderate or severe depending on the amount of curve. The causes are generally unknown and it usually develops during early adolescence. It is important to know if the curves have stabilized or if the scoliosis is progressing. If it is stable then the patient is a good candidate for conditioning. If the patient is not stable make sure that a doctor is overseeing their care as the curves can progress to the point where they put pressure on the internal organs and the condition can become life threatening. If the scoliosis was progressive they may have had surgery to implant rods in their spine. If they have it is important to be aware of where the rods are as their mobility will be limited in that area. Typically the rods do not attach to the neck or sacrum so that all of their spinal mobility may be happening at only a few levels. This can put extra stress on the areas that can move.

Exercise Principles:
Programs are individually designed based on an understanding of the direction and degree of the curves.

- The first step is to understand the structure as clearly as you can.
- The second step is to understand how well the client has accommodated to their structure and to respect how their natural intelligence has dealt with their imbalances. If they are having no discomfort and are functioning well then consider working with them as you would any other client without aggressively addressing their imbalances.
- If they need help adapting to their structure then the goal is to work toward balancing the body by strengthening the weaker areas and stretching the tighter areas of their curve or curves. The general rule here is to stretch the concave areas and to strengthen the convex areas.
- Keep pressure out of the spine and focus on decompression and elongation. Use sticky pads in Reformer leg and footwork for example. Include traction in some form in their program.
- They will probably never look or feel balanced. Work within their structure to make them as comfortable and functional as possible.
- Creativity is the key word here because every scoliosis patient is going to be unique.

Contraindications:
Avoid compression into the spine. Work slowly and allow the client's body to guide your progress. Remember that the body has adapted to the structure as it is and may be resistant to change. Respect the fact that it has served this client well for as long as it has.

Additional Resources:
There are a few Pilates instructor who have specialized in Scoliosis and studying with them can be very useful. Karen Clippinger, Michele Larsson and Jillian Hessel all offer workshops in this field.

DISC AND NERVE PATHOLOGIES

Symptoms:
The most common symptoms of disc and nerve pathologies are chronic inflammation, radiating pain on one side of the body and significant muscular compensations. The client will typically feel worse with sitting and will often feel best when lying down or standing. The pain is not easily relieved by icing or anti-inflammatory medication. If the client has nerve pain the pain will typically radiate from the low back down one leg through the gluteals, down the side, back or front of the leg and into the foot. Often the pain is discontinuous and will not be relieved by trigger points or massage the way muscular pain often will. The client may report numbness, tingling, burning and changes in strength in the affected limb. In severe cases bowel and bladder control can be affected.

Definition:
Disc pathologies take different forms and the forms are called by different names depending on the practitioner.

- The mildest form is a bulge or protrusion where the wall of the disc weakens and the disc becomes distorted. The protrusion can cause no symptoms and can resolve on it's own or it can put pressure on a nerve and cause radiculopathy.
- The next level of herniation is called a prolapse and it occurs when the protrusion becomes a permanent distortion in the disc.
- The next level is an extrusion and it occurs when the material inside the disc leaks out but does not move beyond the immediate area of the disc.
- The last level is called free sequestration or a leaky disc and occurs when the disc ruptures and the contents float away from the disc and enter the spinal canal. This last case is also called degenerative disc disease or DDD and it can be extremely debilitating.

- Radiculopathy or sciatica indicates that a nerve root is being irritated. This will lead to symptoms of tingling, numbness, radiating pain and loss of function along the path of the nerve. With lumbar injuries the sciatic nerve is usually the one being compressed. Because it has several specific pathways in the leg, symptoms will follow one of a few typical patterns depending on the level of the herniation.

In the lumbar areas the most common discs affected are L4-5 and L5-S1 because these joints are where most of the movement in the back occurs.

Exercise Principles:

A) Disc Injury without Radiculopathy

- Identify neutral position for this particular client and support it as needed.
- Develop pelvic stabilization principles.
- Educate the client about supporting the back. Teach lifting, sitting, driving etc.
- Caution with hamstring and psoas stretching.
- Avoid compression.
- Be careful with rotation and lateral flexion initially but do add it in gently as soon as it is tolerable.
- Add exercises to challenge core strength and pelvic stability as the client improves

B) Disc Injury with Radiculopathy or Sciatica

Treatment is the same as without radiculopathy except for:

- Work to centralize nerve pain, ie decrease pain in the limb.
- Identify positions that decrease pain
- Train client in techniques that decrease pain
- McKenzie extension exercises
- Hip glides in different positions
- Do nothing to exacerbate the pain and train the client to do the same.

Any area that has been affected by a pinched nerve for a period of time will have some amount of muscular atrophy in the muscles that the affected nerve supplied. Strengthening will be more difficult in the area. The patient will also experience the area as feeling and behaving very differently from the unaffected side. This feeling of imbalance may persist long after the pain subsides.

As the client improves developing strength while maintaining the functional position becomes the goal of treatment. Exercises should focus on activities that are necessary for ADL first and then progress as the client improves.

Contraindications:

Avoid spinal compression. Do not allow the patient to work in pain if at all possible.

SACROILIAC (SI) JOINT DYSFUNCTION

Symptoms:
The client will typically have pain unilaterally which may be located at the SI joint or may spread into the low back and buttocks on the affected side.

Definitions:
Sacroiliac joint dysfunction is characterized by either instability or immobility in one or both sacroiliac joints. It is much more common in women than in men and is also more common in dancer's and athletes who use a lot of external rotation and flexibility in their activities. Pain in the SI joint is a common symptom of muscular imbalances, disc injuries and facet joint dysfunction.

Exercise Principles:
Through analyzing the structure of the pelvis and associated muscles, imbalances in strength and flexibility will become evident. Typically the pelvis will be unlevel, there will be differences in the flexibility of the external rotators and psoas on each side and the adductors and abductors will be imbalanced. Treatment is designed to balance the functioning of this area as much as possible.

- The first step is to understand the imbalances around the sacrum as well as you can. Is the pelvis rotated? Is one leg longer? Is there unequal mobility around the SI joints.
- Find the most comfortable position for them around the joint. The SI joint is directly affected by internal and external hip rotation and engaging the adductors and/or abductors. External hip rotation increases pressure on the joint which can stabilize a hypermobile joint while internal hip rotation decreases pressure on the joint which can decrease discomfort if the joint is inflamed or arthritic.
- The second step is to work to correct the imbalances. One strategy is to work with the inner unit first and then to develop strength and balance in the outer unit systems to balance the forces that are acting on the joint. Balancing the flexibility of the muscles around the joints is also important.
- Work with coaching them on activities of daily living to maintain the balance around the joint as much as possible.

Contraindications:
With inflammation, arthritis and joint pain, be cautious with external rotation, excessive gluteal tension and back extension at least initially. With instability and hypermobility, be cautious with internal rotation. Be cautions with lateral spinal flexion as aggressive side stretches can pull an unstable joint out of position.

PIRIFORMIS SYNDROME

Definition:
Piriformis syndrome is a version of sciatica that does not involve the disc or nerve root but instead is caused by the piriformis muscle being so tight that it compresses the sciatic nerve and causes pain in the gluteal region and down into the leg. This typically occurs because the support structure around the hip is not balanced.

Exercise Principles:
Since an imbalance in the support system around the pelvis is the underlying issue, treatment is similar to that for SI joint dysfunctions.

- Teach the client tennis ball or roller releases for the external rotators.
- Modify daily activities to minimize external rotation of the hip and constant gluteal tension. Work with the legs in parallel.
- Refer the client to a hands on practitioner for manual release work.
- Stretch the external rotators and increase mobility of the lumbar spine.

Contraindications:
Be careful of excessive pressure on the sit bones, be careful with external rotation work.

PELVIC IMBALANCES AND LEG LENGTH DIFFERENCES

Definition:
Pelvic imbalances occur as both reactions to back pathologies and as contributors to them. Sorting out cause and effect may or may not be useful to you. In essence when observing the patient it is important to notice the relative levels of the hip bones at the ASIS and at the PSIS. It is also useful to check the pelvis when lying down and when standing as differences in the two positions can be caused by muscular versus bony imbalances.

Exercise Principles:
- Focus on core strengthening and on developing the strength of the outer unit to support a balanced pelvis in all positions.
- Have the client work with a balanced pelvis as much as possible in all of their work.
- Develop and challenge their ability to keep their pelvis stable under different circumstances. Add unstable surfaces to their program as soon as they can tolerate it.
- Often padding can be used to place the body in it's optimum functional position. Working with each side of the body individually can help the patient to understand that balance will be a matter of understanding the differences in the two sides and addressing them individually.

Contraindications:
Depends on what other conditions or symptoms accompany the imbalances.

SPONDYLOLYSIS

Symptoms:
The most common symptom is unilateral pain with lumbar hyperextension.

Definition:
A spondylolysis indicates a fracture or stress fracture of a vertebra, typically in the lumbar region. If the fracture is due to an injury it is most common in young, 9–14 year old athletes and it is more common in young women than in young men. This condition is often seen in young dancers or gymnasts and can be caused by working in extreme hyperextension with force being transferred into the lower back during jumps or in landing from lifts. It can also happen as a result of trauma for instance during a car accident or after a fall. This diagnosis will be given to a client by a medical professional and the client needs to be cleared to do exercise before sessions begin.

Exercise Principles:
Once the client is cleared to resume movement, overall strengthening of the trunk is extremely important. If the fracture is in the lumbar region one of the challenges is to avoid overusing the psoas to make sure it does not pull the vertebra anteriorly.

- Initially stabilize the trunk only in a neutral position. Add flexion as the client improves. Extension may never be comfortable or may be contraindicated by the prescribing physician.
- Improving overall strength is important to stabilize the spine.
- Be cautious with psoas stretching, rotation and lateral flexion until the client is pain free.

Contraindications:
Avoid hyperextension and keep a careful monitor on pain level and changes in pain level. If the client has a sudden change in pain level refer them back to their physician.

SPONDYLOLISTHESIS

Symptoms:
The most common symptom is unilateral pain with lumbar hyperextension.

Definition:
Spondylolisthesis is also most common in the lumbar area. It indicates a vertebra that has slid forward on the vertebra below it or on the sacrum. This may be accompanied by a spondylolysis where the vertebra breaks and slides forward. This is a relatively common condition. It can be symptomatic or not depending on whether the spondylolisthesis is a result of a developmental abnormality or an acute episode. If the vertebra shifts acutely it can bring on sudden symptoms of low back pain.

Exercise Principles:
Treat as for spondylolysis.

Contraindications:
Avoid hyperextension

SURGICAL DIAGNOSIS – LAMINECTOMIES, DISCECTOMY, FUSIONS, RODS AND IMPLANTS

Definitions:
A laminectomy indicates the surgical removal of the lamina which surrounds the nerve route as it exits from the spinal cord. It is typically done with a discectomy to decrease the likelihood of the nerve becoming irritated again after the surgery. It is the simplest of the back surgeries.

- A discectomy indicates the removal of some or all of the intervertebral disc material. This can be a relatively non-invasive surgery or it can be a major one.
- A spinal fusion indicates that one or more vertebral levels have been fused through the use of bony implants or plates.
- Rods or plates are typically attached to the spine in order to correct a scoliosis which is not stabilizing on its own or following trauma to the spine of some kind.

Exercise Principles:
For surgery where the mobility was not surgically limited the patient will be treated depending on their symptoms and according to the recommendations of their surgeon if they are still under their care. If the surgery is successful our primary job is to develop overall pelvic stability and general conditioning in order to maintain the pain free state the patient achieved through surgery.

With fusions, rods and plates we need to keep in mind any mobility problems that the patient has and be sure not to stress the surrounding functional joints.

Contraindications:
Be aware of any contraindications that the treating physician has made you or the patient aware of. Be careful with ROM in the case of fusions, rods and implants.

BALANCED BODY® MOVEMENT PRINCIPLES™

OVERVIEW

The Balanced Body® Movement Principles™ teach Pilates and fitness professionals how the body moves so they can help students, clients and patients move better. The Movement Principles provide practical tools for observing, analyzing and improving movement by gaining a deeper understanding of anatomy, kinesiology, biomechanics and optimum movement patterns.

Balanced Body® Movement Principles™

MODULE 1: WHOLE BODY MOVEMENT

Whole Body Movement

Learning to see, evaluate and influence whole body movement patterns is the ultimate goal of any trainer. This section includes information on observing the body from three different levels:

- Global movement - observing the whole body.
- Planar movement - looking at the body from the sagittal, frontal and transverse planes.
- Local movement - seeing local and regional movement patterns.

Posture and Alignment

Good posture and proper alignment of the joints allow the force of gravity to move through the body in an optimal way. This section includes:

- Postural observations..
- Common misalignments and dysfunctional patterns.

MODULE 2: TRUNK INTEGRATION

Trunk Integration includes the core and the muscle systems that integrate movement between the trunk and the limbs. Trunk Integration includes information on:

- Breathing.
- Inner unit and core activation.
- Outer unit and lumbopelvic stability.
- Spinal mobility and strength.

MODULE 3: LOWER BODY TRAINING

The lower body carries us everywhere we go and teaching good alignment, balanced strength and optimum range of motion are vital for training agility, endurance and power in movement. This section includes information on:

Lower Body Training Principles

- Alignment.
- Balanced muscle development and range of motion.
- Functional movement skills.

MODULE 4: UPPER BODY TRAINING

Training the upper body prepares us for everyday activities and creates power and speed for athletic pursuits. This section includes:

Upper Body Training Principles

- Movements of the upper body.
- Glenohumeral stability, scapular stability and mobility.
- Functional movement patterns.
- Integrating the upper body into whole body movement.

MODULE 5: MOBILITY AND RESTORATION

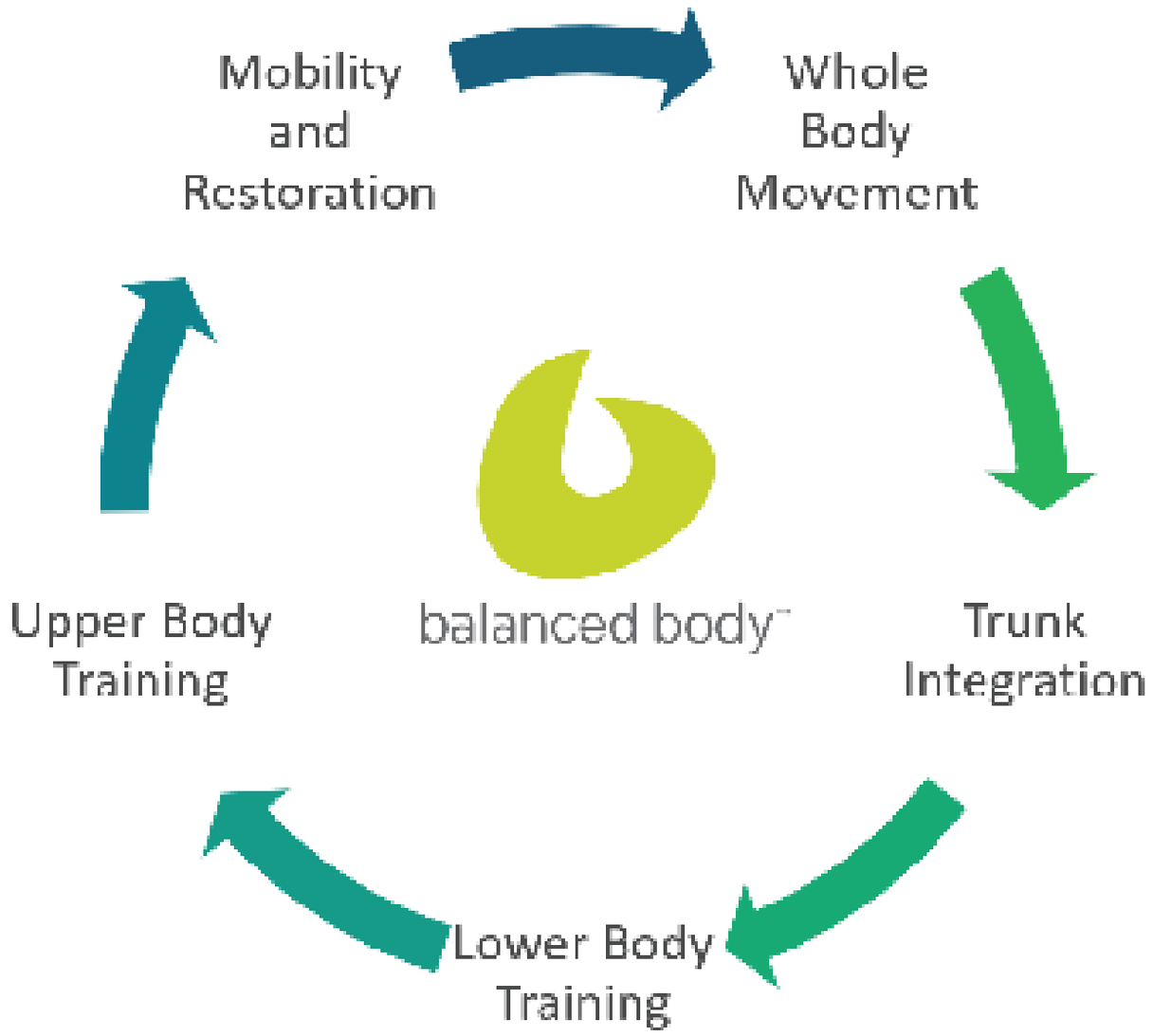
The body requires a balance of effort and relaxation to recharge and refresh. This section includes information on:

Mobility

- What it is, why mobility is useful and techniques for enhancing mobility.

Restoration, recovery and relaxation

- The importance of rest and relaxation to the recovery process.
- Self massage techniques to help the body recover.



WHOLE BODY MOVEMENT

GLOBAL, PLANAR AND LOCAL

Training clients to move better means training their whole body to move better. The most effective trainers focus on understanding and training functional, whole body movement in order to create pain free, efficient and effective movement patterns. Whether training an athlete for higher levels of performance, a senior citizen to stay active and healthy or an injured client to recover a pain free life, understanding how the body works and developing strong movement foundations are the key to creating effective fitness programs.

Training Whole Body Movement

Whole Body Movement requires the integration and coordination of multiple body systems working together. Whole body movement includes walking, standing, lifting, throwing, pushing, pulling and many other daily and sports related activities we engage in on a regular basis.

In order for the body to move through each day with ease, each of the following systems must play their part:

- Skeletal system
- Muscular system
- Fascial system
- Cardiovascular system
- Nervous system

Harmonious movement patterns are evidence that all of these systems are working in perfect synergy. Dysfunctional or impaired movement patterns point to disharmony somewhere in the body. One of the great joys and challenges of being a movement teacher is the need to continually refine one's ability to recognize and understand harmonious and impaired movement patterns and to expand one's ability to improve them.

GLOBAL, PLANAR AND LOCAL

To simplify the process of understanding and improving movement patterns, Balanced Body has developed a systematic framework for observing the body in motion.

The system involves observing the body from three different levels:

- Global movement patterns
- Planar movement patterns
- Local or regional movement patterns

GLOBAL MOVEMENT

Global movement is the highest level view. It is stepping back to observe the proverbial forest before tackling the trees. This panoramic view provides information on:

- Postural patterns
- Movement strategies
- Strength imbalances and side dominance
- Coordination and balance

PLANAR MOVEMENT

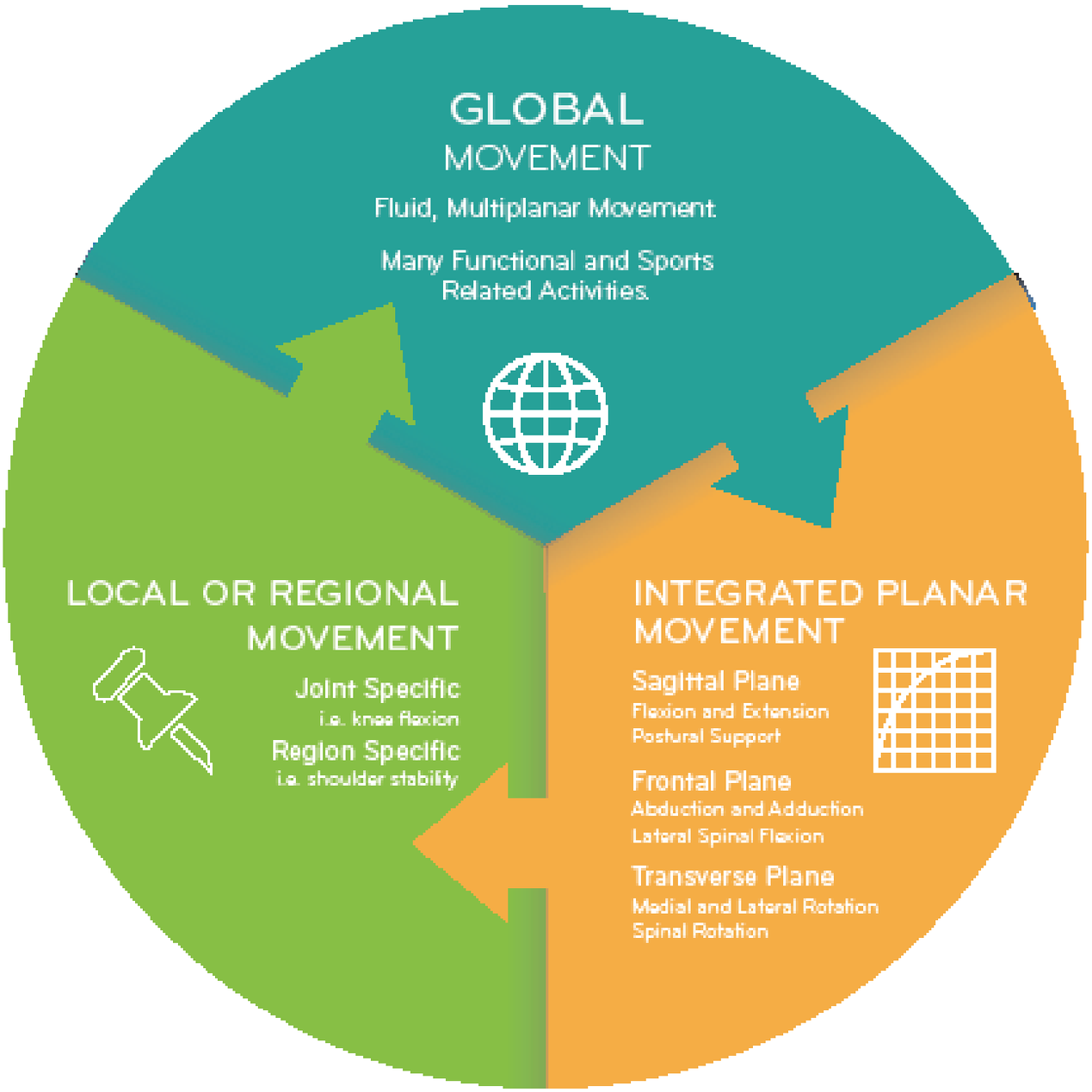
Understanding whole body or global movement can be very complex and difficult to analyze. Breaking down the observation of global movement into movement in the sagittal, frontal and transverse planes helps teachers more easily analyze what they are seeing.

As instructors, observing the body from the front, side and back is an excellent way to assess movement in each plane in order to more easily identify impaired movement patterns.

LOCAL MOVEMENT

Local movement includes regional and joint specific motions like the action of the shoulder in a push up or the alignment of the knee in a squat. Global and planar observations often lead to identifying one area or joint that is creating a disruption in the movement pattern. Once the movement pattern of the local area is improved, observation returns to the planar or global level to see if correcting the local issue improved the global movement pattern.

Learning to continuously move between the three levels of observation and learning the skills to improve a client's movement foundations at every level are at the heart of being an excellent movement teacher.



Analyzing Posture

Postural analysis is the science of understanding the optimum relationship of the body to gravity. To analyze posture we begin by identifying key bony landmarks and how they line up in a standing position.

This simple two page form can be used to chart static posture. It is helpful to establish baseline posture prior to beginning an exercise program and to occasionally re-assess client progress. Use the images to identify deviations and the space below for relevant notes and observations.

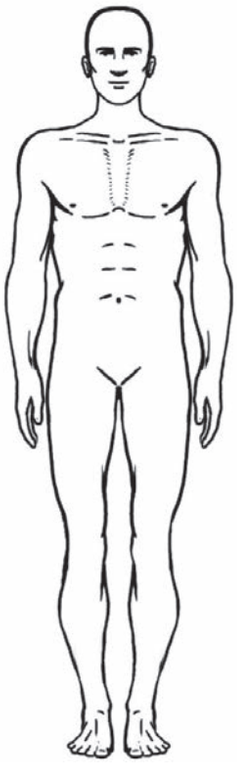
SIDE VIEW

VERTICAL OBSERVATION POINTS

- Tip of earlobe
- Top of shoulder
- Center of rib cage
- High point of iliac crest
- Mid point of the lateral side of the knee
- Slightly in front of the lateral malleolus of the ankle

FRONT VIEW

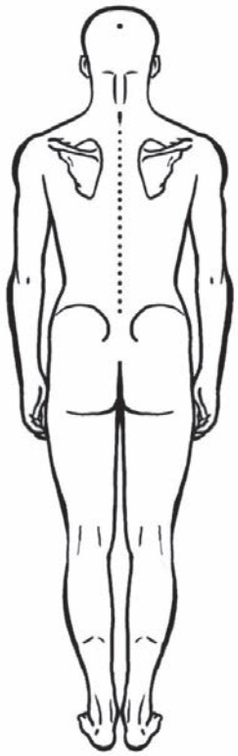
VERTICAL OBSERVATION POINTS



- Nose
- Center of Sternum
- Navel
- Center of pubic bone
- Inside ASIS
- Center of patella
- Center of the front of the ankle
- Space between 1st & 2nd toe

BACK VIEW

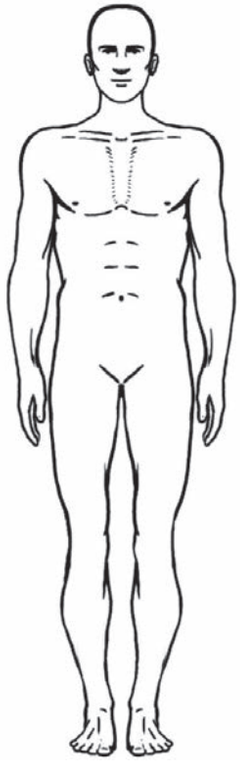
VERTICAL OBSERVATION POINTS



- Center of skull
- Spine straight
- Center of sacrum and tailbone
- Center of gluteal fold
- Center of back of knee
- Center of Achilles tendon

FRONT VIEW

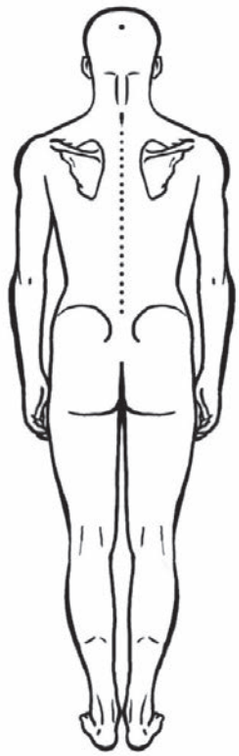
HORIZONTAL OBSERVATION POINTS



- Eyes level
- Shoulders level
- Equal distance between arms and torso
- ASIS level
- High point of iliac crests level
- Greater trochanters level
- Both knees even
- Equal turnout on both feet

BACK VIEW

HORIZONTAL OBSERVATION POINTS



- Ears level
- Level and balanced scapulae
- Equal distance between spine and sides of ribs
- PSIS level
- High point of iliac crests level
- Knees level

Common Misalignments/Deviations

Each of the following patterns are caused by a combination of bone structure, joint mobility, habitual patterns, muscular tightness and muscular strength. In addressing them, change will come about most easily with patterns that are primarily muscular and will be hardest to change in patterns that are embedded in the bones and joint structure. The goal is to create as much balance as the client's structure will allow and to work gently and gradually toward improved movement patterns.

SPINE AND PELVIS

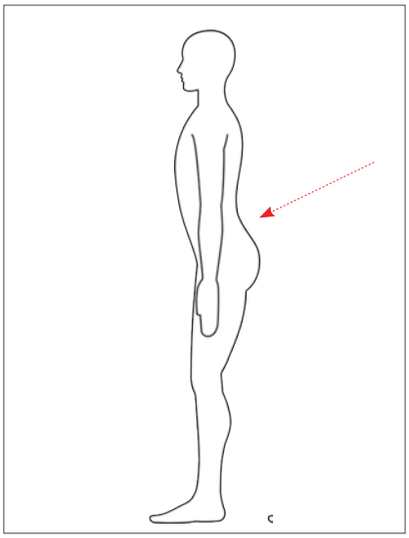
Scoliosis

- **Definition:** A lateral deviation of the spine usually accompanied by rotation. Scoliosis that occurs in one part of the spine such as the thorax is called a C curve scoliosis. If the scoliosis occurs in two parts of the spine, for example a right curve in the thorax and a left curve in the lumbar, it is called an S curve scoliosis.
- **General guidelines:**
  - Work to balance the client's posture by cueing them to maintain as much balance as possible.
  - Consider gently stretching the tighter sides of the curve and strengthening the open sides of the curve.
  - If this population is of interest, consider taking continuing education courses on scoliosis for more specific direction.

Scoliosis

Lordosis

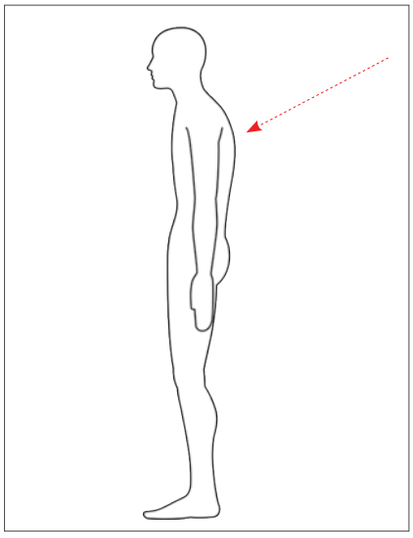
- **Definition:** A spinal curve toward the front of the body. There is supposed to be a small forward curve or lordosis in the lumbar and the cervical sections of the spine. An excessive curve can be called a lordosis or more accurately a hyperlordosis.
- **General guidelines:**
  - Lumbar lordosis is usually accompanied by tight low back extensors, an anteriorly tilted pelvis, tight hip flexors and weak abdominals in the neutral range.
  - Correct the pattern through increasing the flexibility of the lumbar and hip flexors and increasing the strength of the abdominals and hamstrings while actively stabilizing the pelvis in neutral.



Lordosis with an anteriorly tilted pelvis

Kyphosis

- **Definition:** A spinal curve toward the back of the body. There is supposed to be a small kyphotic curve in the thoracic spine. An excessive curve can be called a kyphosis or more accurately a hyperkyphosis.
- **General guidelines:**
  - Thoracic kyphosis is usually accompanied by weak thoracic extensors, tight anterior chest muscles and weak scapular stabilizers.
  - Correct the pattern by stretching the chest and strengthening the thoracic extensors and scapular stabilizers.



Kyphosis with a posteriorly tilted pelvis

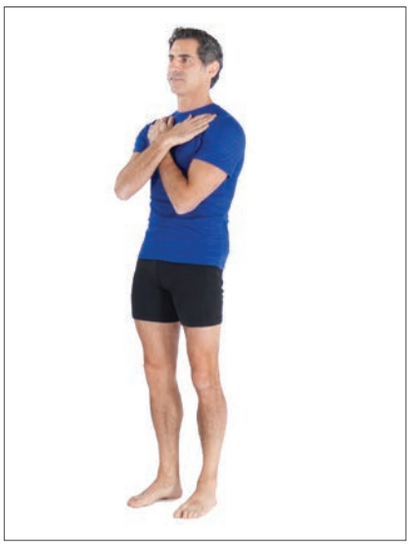
Anterior pelvic tilt

- **Definition:** When the ASIS is anterior of the pubic bone.
- **General guidelines:**
  - Lengthen the hip flexors and lumbar extensors and strengthen the hamstrings and abdominals.
  - Train to maintain posture in standing and functional movements.

Anterior Pelvic Tilt

Posterior pelvic tilt

- **Definition:** When the ASIS is posterior to the pubic bone.
- **General guidelines:**
  - Strengthen the hip flexors and lumbar extensors and lengthen the hamstrings and abdominals.



Posterior Pelvic Tilt

Pelvic up slip and down slip ("high hip or low hip")

- **Definition:** When the high point of the iliac crest is not level, the high hip side is called an up slip and the low hip side is called a down slip.
- **General guidelines:**
  - Balance the lateral system including hip abductors and adductors, quadratus lumborum and lateral torso muscles.

Pelvic inflare and outflare (Pelvic rotation)

- **Definition:** When one ASIS is anterior and closer to the midline while the other hip is posterior and farther from the midline, the anterior hip is in inflare while the posterior hip is in outflare. This is by definition accompanied by counter rotations of the femurs and the torso.
- **General guidelines:**
  - Balance the rotation of the torso and pelvis through the anterior and posterior oblique slings and the hip rotators.

COMMON MISALIGNMENTS

LEGS

Femoral medial rotation

- **Definition:** When the femurs are rotated toward the midline around their long axis. This can often be seen by the patellas aiming toward the midline when the legs are straight as if they were "cross eyed." This may be a postural pattern which is easier to change or it may be caused by the structure of the hip joint in which case work to balance the alignment as much as the structure will allow.
- **General guidelines:**
  - Strengthen lateral femoral rotation and stretch the adductors and medial rotators.

Femoral lateral rotation

- **Definition:** When the femurs are rotated laterally around their long axis. In this case the patellas will aim away from the midline when the legs are in a relatively neutral position.
- **General guidelines:**
  - Strengthen the femoral medial rotators and stretch the lateral rotators.

Knee hyperextension

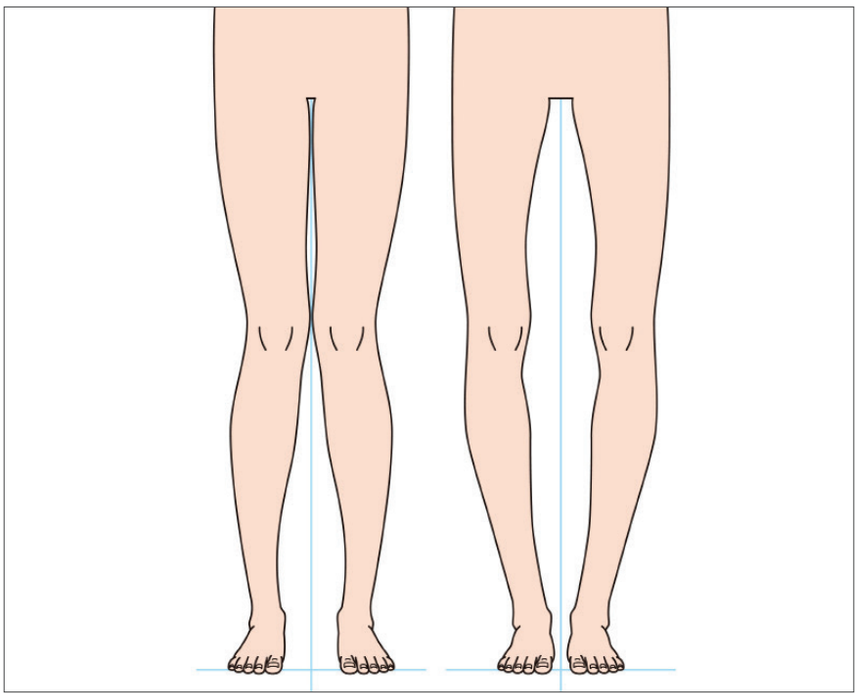
- **Definition:** In standing alignment viewed from the side, the knees are posterior to the plumb line. This is usually caused by hypermobility of the knee.
- **General guidelines:**
  - Make sure the knees do not hyperextend in any weight bearing exercises.
  - Focus on balance between hamstrings and quadriceps to stabilize the knee

Knock knees (genu valgum)

- **Definition:** When standing with the knees straight, the knees may touch but the medial border of the feet do not. This is called an increased Q angle. Knock knees are more common in women because of their wider hips. Knock knees and bow legs are caused by the structure of the hip and knee joint. The training focus is on creating the best alignment and muscle balance possible.
- **General guidelines:**
  - Cue the student to correct the alignment as much as possible while exercising.
  - To improve knock knees, assess hip rotation and the balance between hip abductors and adductors.

Bow legs (genu varum)

- **Definition:** A decreased Q angle shown in standing alignment with the legs straight when the knees don't touch but the medial borders of the feet do. Bow legs are often accompanied by knee hyperextension and sometimes correcting the hyperextension will correct the leg position.
- **General guidelines:**
  - Cue the student to correct the alignment as much as possible while exercising.
  - For Bow legs, look at hip rotation, knee hyperextension and the balance between hip abductors and adductors.



Genu Valgum (knock knees) and Genu Varum (bow legs)

Pronation

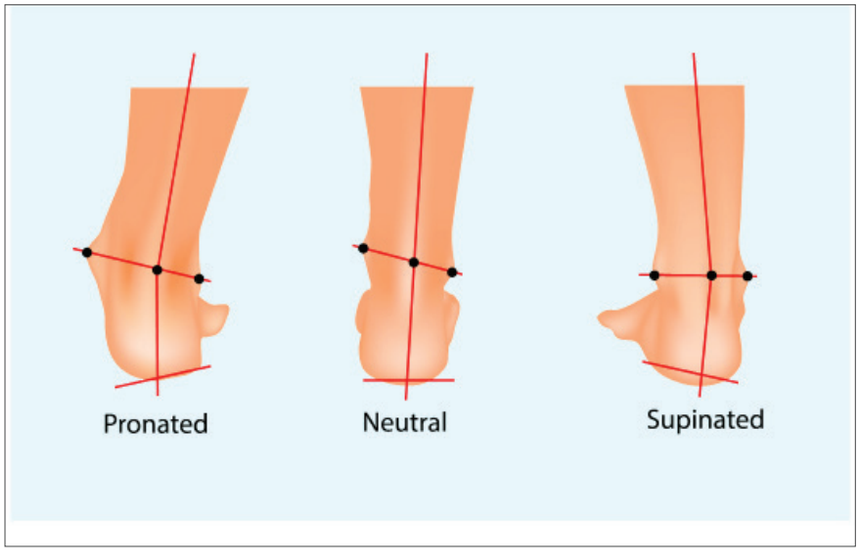
- **Definition:** In standing alignment, the arch flattens toward or contacts the ground and the Achilles tendon bows toward the medial side of the foot. In pronation the weight is carried on the medial side of the foot when standing. This generally indicates a lack of strength and stability on the medial side of the leg from the ankle through to the pelvis.
- **General guidelines:**
  - Strengthen the arch and the medial line of the legs. Observe and correct for habitual compensation.

Supination

- **Definition:** In standing the arch is lifted and the weight is carried on the outside of the foot. This pattern is usually one of stiffness in the joints and muscles of the foot which may limit the amount of change possible.
- **General guidelines:**
  - Stretch the arch and the medial side of the legs. Observe and correct for habitual compensation.

Bunions

- **Definition:** A bunion is a deviation of the toe towards the center of the foot. Bunions usually occur on the big toe.
- **General guidelines:**
  - Correct tendency to over turn out the legs and feet and correct tracking of the foot in gait.



Pronation, supination and neutral foot alignment (right foot shown)

Winging scapula

- **Definition:** When the medial border of the scapula lifts away from the rib cage. Can indicate a weak serratus anterior or a shallow rib cage.
- **General guidelines:**
  - Strengthen the scapular stabilizers and thoracic extensors.

Winging Scapulae

Elevated scapula

- **Definition:** When the scapulae are lifted up towards the ears. It usually indicates tightness in the upper trapezius, pectoralis minor and levator scapulae and a weakness in the inferior fibers of the serratus anterior and lower trapezius.
- **General guidelines:**
  - Strengthen the scapular depressors in their inner range.
  - Improve coordination of scapulohumeral rhythm in upward rotation.

Elevated Scapulae

Neutral Lumbopelvic Position

According to current research in biomechanics, the core works best to stabilize and support the pelvis and lumbar spine when in a "neutral" position. When standing or sitting with a neutral pelvis, the action of gravity on the trunk musculature leads to balanced engagement of the muscles around the spine and abdomen. This decreases the stress on the spine and helps to prevent low back pain and injury.

IDENTIFYING NEUTRAL

There are different landmarks that can be used to identify a neutral lumbopelvic position. When teaching movement, the easiest landmarks to use are the ASIS and the pubic bone. When these two bony landmarks are on a plane perpendicular to the floor in standing or sitting, or parallel to the floor in supine, the pelvis is considered to be neutral.

Finding the right starting position for each exercise provides a solid foundation to move from and creates more comfortable and efficient movement patterns. Research on a neutral lumbopelvic position has primarily been studied when the pelvis and low back are in a standing or upright position. Some modifications may need to be made when lying supine.

NEUTRAL PELVIS AND EXERCISE

Many exercises will challenge and strengthen neutral posture in standing. Maintenance of the spinal curves and neutral pelvis through movement is key to training dynamic core strength and integrating the core with the limbs.

IMAGES AND EXERCISES FOR IDENTIFYING A NEUTRAL PELVIS

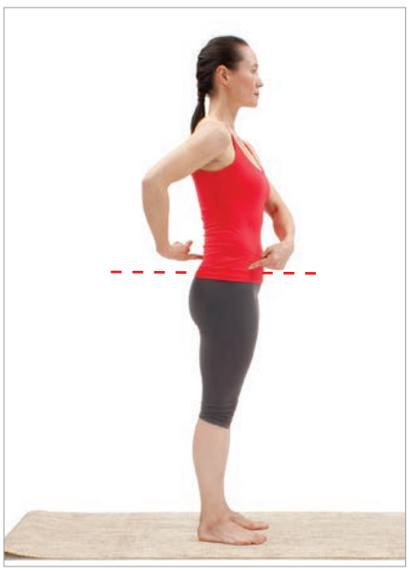
Using the bones
Place the heel of each hand on the ASIS and the second or third finger on the pubic bone to create a triangle with the point facing down. Notice which way the triangle is tipped.

Anterior pelvic tilt
If the ASIS is anterior to the pubic bone, then the pelvis is anteriorly tilted.

Posterior pelvic tilt
If the ASIS is posterior to the pubic bone, the pelvis is posteriorly tilted. Gently move the pelvis forward and back until the pelvis is relatively neutral.

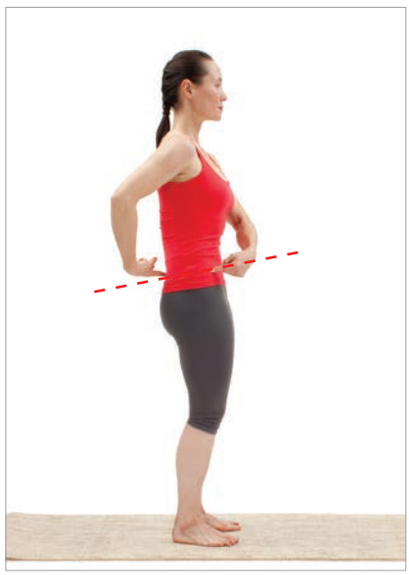
Using imagery
Imagine the pelvis is a bowl full of water balanced over the legs. If the bowl is level, the water won't spill. If the pelvis is anteriorly tilted, the water will spill out the front. If the pelvis is posteriorly tilted, the water will spill out the back.

Neutral is dynamic, not fixed
Neutral pelvis is not a fixed position to create. It is a dynamic concept that shifts and changes slightly in relationship to the movement being performed.



Neutral Pelvis

Anteriorly Tilted Pelvis



Posteriorly Tilted Pelvis

NEUTRAL POSITION IN SUPINE

When standing, sitting or walking, a neutral lumbopelvic position is optimum for efficient movement. When supine, gravity is in a different relationship to the spine and adjustments to neutral lumbopelvic positioning may be necessary.

For example, in exercises where both legs are lowered toward the floor as in the Hundred, the core and abdominal muscles should be strong enough to keep the lower back stable as the legs lower. This keeps the psoas from pulling the lumbar spine forward and potentially causing pain or discomfort. If the core is not strong enough, the lower back position may be adjusted to provide support for these exercises.

Imprinted Spine

An imprinted spine provides support by placing the spine against the mat so it is externally stabilized. An imprinted spine can be created by increasing the flexion in the lumbar spine, posteriorly tilting the pelvis or placing a pad under the sacrum to passively tilt the pelvis and bring the spine closer to the floor.

Imprinted spine. In supine position, press the lower back towards the floor.

Supported Neutral

Supported neutral provides external support by placing a pad underneath the lumbar curve to fill in the space between the lower back and the floor. This position can be useful for teaching new students what a neutral spine is, stabilizing an unstable lower back or supporting a client with an increased lordosis.

Supported neutral. Place a lumbar support under the lower back.

EXCEPTIONS TO NEUTRAL

Neutral pelvis position may also not be appropriate for some clients with low back injuries. The following conditions may prefer an imprinted spine or a posteriorly tilted pelvis:

- Spondylolisthesis
- Spinal stenosis
- Spinal arthritis
- Some sacroiliac joint dysfunctions
- Some disc injuries

TRUNK INTEGRATION

INTRODUCTION

Trunk Integration is an essential concept in movement training. The trunk transfers forces from the lower body to the upper body, from the upper body to the lower body, from one side of the body to the other and from one leg to the opposite arm. The systems that make up Trunk Integration must be trained to work harmoniously in order to create coordinated, effective, efficient and powerful movement patterns.

The Evolution of Core Training

The concept of core training began when physical therapists were looking for a new model to help them treat clients with lower back pain. The first model focused on the action of the "core" as a stabilizer of the lower back during activities of daily living and in athletic pursuits. The first resource was "Clinical Biomechanics of the Spine" by Panjabi and White (1978) This book looked in detail at the biomechanics of the spine and its muscular support system and proposed that the action of the transversus abdominis and multifidi worked as partners to stabilize the spine when the body was in a neutral position.

This original idea of the "core" was expanded, researched and worked with until another seminal work came out, "Therapeutic Exercises for Spinal Segmental Stabilization in Lower Back Pain: Scientific Bases and Clinical Approach" by Richardson et al.(1999). This book put the biomechanical insights of the first book into clinical practice and focused on ways to help clients consciously retrain the stabilization system of the lumbar spine. The concept of the core was expanded to include the action of the pelvic floor and the diaphragm in addition to the transversus abdominis and multifidi.

Through practice with many clients in many environments, the importance of the core became clear but for creating the dynamic stability needed for both managing lower back pain and for optimizing lower back function in healthy, active people, the idea of the core needed to be expanded. In "The Pelvic Girdle: An Integration of Clinical Expertise and Research" by Diane Lee et al, The concept of lumbopelvic stability was expanded to include not just the inner support cylinder or inner unit but also the outer unit where the thorax, spine and pelvis connect to the limbs to create full body movement.

Trunk Integration

Balanced Body has integrated these concepts and many more into the ideas presented in this manual. Our goal is to help movement teachers understand the interconnections that tie the body together so they can work more effectively to create harmonious, whole body movement.

THE FOUR ELEMENTS OF TRUNK INTEGRATION INCLUDE THE FOLLOWING:

Breathing
This repetitive, unconscious action can profoundly effect movement, mood and energy levels. And the diaphragm forms the "ceiling" of the core or inner unit.

The core or inner unit
Consists of the pelvic floor, transversus abdominis, multifidi and diaphragm and forms the inner cylinder tying our pelvis, spine and rib cage together.

The four outer units
These four systems maintain the relationship between the upper limbs, thorax, spine, pelvis and lower limbs in functional activities of all kinds. The four outer units consist of the anterior and posterior oblique slings, the deep longitudinal system and the lateral system.

Spinal mobility
The focus of many core and trunk integration exercises is on stability. To balance stability, spinal mobility must be balanced and harmonious.

All of these elements are discussed and examples are given of the principles in action in this section.

References

Clinical Biomechanics of the Spine by Manahar M. Panjabi and Augustus A. White III, 1st edition 1978, 2nd edition 1990, Lippincott, Williams and Wilkins

Therapeutic Exercises for Spinal Segmental Stabilization in Lower Back Pain: Scientific Bases and Clinical Approach

by Carolyn Richardson, PhD, BPhty (Hons), Gwendolen Jull, PhD, MPhty, Grad Dip Manip Ther, FACP, Paul Hodges, PhD, MedDr, DSc, BPhty (Hons) and Julie Hides, PhD, MPhtyST, BPhty, 1st edition 1999, 2nd edition 2004, Elsevier Limited

The Pelvic Girdle: An integration of Clinical Expertise and Research by Diane Lee, BSR, FCAMPT, CGIMS, Linda-Joy Lee, PhD, BSc(PT), FCAMPT, CGIMS, MCPA, Andry Vleeming, PhD, PT , 1st edition 1989, 4th edition 2011, Churchill Livingstone/Elsevier

Breathing

"Breathing is the first act of life and the last." - J. Pilates.

It is the foundation of our existence and creates the fundamental rhythm that underlies our life. It is essential for maintaining and creating optimum health and wellbeing. Breathing techniques can be used to decrease stress, lower or raise blood pressure, improve aerobic capacity and calm the mind and spirit. Breathing has been used by every culture to change mind and body states in meditation, exercise and daily living.

How Breathing Works

The diaphragm is the primary muscle of respiration. It forms a dome whose bottom edge attaches to the inside of the rib cage, the spine, the 12th rib, the lowest costal cartilages and the xiphoid process. The other end of the muscle fibers of the diaphragm attach to a tendinous ring that sits at about the level of the 5th rib when the diaphragm is at rest.

On the inhale, the diaphragm contracts, drawing the top of the dome down as much as four centimeters with a full inhale. This increases the volume of the lungs and draws the air in. As the diaphragm relaxes, the dome rises back up and the air is pushed out of the lungs.

On the Inhale

- The diaphragm contracts and the dome moves down
- The volume of the lungs increases and draws air in
- Abdominal pressure increases
- Pelvic floor responds

On the Exhale

- The diaphragm relaxes and the dome moves up
- The volume of the lungs decreases and air flows out
- Abdominal pressure decreases
- Transversus abdominis contracts
- Pelvic floor responds

Accessory breathing muscles

In addition to the diaphragm, the following muscles are also involved in breathing by helping to move the rib cage:

- The internal and external intercostals, serratus posterior superior and inferior, the scalenes and the upper trapezius

The Breath in Movement

Breathing techniques can be used to facilitate movement, improve strength and increase mobility as well as improve lung capacity and focus the mind. As a general rule:

- Inhaling facilitates spinal extension
- Exhaling facilitates spinal flexion
- Either inhaling or exhaling can facilitate lateral flexion
- Either inhaling or exhaling can facilitate spinal rotation

When teaching a beginner these are good rules to follow. In order to challenge a more advanced student, reverse the breathing pattern to bring awareness back to the exercise.

Bracing for Stability

Exhaling during a challenging exercise helps to activate the trunk stabilizers and "brace" the torso. Bracing is often used for safety with clients rehabilitating from lower back and other injuries. As the deep structural muscles of the core get stronger, less bracing is required to do the same task.

Diaphragm, inferior view

The Inner Unit: Spine and Abdominal Support

The multifidi, transversus abdominis , pelvic floor and diaphragm work together to provide three dimensional support to the abdominal cavity.

Multifidi

- The multifidi are small muscles connecting the transverse processes of each vertebra to the spinous processes of the vertebra from three to four (or more) levels above. The multifidi run from C2 through the sacrum.
- They function to support the spine at the deepest level.

Transversus Abdominis

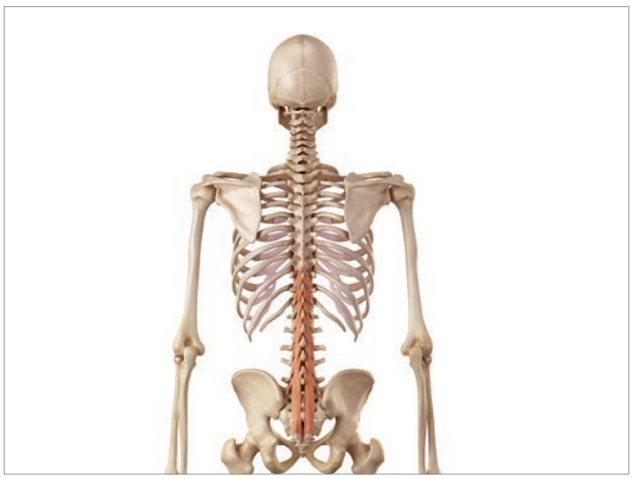
- The muscle fibers of the transversus abdominis wrap horizontally around the abdomen creating the deepest layer of the abdominals. The transversus abdominis acts like a corset to draw in the abdominal muscles and decrease the diameter of the waist.
- The transversus abdominis provides structure to the abdominal wall.

Diaphragm

- The diaphragm is the top or roof of the core and organizes the rib cage and spine in preparation for movement.
- As discussed in the Breathing section, an exhale can be used to activate the core, creating stability of the lumbar spine, pelvis and rib cage.
- In aerobic activities, the diaphragm works with the core to create stability while allowing full respiration to meet cardiovascular demands.

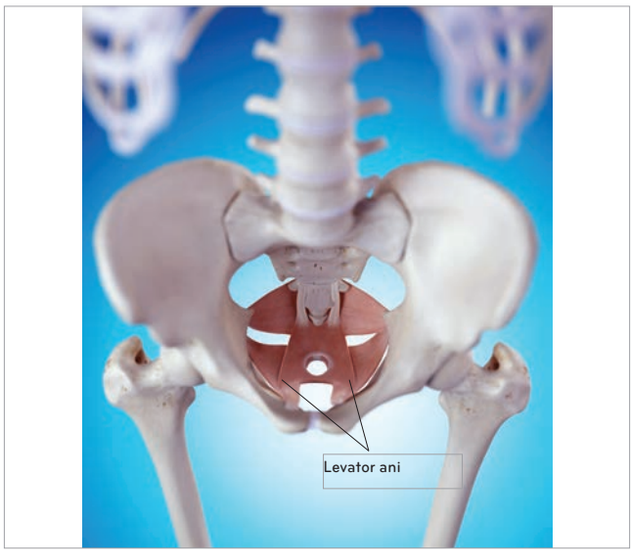
Pelvic Floor

- The pelvic floor is a group of muscles filling in the bottom of the pelvis and forming the "floor" of the core.
- The primary purpose of the pelvic floor is to hold the contents of the abdomen up against gravity.
- The pelvic floor includes muscles that control the flow of urine and feces, as well as muscles that hold the pelvis together and connect the pelvis to the femur.
- In women they are essential for childbirth and in both men and women, a healthy pelvic floor facilitates better sexual function.



Lumbar Multifidi

Transversus Abdominis



Pelvic Floor, internal view

Myofascial Connections

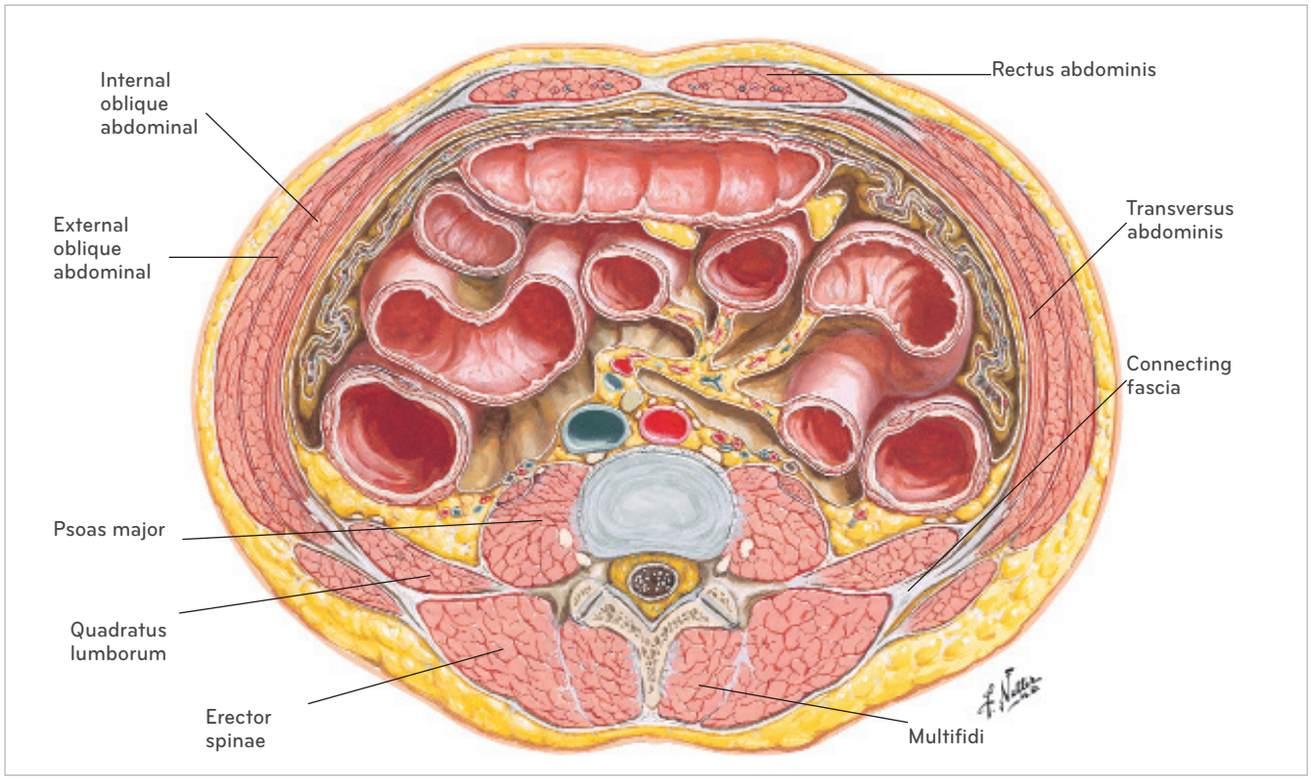
The inner unit stabilizes the lumbar spine through the myofascial connections between all of the elements of the inner unit. The myofascia consists of the muscles (myo) and their associated fascia. Fascia is the connective tissue that surrounds and interpenetrates all of the muscles and creates connections between them and their associated joints. The myofascial system ties the action of different muscles together to create the synergy necessary for integrated, whole body movement. In the lower back, the fascial system is called the thoracolumbar fascia.

This illustration is a cross section through the body at the level of the third lumbar vertebra. It shows the relationship between the muscles surrounding the lower spine and the transversus abdominis. By following the white fascia surrounding the transversus abdominis and connecting it to the fascia surrounding the erector spinae and quadratus lumborum, one might imagine that if the transversus abdominis contracts, it will increase the tension on the thoracolumbar fascia.

The thoracolumbar fascia acts much like a sausage casing around the filling of the multifidi. When the multifidi contract against the tension of the casing, they gently squeeze the spine creating a stabilizing force on the many joints between the vertebrae. The pressure of the casing against the multifidi also helps to create space between the vertebrae which is called decompression or axial elongation.

Based on electromyographic studies, in a normal healthy body, the multifidi, transversus abdominis, diaphragm and pelvic floor will fire in an appropriate sequence to stabilize the lower back in anticipation of spinal loading. With lower back pain, this sequence is often delayed or dysfunctional.

In a normal healthy body all of this happens automatically as part of a reflexive reaction to load being placed on the spine. When training clients to activate their inner unit, conscious cueing should be combined with movements designed to reactivate the reflexive sequences.



Cross section through L3. Lumbopelvic stability is generated by a light contraction of the transversus abdominis to tension the thoracolumbar fascia. The multifidi contracts into the tightened fascia, increasing its volume thus stabilizing the spine and creating axial elongation.

The Outer Unit

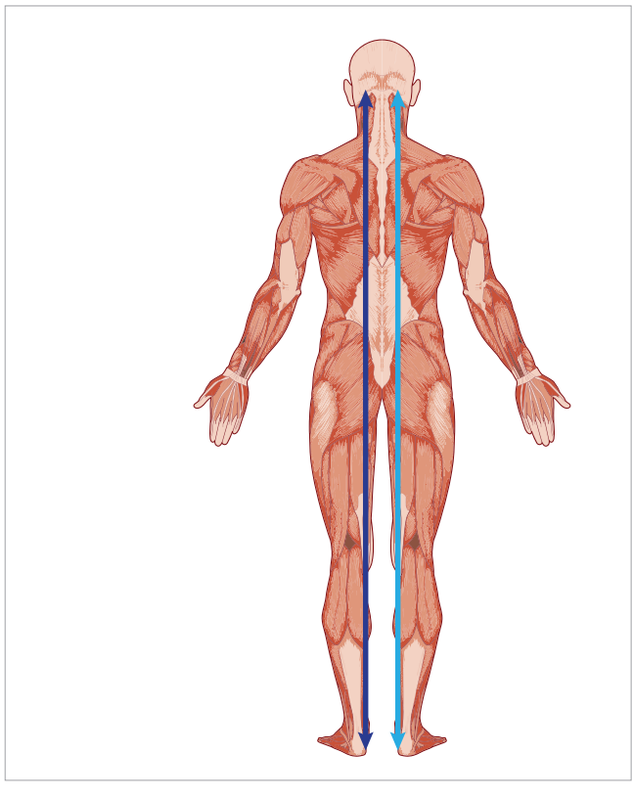
The Outer Unit consists of four subsystems, the Deep Longitudinal System, Lateral System and Anterior and Posterior Oblique Slings. These four systems work together to integrate and coordinate movement between the shoulder girdle, thorax, spine, pelvis and femurs. The Outer Unit creates movement and stability in the sagittal, frontal and transverse planes to produce fully balanced three dimensional movement.

THE DEEP LONGITUDINAL SYSTEM: SAGITTAL PLANE INTEGRATION

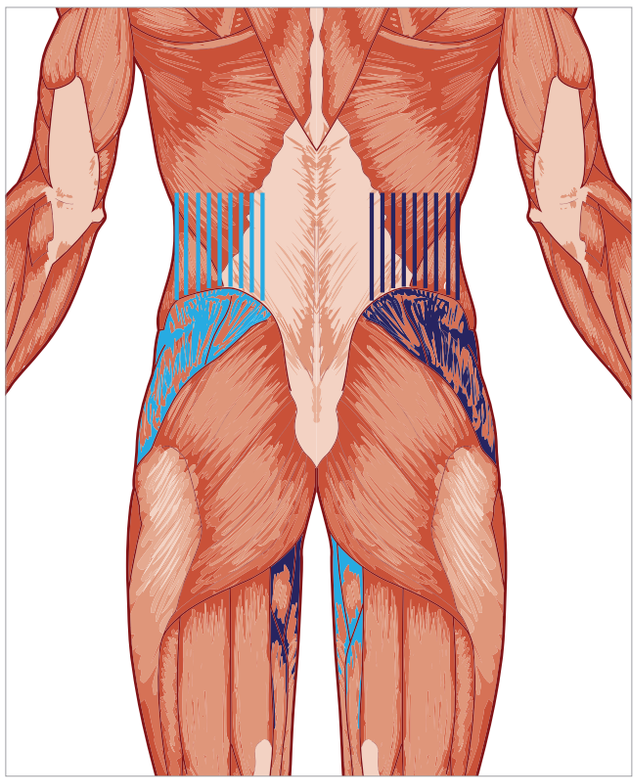
- The deep longitudinal system includes the erector spinae, sacrotuberous ligament, biceps femoris, gastrocnemius and plantar fascia.
- It supports the body upright against gravity.
- It is responsible for spinal extension when activated bilaterally and lateral flexion when activated unilaterally.
- It works with the posterior oblique sling to create extension and counterbalances the anterior oblique sling which initiates flexion.

THE LATERAL SYSTEM: FRONTAL PLANE INTEGRATION

- The lateral system includes the quadratus lumborum, abductors and adductors.
- These muscles are responsible for adduction and abduction of the hips and for up slip and down slip of the pelvis.
- The lateral system acts to balance the forces on the pelvis and to keep it level over the femurs in walking and standing.



Deep Longitudinal System



The Lateral System

The Oblique Slings: Transverse Plane Integration

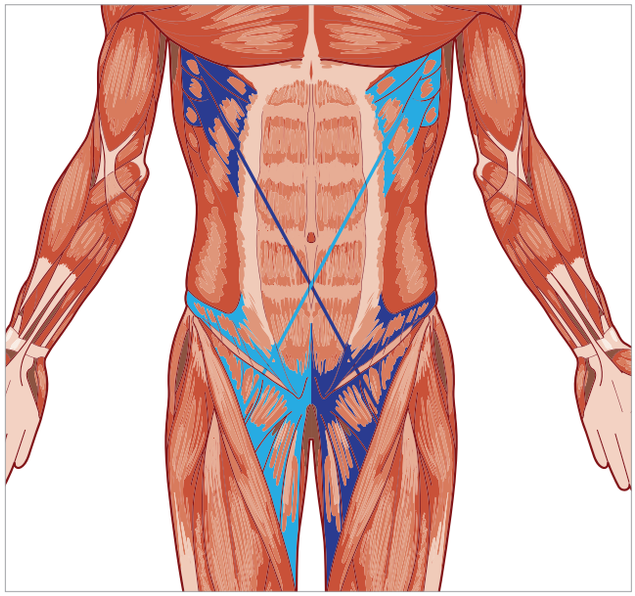
The anterior and posterior oblique slings (AOS and POS) are responsible for integrating the upper limbs, torso, spine, pelvis and lower limbs in whole body exercises such as running, throwing and swimming. The opposing slings (left to right AOS and right to left POS) create rotation while the parallel slings (right to left AOS and POS) create lateral flexion and rib translation.

THE ANTERIOR OBLIQUE SLING SYSTEM

- The anterior oblique sling includes serratus anterior, external oblique abdominals, contralateral internal oblique abdominals and contralateral adductors
- This system creates torso flexion when activated bilaterally and creates rotation between the rib cage and the pelvis when activated unilaterally.

Imagery

The anterior oblique system runs like a sash Miss America would wear over her shoulder or like crossed bandoliers and covers the line of the anterior serratus, external oblique abdominal, internal oblique abdominal and adductor muscles.



Anterior Oblique Sling

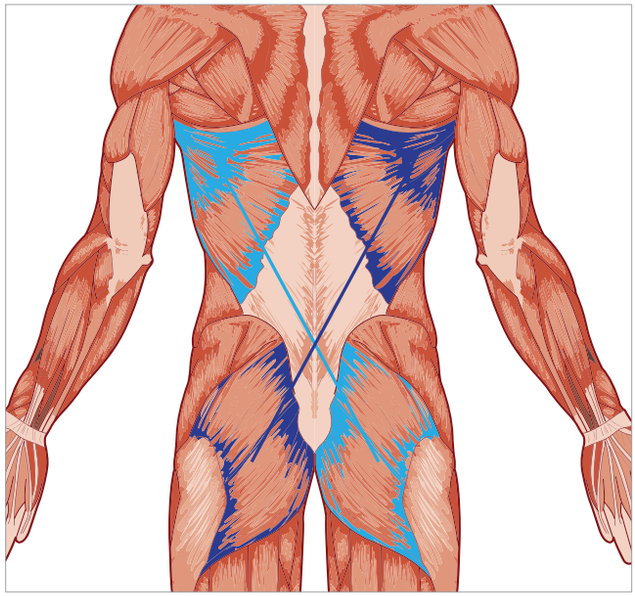
THE POSTERIOR OBLIQUE SLING SYSTEM

- The posterior oblique sling includes the latissimus dorsi and the contralateral gluteus maximus.
- The posterior oblique sling system creates torso extension when activated bilaterally and partners with the anterior oblique sling to create rotation and lateral flexion when activated unilaterally.

Imagery

The posterior oblique system runs like the back of the sash or bandolier covering the latissimus dorsi and the opposite gluteus maximus.

The anterior and posterior oblique slings keep the upper and lower body balanced for activities like walking and running. Both systems are activated in exercises such as an oblique abdominal curl or lateral spinal flexion.



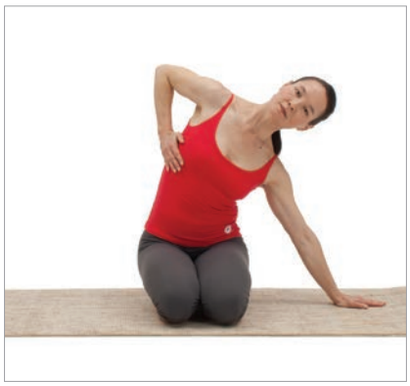
Posterior Oblique Sling

TRUNK INTEGRATION

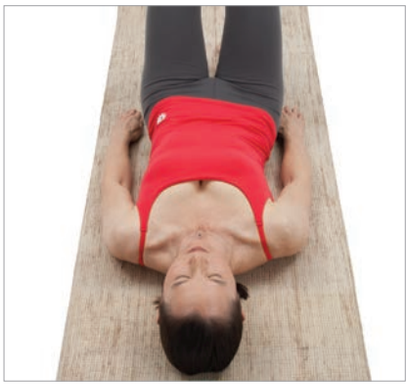
EXERCISE PROGRESSIONS: BREATHING AND INNER UNIT ACTIVATION

Diaphragmatic Breathing

Posterolateral Breathing



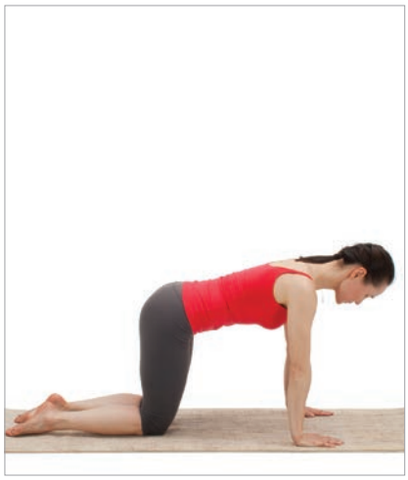
One Lung Breathing



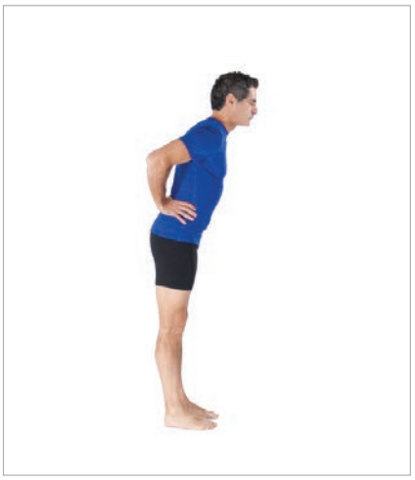
Pelvic Clock

Fingertip Abdominals

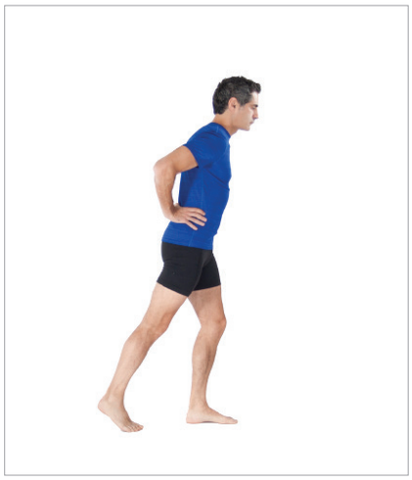
Pelvic Floor Activation



All Fours Abdominals



Standing Multifidi



Standing Multifidi
Single Leg

Marching

Abdominal Curl

Oblique Abdominal Curl

Opposite Arm and Leg Reach

The Spine

The spine creates the central axis of the body. Its position, symmetry and pyramidal shape give it strength while its tapering curves support and balance the three weight centers of the body: the head, thorax and pelvis. The spine has the capacity to absorb shock, is designed to protect the delicate spinal cord and has the capacity to support the weight of the body through various ranges of motion. Optimizing spinal mobility and strengthening the muscles supporting the spine is key to minimizing joint stress and maximizing overall health, physical wellbeing and activity specific performance.

FUNCTIONS OF THE SPINE

Force transference

- The many joints of the spine act to transfer force moving from the lower body to the head or from the shoulders to the pelvis. Because the spine is made up of many units like beads on a string, some energy is lost as the force moves from one bone to the next allowing ground forces to dissipate.
- The spine also acts as the fluid connection between the legs, pelvis, rib cage, shoulders and head. It connects and integrates the actions of the entire body.

Protects the spinal cord and nerve roots

- The segmental nature of the spine allows it to protect and distribute the nerves to the rest of the body.
- The interlocking structure of the vertebrae provide a vertical central channel to protect the spinal cord while the many lateral channels distribute the nerve roots to the body.

Creates Movement

- The segmental structure of the spine allows for a small amount of movement in multiple planes at each joint. This allows the torso to rotate, flex, extend and laterally flex without putting too much pressure on any one joint.
- The bones also provide attachment points for the many muscles that hold the spine together and coordinate the movement of both adjacent and distant vertebrae.

MOVEMENTS OF THE SPINE

The primary integrated movements of the spine are:

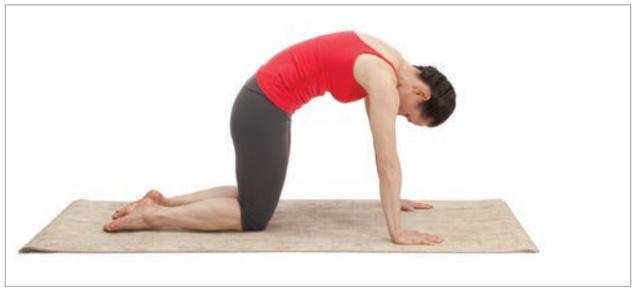
- Flexion
- Extension
- Lateral Flexion
- Rotation

Spinal Flexion

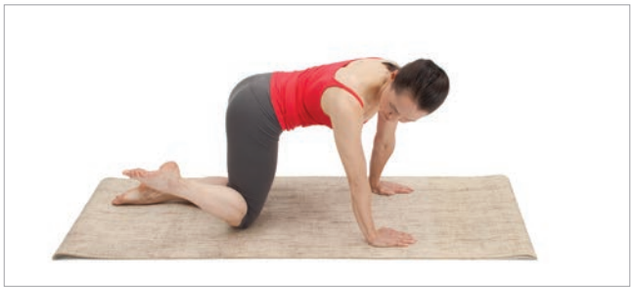
Spinal Extension

Spinal Lateral Flexion

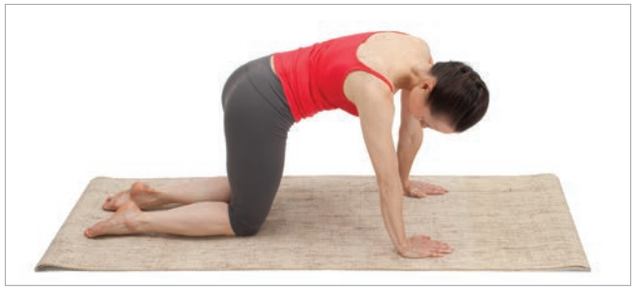
Spinal Rotation



Cat/Cow



Tail Wag



Poodle Tail

Bridging

Bridging with Hip Dips, Typewriter and Figure Eights

Rockets

Mini Swan

LOWER BODY TRAINING

INTRODUCTION

The Lower Body

The lower body forms the foundation of mobility, strength and endurance for daily and athletic activities. A well trained, aligned and balanced lower body provides a lifetime worth of pain free movement. This section focuses on key training principles for helping clients to move well and stay healthy.

Lower Body Training Principles

Train optimum leg alignment

- Organize hip, knee and ankle in optimal alignment.
- Work with client's structure to find and train optimum alignment of the hip, knee, ankle and foot.

Balance range of motion

- Assess ranges of motion of the hip, knee and ankle and work to create the best possible range of motion on all sides of the joints.

Balance muscular strength

- Assess strength on all sides of each joint and work to create balanced strength between the agonists and antagonists to optimize support and optimum mechanics of the lower body.

Create strength and endurance

- Endurance is necessary for the lower body to perform its functions of walking, standing, squatting, lifting and lunging.

Train agility, balance and coordination

- Agility, balance and coordination are essential skills for the lower body.

TRAIN OPTIMUM LEG ALIGNMENT

Training clients to optimally align the legs can decrease wear and tear on the joints and help the muscles to provide balanced support for all the movements of the hip, knee and ankle.

In ideal alignment, the hip joint, knee joint and ankle joint are lined up directly over each other in standing and in squatting or lunging. Ideal alignment is exactly that, ideal. When working with clients, the goal is usually to correct, balance and strengthen the best alignment possible for that individual.

When working with athletic clients, their sport or activity might include working in ranges well outside of ideal alignment. In this case, work to strengthen and balance the lower body to be able to tolerate the stresses put on it by their sport or activity.

Leg Alignment - Hip, knee and ankle in line

BALANCE RANGE OF MOTION

Creating muscular balance on all sides of each joint is an important principle in training the lower body. Muscular imbalances in either strength or flexibility can easily lead to stress on the joints.

Without good range of motion on both sides of a joint, the muscles can't work correctly. This is called reciprocal inhibition. For example, if the hip flexors are too tight, the hamstrings won't have enough range to work well and strength gains will be difficult. Hip mobility, dynamic flexibility and myofascial release exercises are used to balance mobility of the lower body.

Balanced muscle development is important in both joint specific movements like hip extension, flexion, adduction and abduction shown below and in functional lower body moves like squatting, lunging and walking.

BALANCE MUSCULAR STRENGTH

Promoting balanced muscular development optimizes joint function, enhances power and creates support and stability for the joints. Strengthen the muscles around each of the joints in three dimensions:

Hip flexion and extension, abduction and adduction, medial and lateral rotation and circumduction.


Hip flexion


Hip extension


Hip abduction

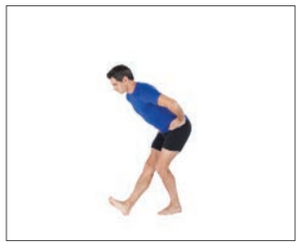

Hip adduction


Hip lateral or external rotation


Hip medial or internal rotation

Knee flexion and extension and tibial medial and lateral rotation.


Knee flexion


Knee extension

Ankle plantarflexion and dorsiflexion.


Ankle plantarflexion


Ankle dorsiflexion

Foot inversion, eversion and toe flexion and extension.

CREATE STRENGTH AND ENDURANCE

The lower body is often used to develop good cardiovascular health through repetitive, high output activities designed to challenge the heart and lungs. While walking, running, biking, swimming or climbing, the lower body needs a significant amount of both strength and endurance to stay healthy over time. With good leg alignment and muscle balance the client can work the lower body to develop the strength and endurance necessary to meet their goals.

Train good mechanics in functional movement patterns including:

- Locomotion: Walking, running, biking or swimming
- Squatting and lunging in a variety of ways.
- Foot and ankle work like heel raises and jumping to stabilize the ankle and improve balance.

TRAIN AGILITY, BALANCE AND COORDINATION

In order to handle ordinary and unexpected situations, clients need to work on agility, balance and coordination at a level appropriate to their goals. These elements create the whole body movement skills necessary for a person to manage their daily and athletic activities successfully.

- Agility can be as simple as being able to respond quickly to a change in the environment like a slippery patch of ice or as complex as training a soccer or basketball player.
- Balance is a multisensory skill that begins to deteriorate after the age of 30. Having a good sense of balance is important for keeping clients safe, especially as they age. Incorporating balance challenges in each session can help keep this system tuned up and clients moving with confidence and grace.
- Coordination of complex movements is what we are designed to do. Training clients in functional movement patterns involving coordination of the lower body, trunk and upper body are essential for overall health and wellbeing whether clients are a 60 year old gardener or a 20 year old tennis player. Coordination is the key to moving efficiently, generating power, and accuracy and minimizing wear and tear on the joints.

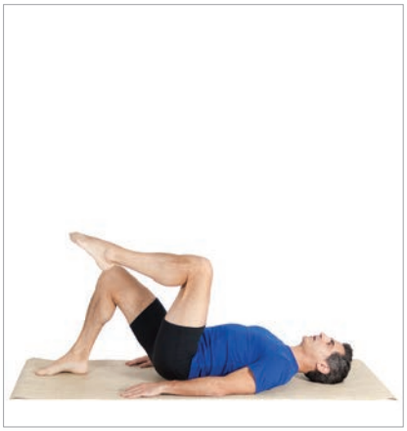
In designing an exercise program for the lower body, the goals and condition of the client will dictate which elements to focus on. If the client is strong but very tight, mobility may be the focus. If the client has had repeated knee injuries, alignment, balanced muscle development and mobility may all be included to balance the forces around the knee. For an older client who wants to remain fit and active, overall strength, endurance and balance may be the focus.

Agility

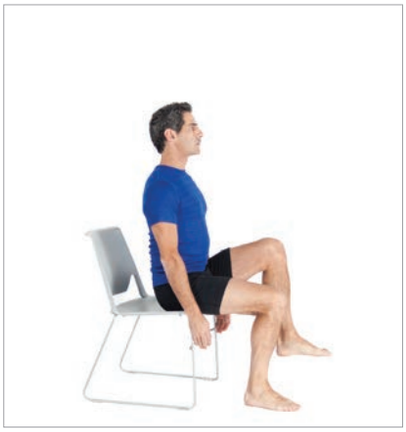
Balance

Coordination

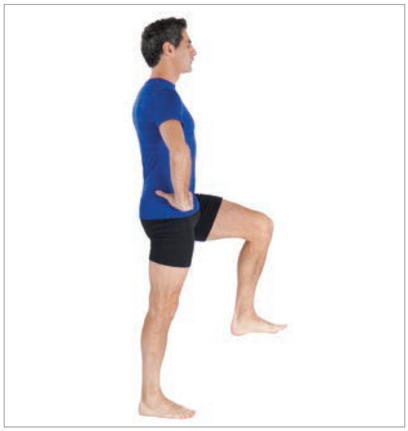
Hip Flexion above 90°



Marching Supine

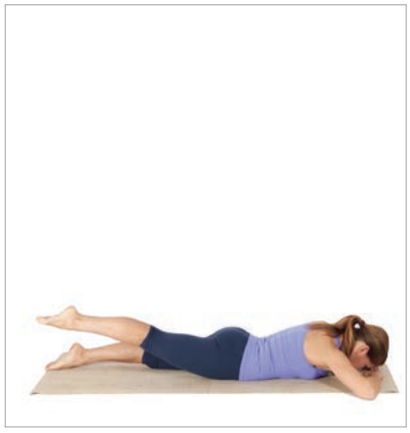


Marching Seated

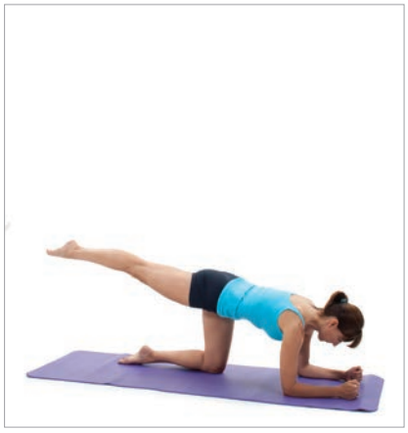


Marching Standing

Hip Extension



Hip Extension Prone



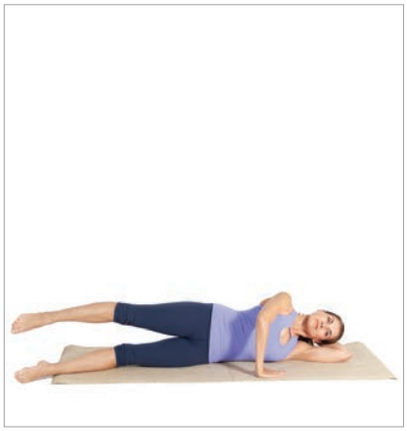
Hip Extension All Fours

Hip Extension Standing

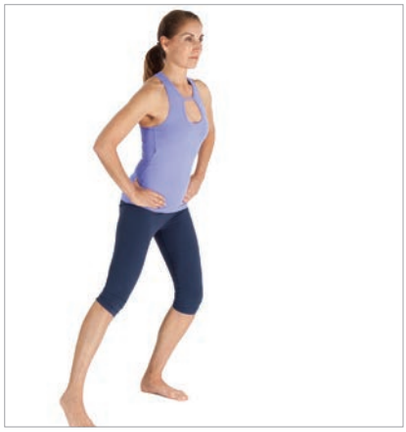
LOWER BODY TRAINING

EXERCISE PROGRESSIONS: HIP ABDUCTION AND ADDUCTION

Hip Abduction



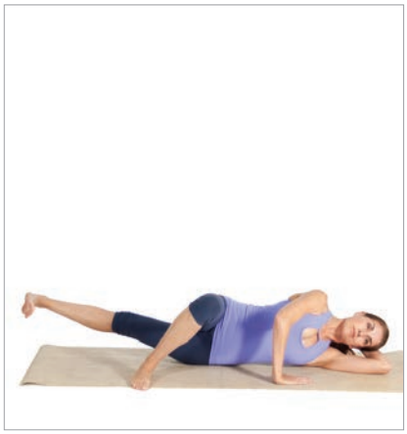
Side Lying Leg Lifts - Abduction



Stepping Out Abduction

Standing Leg Lifts - Abduction

Hip Adduction



Side Lying Leg Lifts - Adduction

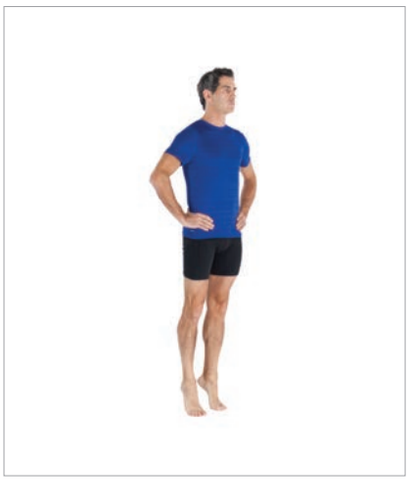
Standing Leg Lifts - Adduction

Seated Isometric Adduction

Foot and Ankle Strength

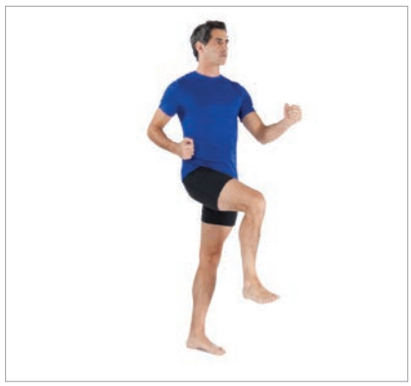
Plantar Flexion

Dorsi Flexion

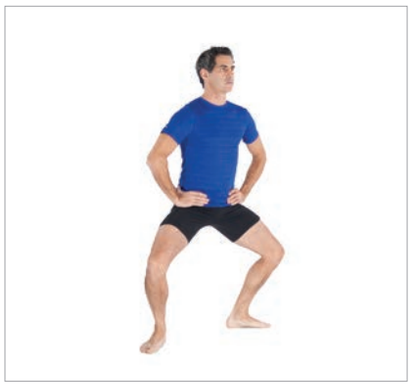


Heel Raise

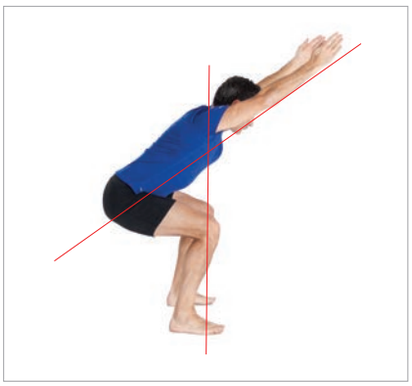
Functional Movements



Marching with Arm Swings

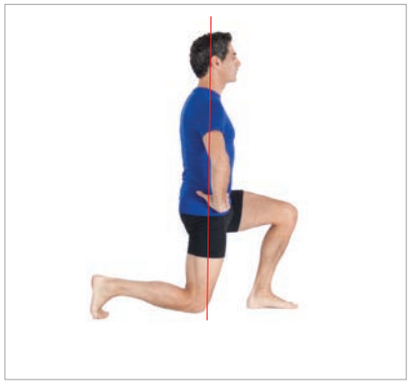


Knee Bends

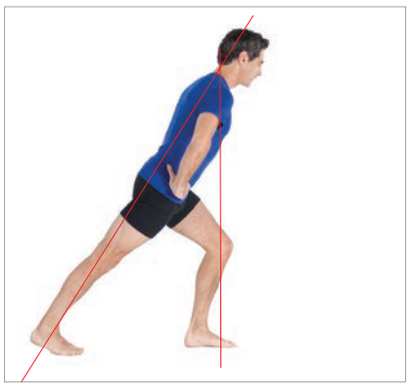


Squats - Narrow, Parallel

Squats - Wide, Turned Out



Upright or 90/90 Lunge



Tilt or Forward Lunge

The Upper Body

The upper body consists of the cervical spine, thoracic spine, ribs, shoulders, arms, elbows, wrists and hands. Upper body actions run on a spectrum from the fine motor skills of texting, drawing and sculpting to the power moves of throwing a ball or lifting a heavy object. The anatomical complexity and multiple functions of the upper body require a solid understanding of upper body anatomy, biomechanics and training principles to successfully train clients for functional and athletic activities.

Upper Body Training Principles

There are many ways to design an effective upper body training program but any program should begin by creating optimum movement patterns with a balance of strength, mobility and stability. When upper body movement is not well coordinated, injury can easily be the result. The following principles provide a framework for creating strength and balance in the upper body:

Optimize joint mobility and stability

- Create glenohumeral stability, coordination and endurance.
- Develop appropriate scapular mobility.
- Train dynamic scapular stability or scapular control.

Train functional movement patterns

- Pulling, pushing and lifting with both arms, one arm and in multiple directions.

Integrate upper body movements with the rest of the body

- Include rotation, cross body moves and exercises like throwing where power moves through the body to the arm.

OPTIMIZING JOINT MOBILITY AND STABILITY

The upper body has many more joints participating in most actions than the lower body does so understanding the balance between stability and mobility and thinking in terms of integrated rather than joint specific movement patterns is crucial for training success. The two areas to focus on are glenohumeral stability and endurance and scapular stability and mobility.

GLENOHUMERAL STABILITY AND ENDURANCE

Glenohumeral stability and endurance means training the rotator cuff to position the humeral head in the glenoid fossa so larger muscles and movements can be performed without compromising the glenohumeral joint. The muscles in this area are small so training should focus on endurance rather than strength or high repetitions with low resistance rather than high resistance with low repetitions. Training should also focus on maintaining the congruency of the joint or keeping the humerus relatively centered in the glenoid fossa as it rotates.

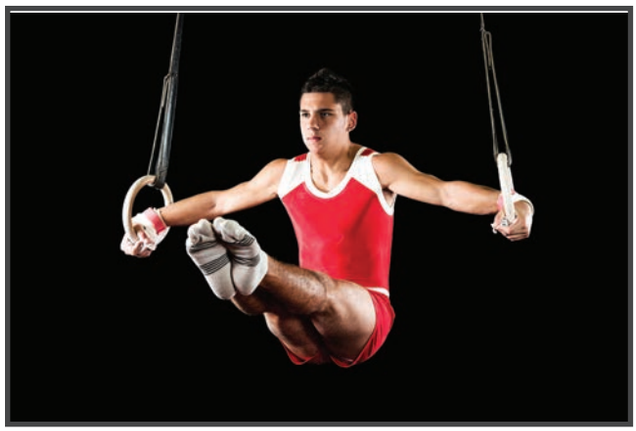
SCAPULAR MOBILITY AND COORDINATION

Optimizing scapular stability and mobility are important for creating power transfer through the shoulder joint and for minimizing stress on any one element of the upper body kinetic chain. Mobility exercises are designed to coordinate the actions of the lower body, spine, shoulder, arm and head to maximize power transfer and minimize joint stress in functional movements. If there is a limitation in mobility, for example the scapula is not moving into upward rotation when the arm is lifted, stress will be placed on the glenohumeral joint potentially leading to shoulder impingement.

SCAPULAR STABILITY AND DYNAMIC CONTROL

Scapular stability means positioning the scapula for optimum force transfer during movement. For example, in a push up, the scapulae may move into retraction as the body lowers but should return to a neutral position before starting a second rep. This provides a stable base for the glenohumeral joint to move into extension as the body lowers and to flex as the body rises.

In the case of raising the arm overhead in preparation for throwing a ball, the stability of the scapulae needs to be dynamically controlled through the range of motion. In other words it needs to move at just the right speed into upward rotation to support the action of the glenohumeral joint and the rest of the arm. In this example, if the scapulae stayed perfectly stable in one position, the arm could not rise high enough to produce the necessary power to throw the ball.



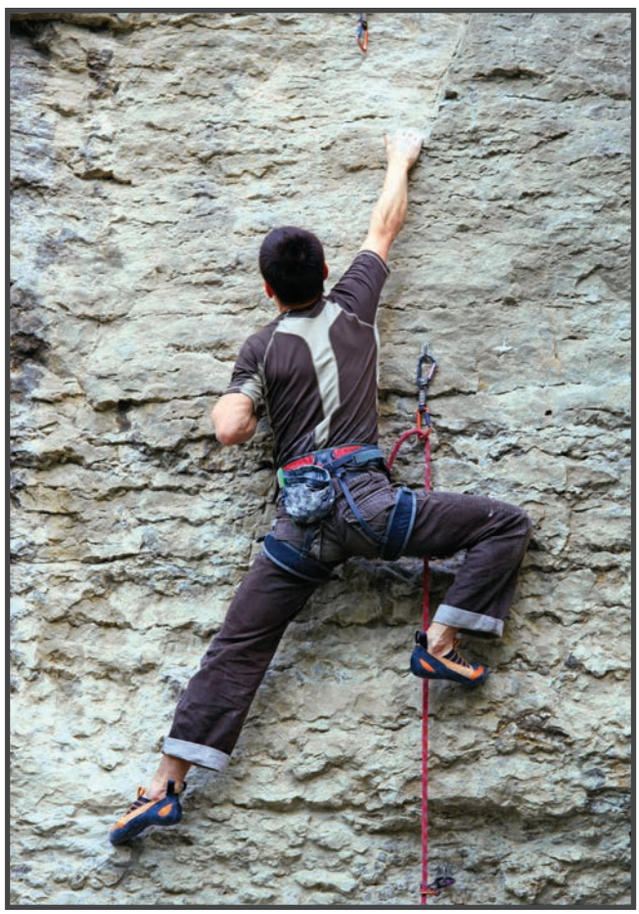
PULLING, PUSHING AND LIFTING

Because of the multi planar and multi joint actions of the upper body, training functional movement patterns is the best way to create strength and balance in the upper body. Pushing in all directions: forward, overhead, down and laterally; pulling in all directions: in, down and up and lifting in a variety of ways all provide a general framework for planning a well balanced training session. Using one or both hands and working with different hand grips can easily modify the exercise to create applications for any activity.

INTEGRATING THE UPPER AND LOWER BODY IN FUNCTIONAL MOVES

In addition to pushing, pulling and lifting, the upper body should be trained in movements incorporating the legs, hips and spine. For a power move like a tennis serve, most of the force hitting the ball is not generated by the shoulder and arm but by the legs and spine. Working on moves like throwing, or rotational moves can integrate the upper and lower body creating both more power and less likelihood of injury because a well coordinated movement spreads the load out between joints and transfers the energy smoothly from segment to segment.

For example, a golfer who does not integrate the rotation of the swing through the body from the feet to the hands to the club to the ball, will not generate the power needed for a good drive. Developing integrated mobility of the upper and lower body is crucial for many functional movements and a common limitation to developing power and efficiency in daily and athletic activities.



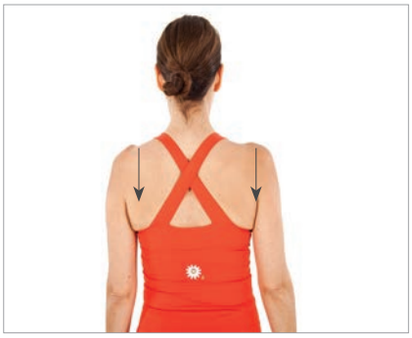
Shoulder Stability, Mobility and Muscle Balance

The scapulae are relatively mobile islands of bone floating on the back of the rib cage and connected through the acromioclavicular joint, the clavicle and the sternoclavicular joint to the thorax. The clavicle, the scapula and all of their associated joints work together to create movement of the shoulder. The scapulae function as platforms which the upper limbs use for support. The position, stability and strength of the scapulae are almost entirely dependent on the action of the muscles that surround them. This complex system is called the scapulothoracic joint. The shoulder muscles work isometrically in balanced partnerships to stabilize the scapulae for weight bearing exercises like the plank. The same partnerships work concentrically and eccentrically to move the scapulae and the upper limb for exercises such as lat pulls. These muscular relationships allow the scapulae to be supported in all planes for safe and efficient motion.

ELEVATION AND DEPRESSION OF THE SCAPULA

Elevation slides the shoulder blades up toward the head while depression draws them down toward the hips. The balance of these two actions keep the scapulae centered between the head and the bottom of the rib cage. The scapular depressors are generally weaker and less active than the elevators and require more training to create balance.

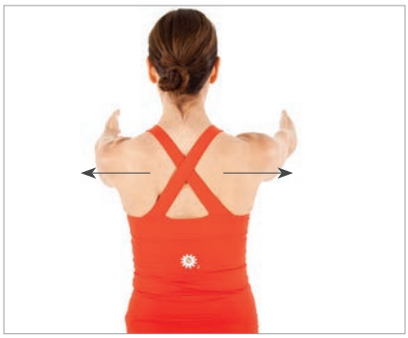
Scapular elevation



Scapular depression

PROTRACTION AND RETRACTION OF THE SCAPULA

Retraction pulls the scapulae toward the spine. Protraction pulls the scapulae away from the spine and around the rib cage. These muscles work together to keep the scapulae stable and balanced between protraction and retraction when bearing weight on the upper body as in a plank exercise. Dynamic scapular stability is critical for generating power in the upper body.



Scapular protraction

Scapular retraction

UPWARD AND DOWNWARD ROTATION OF THE SCAPULA

In upward rotation, the scapulae rotate so the glenohumeral joint angles up toward the ceiling while the bottom tip of the scapula swings laterally and superiorly around the rib cage. As the arms lower the scapulae depress and downwardly rotate, swinging the bottom tip of the scapulae toward the spine. The scapulae upwardly rotate approximately 1 degree for every 2 degrees of humeral movement in abduction or flexion above 60 - 90 degrees. This is called scapulohumeral rhythm.

Scapular upward rotation

Scapular downward rotation

Movements of the Glenohumeral Joint

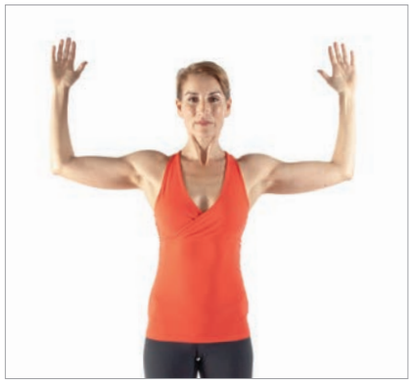
The glenohumeral joint is designed for maximum range of motion. The humeral head is a very big ball fitting into the very small socket of the glenoid fossa of the scapula. Compare this to the close fitting ball and socket of the hip which also has a large range of motion but much more structural stability than the glenohumeral joint. Unlike the hip joint, the glenohumeral joint combines its motion with the scapula and the clavicle to allow the shoulder to throw a ball, swing from a trapeze or pull ourselves out of the pool.

In addition to the synergy between the glenohumeral joint and the rest of the shoulder joints, many actions of the arm are accompanied by movements of the thoracic spine. For example, the range of motion of the arm in flexion may be limited by the mobility of the thoracic spine in a client with kyphosis. Or, in observing a tennis player serving, or a baseball pitcher throwing, thoracic extension is part of the wind up to deliver power to the ball. Most functional moves of the upper body are working multiple joints in multiple planes so training for that reality is essential for success.

MEDIAL AND LATERAL ROTATION

The humerus rotates in the glenoid fossa into medial (internal) and lateral (external) rotation. The rotators are responsible for positioning the humerus in the glenoid fossa so the larger, more superficial power muscles can move the humerus safely.

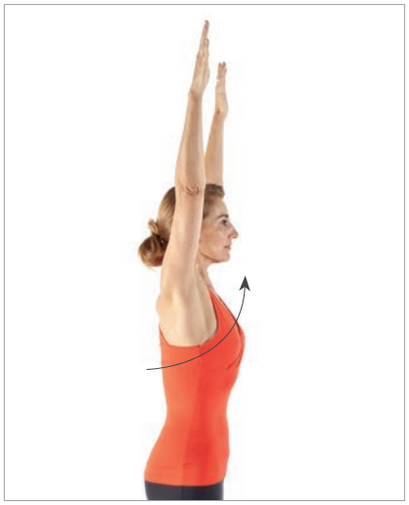
Shoulder medial rotation



Shoulder lateral rotation

FLEXION AND EXTENSION

The flexors and extensors move the arms forward and back in the sagittal plane. Once the arms move above shoulder height, upward rotation of the scapulae is necessary to allow the humerus to keep moving. For full flexion or flexion beyond straight overhead, thoracic extension is often necessary.

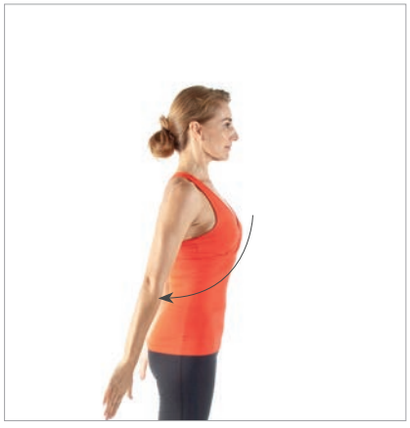


Shoulder flexion

ABDUCTION AND ADDUCTION

Abduction takes the arms away from the torso while adduction brings the arms to the side of the body or toward the midline if combined with flexion or extension. Upward rotation is again necessary when the arms move above shoulder height in abduction.

Shoulder abduction and adduction



Shoulder extension

UPPER BODY TRAINING

EXERCISE PROGRESSIONS: GLENOHUMERAL STABILITY AND SCAPULAR MOBILITY

Glenohumeral Stability

Lateral Glenohumeral Rotation

Medial Glenohumeral Rotation

Scapular Mobility

Arm Raises Together

Arm Raises Alternating

Angels in the Snow

Telescope Arms

Pinwheel

Develop Scapular Stability - Plank Preps

Sternum Drop

Plank Prep - All Fours Single Arm Lift

Front Plank

Modified Front Plank

Front Plank

Front Plank with One Leg Lifted

Front Plank with Opposite Arm and Leg Reach

Front Forearm Plank or Hover

Push Up

UPPER BODY TRAINING

EXERCISE PROGRESSIONS: BACK AND SIDE PLANK

Back Plank

Back Plank - Elevation

Back Plank - Depression

Modified Back Plank

Mod. Back Plank - Marching

Back Plank

Back Plank - Leg Lift

Side Plank

Modified Side Plank

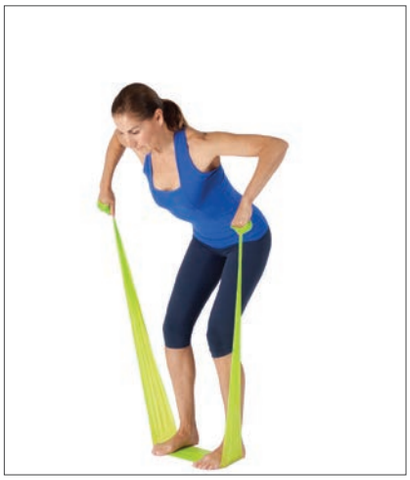
Side Plank - Feet Staggered

Side Plank - Feet Stacked

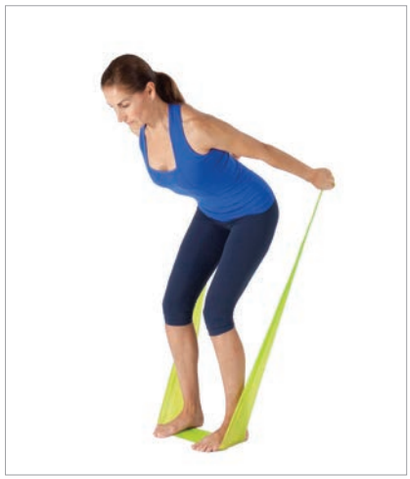
Side Plank with One Leg Lifted

Side Forearm Plank or Hover

Activating the Posterior Shoulder

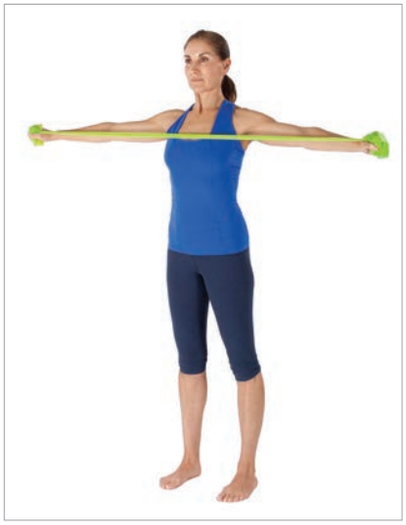


Rows



Triceps Press

Triceps Dip

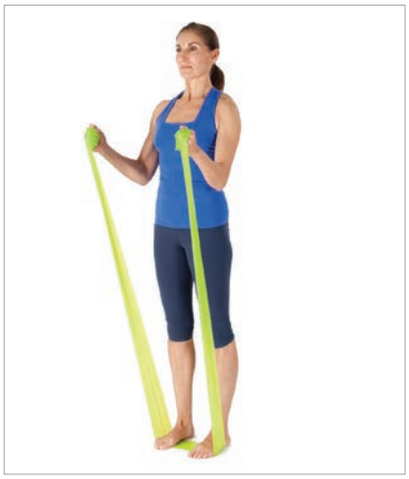


Lateral Press

Overhead Press

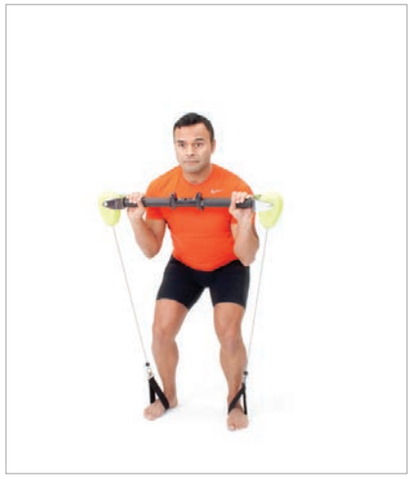
Pulling Down

Activating the Anterior Shoulder

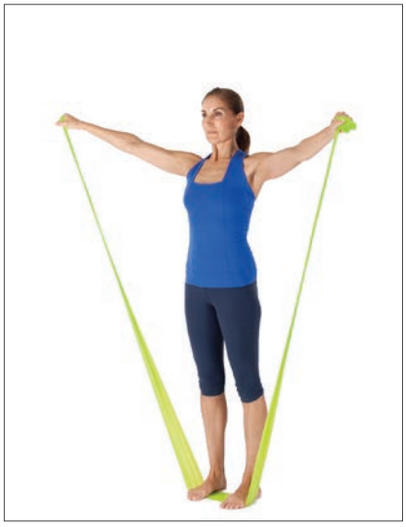


Biceps Curl

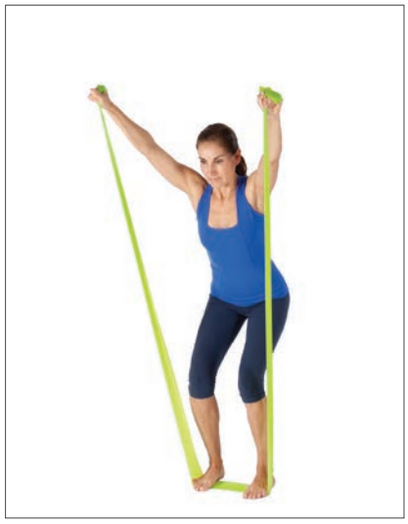
Chest Press



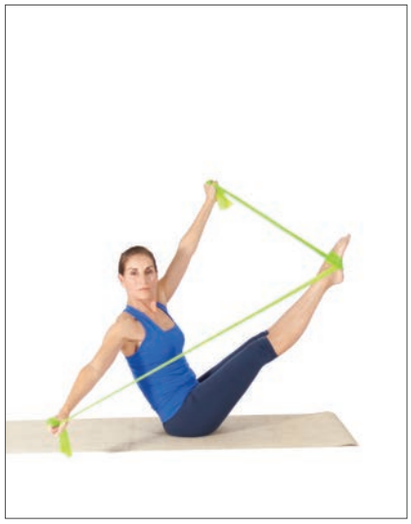
Lifting



Side Raise



Forward Raise



Integration of Upper and Lower Body

Stretching

Ever watch a dog or a cat after they the get up from a rest? One of the first things they do, after a great big yawn, is stretch. It is a natural instinct in all animals, including us humans. Stretching, as part of any physical fitness regime, provides an opportunity to restore and relax the body while facilitating both recovery and flexibility. While there are many theories surrounding stretching and the different stretching techniques it is clear that stretching is a great way to enhance flexibility, muscle control, awareness and range of motion.

Stretching techniques vary, but they all strive to increase flexibility and range of motion by overcoming the stretch reflex. Stretching techniques include static stretching, contract/release and active isolated stretching. Stretching can be slow and controlled, ballistic or dynamic. Each of these versions have value and can be used to find the most effective stretch for the client.

The Stretch Reflex

The human body has many brilliant ways of protecting itself against potential harm. The stretch reflex is one such mechanism. It moderates muscle length and protects against overstretching a joint. When a muscle is stretched, sensors called muscle spindles are stimulated and send a signal to the brain to contract the stretching muscle to limit its range of motion. To change the range of motion of a joint and reset this stretch reflex, many different strategies are employed. Some clients respond better to one technique than another so it is good to have options in your training toolkit.

Dynamic Stretching Techniques

Dynamic stretching involves gaining flexibility by moving in and out of end ranges of motion. It is an excellent way to increase flexibility while simultaneously developing stability of the joint at the end range. While some literature categorizes dynamic stretching as a technique of its own, others refer to it as dynamic preparatory movements for real world and sports specific activities. Activities such as yoga and Pilates are exercise modalities known for their dynamic stretching exercises.

Contract/Release

Contract/Release, or hold relax, is one form of PNF (proprioceptive neuromuscular facilitation) stretching. In a hamstring stretch for example, the muscle is put in a stretched position then the hamstring is contracted isometrically and released. Isometrically contracting a muscle for longer than 6 seconds creates high tension which is followed by sudden relaxation. This negative feedback lengthening is called autogenic inhibition. To perform, contract and release the muscle for 6 seconds three times before holding a sustained stretch for 30 seconds.

Active Isolated Stretch

Active Isolated Stretching, or AIS, is a method which is intended to naturally create neuromuscular relaxation by activating the antagonist of the muscle being stretched. In a hamstring stretch, for example, the hip flexors would be used to stretch the hamstring. It is the concentric contraction of the opposing muscle which creates the stretch in the targeted muscle. Activation of the opposite side of the joint pulls the muscle into a stretched position. Activation is designed to overcome the tendon stretch reflex by creating short, slow and controlled movements of the joint enhancing the stretch tolerance. Six to ten repetitions of a slow movement through range of motion is recommended before holding the stretch.

Static Stretching

Static stretching is a widely used and accepted form of stretching. A stretch is held for a specific period of time, usually for 30 – 45 seconds or longer. To improve flexibility, the American College of Sports Medicine recommends 2 to 4 repetitions totaling 60 seconds. It is currently believed that static stretching overcomes the stretch reflex by desensitizing receptors to tension. This in turn allows muscles to handle more force.

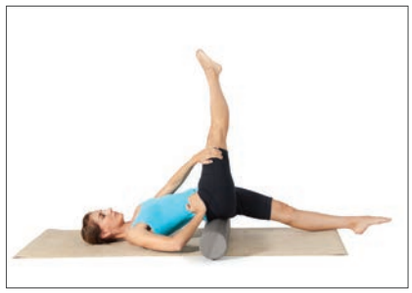
MOBILITY AND RESTORATION

EXERCISE PROGRESSIONS: LOWER BODY STRETCHES - SUPINE, KNEELING AND SEATED

Supine Stretches

Hip Lateral Rotators

Hamstrings



Abductors/Lateral Leg

Adductors

Hip Flexors

Quadriceps

Kneeling and Seated Stretches

Hip Flexors

Quadriceps

Hamstrings

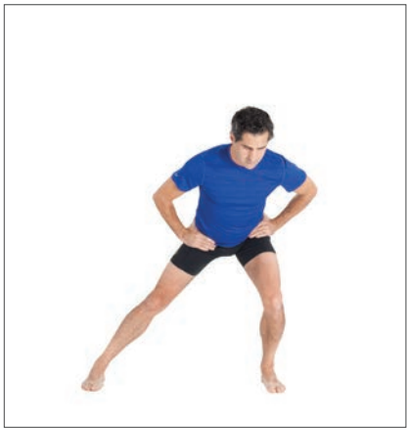
Abductors/Lateral Leg

Adductors

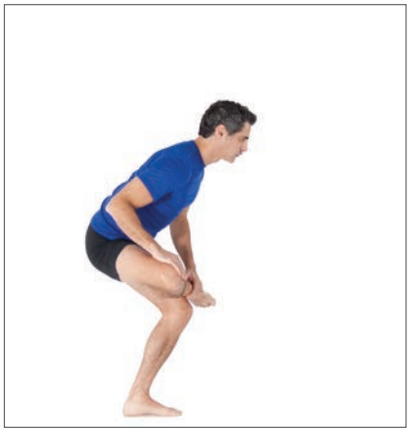
Hip Lateral Rotators

Standing Stretches

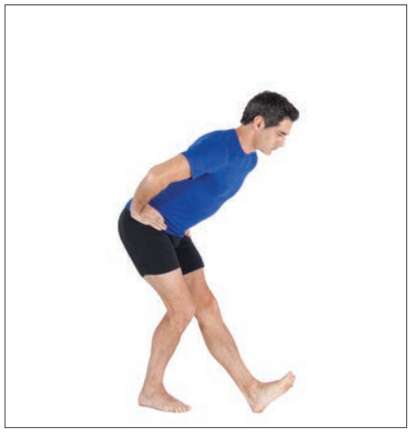
Hip Flexors



Adductors

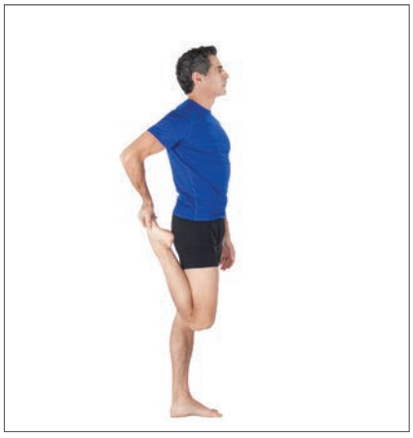


Hip Lateral Rotators

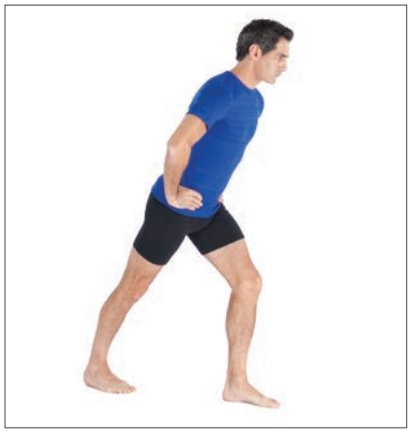


Hamstrings

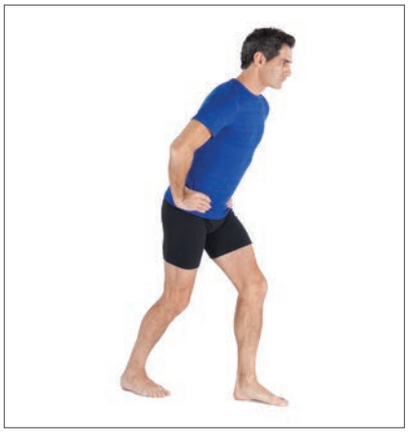
Abductors/Side Body



Quadriceps



Calf

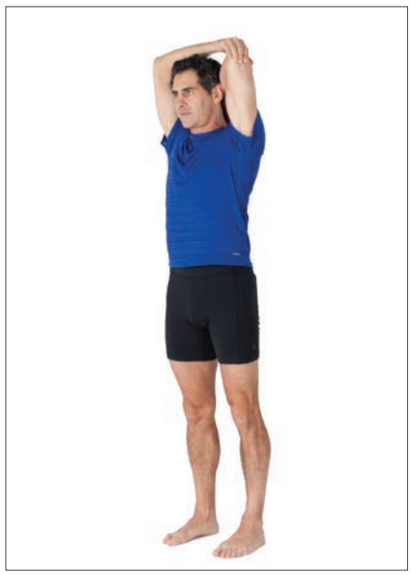


Soleus

Upper Body Stretches

Chest

Posterior Shoulder



Triceps

Eagle Stretch

Neck

Stretching

Forearm and Wrist Extensors - Starting Position

Forearm and Wrist Extensor Stretch

Wrist and Finger Extensors

Wrist and Finger Flexors

Fingers and Thumb

MOBILITY AND RESTORATION

MYOFASCIAL RELEASE, REST AND RECOVERY

Rest, Relaxation and Recovery

In our modern, always on the go society, rest and relaxation are not always a priority. Many ancient forms of health care and physical practice, from meditation to yoga, emphasize the rejuvenating power of rest in creating greater levels of awareness, fostering creativity and healing the effects of our daily activities.

Stress and Relaxation

Stress affects the autonomic nervous system (ANS) which controls many of our life sustaining functions such as heart beat, thermoregulation, respiration, and digestion. The ANS also works with the mind, affecting our emotions and our behavior. Continuous stressful stimuli can interfere and exhaust the routine ANS function while relaxation soothes the body and restores us to our natural state by modulating hormone release, slowing respiration rate and clearing the mind.

WHOLE BODY MOVEMENT AS RELAXATION

Movement can itself be a form of relaxation. Rhythmic, breath driven movements like those used in Tai Chi, or the repetitive action of running or cycling have been proven to release endorphins which can create a feeling of well being. Whole body exercise has also been shown to improve the function of the cardiovascular, respiratory, myofascial and neurological systems. When these systems are tuned up, the body is better able to handle stress and recover from illness, injury or hard physical training.

Incorporating moments of rest, breath and mindfulness into a session or into a client's home program will encourage them to take better care of themselves and to respect their bodies need for recovery. Cueing clients to focus on the breath in any given activity helps facilitate ease and relaxation which in turn creates a more productive learning environment, increases awareness of functional and dysfunctional movement patterns, decreases the likelihood of injury and increases client empowerment and satisfaction.

We encourage you to find these moments within the exercises and incorporate them into the client's workouts.

Recovery and Rest

An important part of physical training is the concept of recovery. Recovery takes many forms including resting between sets in an exercise sequence, getting a good night's sleep to allow tissues to recover and the nervous system to integrate a new skill and performing myofascial release or self-massage techniques to help tissues recover from over work.

Allowing time between intensive exercise sessions is critical to minimizing injury and maximizing strength and performance gains. Cellular repair is done by the body at night while we sleep so making sure there is recovery time between training sessions keeps the body from breaking down from too much strenuous activity.

Sleep and rest are also critical for learning a new skill or improving performance. When a client is having trouble with a new move, simply sleeping on it will often bring about positive change. On a smaller scale, incorporating short rest periods into a training session allows the muscles to recover enough to keep pushing.

Myofascial Release or Self Massage

The term myofascial release is often used to describe different manual therapy techniques which include soft tissue massage, manipulation and mobilization, trigger point therapy, strain-counterstrain therapy and foam rolling. All of these techniques are designed to positively effect musculoskeletal limitations by relaxing muscles, improving blood and lymphatic circulation, and removing toxins from immobile tissue.

As a personal trainer or Pilates instructor, hands on techniques may be beyond your scope of practice so using self massage or myofascial release techniques on the foam roller are an excellent way to help clients recover. They can also be used to loosen tissue and improve range of motion through providing pressure on the tissue. Myofascial release can be used very successfully at the beginning of a session to decrease chronic tension patterns at the end of a session to help the tissues recover from the workout. Self massage can be used quite successfully with dynamic flexibility techniques to improve or maintain range of motion.

Roller Stretches

Chest Opener

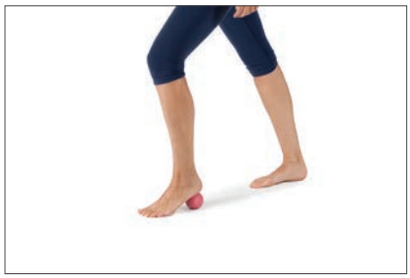
Bookends Starting Position

Bookends Stretch

Flip Flops

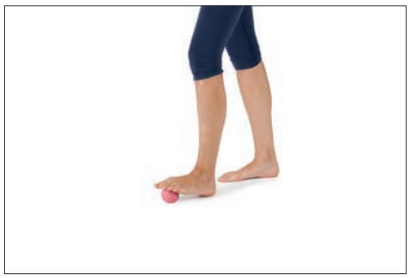
Angels in the Snow

Myofascial Release for the Feet



Heel Release

Arch Release



Metatarsal Release

Toe Release

Myofascial Release

Posterior Hip

Hamstrings - Two Legs

Hamstrings - Single Leg

Calves - Hips Down

Calves - Hips Up

Quadriceps/Anterior Thigh

Tibialis Anterior - Anterior Shin

Iliotibial Band/Lateral Thigh - Supported

Iliotibial Band/Lateral Thigh - Unsupported

Adductors/Medial Thigh

Lateral Torso

Upper Back

Occiput and Head