REFORMER 3

A DETAILED GUIDE FOR TEACHING PILATES

By Nora St. John

2019 Edition

Balanced Body Inc, Sacramento California

2019 Edition: Revision 1

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.
- Ken Endelman and Balanced Body who made all of this possible through his generosity and vision.
- Naomi Leiserson and Susan Gray from Turning Point Studios for providing the living laboratory out of which it all developed.
- Also many thanks to Naomi Leiserson, Lizbeth Garcia, Abigail Munn, Patrick Dempsey, Elizabeth Larkam, Valentin and Tom McCook for being such ideal models and Alex Luchini and Debbie Wells for their design expertise.

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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Published by:

Balanced Body Inc.
Sacramento, California, USA

Toll-free from U.S. and Canada: 1-800-745-2837
Toll-free from UK: 00-800-7220-0008
From other locations: +1 916-388-2838

Email: education@pilates.com

Printed in the United States of America

TABLE OF CONTENTS

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
Frank H. Netter, M.D.
Saunders, 2002

Anatomy Trains
Thomas W. Myers
Churchill Livingstone, 2001

Thieme Atlas of Anatomy: General Anatomy and Musculoskeletal System
Various
Thieme Medical Publishers, 2005

The Thinking Body
Mabel E. Todd,
Dance Horizons/Princeton Book Co., 1937

Human Movement Potential: Its Ideokinetic Facilitation
Lulu E. Sweigard, Ph. D.
Harper and Row Publishers, 1974

The Breathing Book
Donna Farhi,
Owl Books, 1996

Stretching
Bob Anderson
Shelter Publications, Inc., 1980

Dynamic Alignment Through Imagery
Eric Franklin
Princeton Book Co. 2000

Pelvic Power for Men and Women
Eric Franklin
Princeton Book Co., 2002

Relax your Neck, Liberate your Shoulders
Eric Franklin
Princeton Book Co., 2003

SPORTS INJURIES AND REHABILITATION

Sports Injuries: Diagnosis and Management
James G. Garrick, David R. Webb
W. B. Saunders Co., 1999

Instructions for Sports Medicine Patients
Marc Safran, David A. Stone
W. B. Saunders, 2003

Dance Medicine: A Comprehensive Guide
Edited by Allan J. Ryan, M.D. and Robert E. Stephens, Ph.D.,
Pluribus Press and The Physician and Sportsmedicine, 1987

Therapeutic Exercise for Spinal Segmental Stabilization in Low Back Pain
Carolyn Richardson, Gwendolen Jull, Paul Hodges and Julie Hides
Churchill Livingstone, 1999

Diagnosis and Treatment of Movement Impairment Syndromes
Shirley Sahrmann
Mosby, 2001

The Pelvic Girdle
Diane Lee and Andre Vleeming
Churchill Livingstone, 1999

LONG BOX DOUBLE LEG KICK

ADVANCED • 4-6 REPS

Springs: B to R **Box:** Long **Straps:** Short **Bar:** None

Prerequisites: Mat Double Leg Kick

STARTING POSITION

Lie prone on the long box facing the footbar with the straps on the arches of the feet. Bend the elbows and place the hands on the low back as in Double Leg Kick on the mat. Shorten the straps so the ropes begin to provide resistance when the knees are bent to about 70 degrees of flexion.

1. Starting position. Knees slightly bent, hands behind the lower back.

MOVEMENT SEQUENCE

Inhale: Pull the straps with the legs and slowly kick the heels into the buttocks 3 times.

Exhale: Lift the back into extension, reach the arms toward the feet and straighten the legs.

- **Repeat 4 to 6 times.**
- **Finish by lowering the torso back to the box.**

2. Flex the knees to bring the heels toward the bottom three times.

MODIFICATIONS

Hamstring pull

Pull the heels into the buttocks smoothly and evenly. The Hamstring Pull can be done with one or both legs.

CUEING AND IMAGERY

- Engage the abdominals to support the lower back.
  - Pull the navel to the spine before extending the back.
- Pull the straps in and release them smoothly and evenly.
- Keep the front of the hips pressed into the mat as the knees bend.

3. Extend the upper back, reach the hands toward the feet and straighten the legs.

PURPOSE

- Strengthen spinal extensors
- Strengthen hip extensors and knee flexors including gluteus maximus, hamstrings and gastrocnemius.
- Increase shoulder flexibility.

PRECAUTIONS

Pregnancy: Avoid when lying prone becomes difficult.

Knee problems: Caution with knee that don't tolerate flexion.

Avoid with back problems that do not tolerate extension.

LONG BOX TEASER

SUPER ADVANCED • 4-5 REPS

Springs: B to RB **Box:** Long **Straps:** Regular **Bar:** None

Prerequisites: Teaser on the Mat

STARTING POSITION

Lie supine on the long box with the head toward the straps and the straps in the hands. The bottom of the shoulder blades should be at the edge of the box. Bend the knees at 90 degrees, reach the hands toward the ceiling and keep the head lifted.

MOVEMENT SEQUENCE

Exhale: Engage the abdominals to prepare. Circle the arms out and forward and lift the body into the Teaser position with the legs straight in one move.

Inhale: Roll the torso down and back up while keeping the legs in the Teaser position.

1. Starting position. Knees bent, hands to ceiling.

2. Circle the arms to the sides.

3. Reach the arms forward as the torso lifts up and the legs straighten into the Teaser position.

CHALLENGES

Arm swings

From the Teaser position, lower the arms to the hips and back up 3 times.

1. Arm Swings. Move the arms back and forth maintaining the position of the torso.

Teaser 2

From the Teaser position, lower the legs toward the box while maintaining the position of the torso.

Teaser 3

From the Teaser position, lower the legs and the torso toward the box then return to the Teaser position.

MODIFICATIONS

Bent knees

Come up into the Teaser position with the knees bent for tight hamstrings or beginners.

No box

For shorter clients, try the Teaser without the box. The client must be short enough to roll up into the Teaser position without rolling their pelvis off the front of the carriage.

CUEING AND IMAGERY

- Keep the back straight and the abdominals engaged.
  - In the Teaser position, lift out of the hips and don't sink into the low back.
- Find the balance point on the first try.
  - Practice Teaser on the mat first to find the right position.
  - Aim for the end point and don't worry if you over shoot.
- Keep the legs as straight as the hamstring flexibility allows.
  - If the hamstrings are too tight to achieve the full Teaser position, come up to the position with the knees bent and see how straight they can get without disturbing the position of the back.
- **Instructor note:** Spot the client by holding their feet as they come up into position.

PURPOSE

- Strengthen abdominals.
- Strengthen iliopsoas and hip flexors.
- Develop balance and coordination.
- Maintain a stable spine.

PRECAUTIONS

Pregnancy: Avoid after 16 weeks.

Avoid with osteoporosis, active lumbar or cervical injuries and sciatica.

LONG BOX HORSEBACK

SUPER ADVANCED • 4-5 REPS

Springs: B to RB **Box:** Long **Straps:** Regular **Bar:** None

Prerequisites: Ladder Barrel Horseback

STARTING POSITION

Straddle the long box facing the footbar. Hold the straps in the hands with the elbows slightly bent and the palms forward. For comfort, place a Half Arc over the box or pad the edges to decrease pressure on the inner thighs.

MOVEMENT SEQUENCE

Exhale: Scoop the abdominals, reach the arms forward and lift the hips up off the box as the legs straighten. The carriage will move back as the arms reach forward. The spine stays flexed with the legs and arms reaching forward in the final position.

Inhale: Return to the starting position with control.

1. Starting position. Straddle the box facing the footbar holding the straps to the sides.

2. Round the back, lift the hips up and press the arms forward.

CHALLENGES

Arm swings

Stay up and swing the arms forward and back 3 times without changing the position of the torso.

Arm circles

For an even more challenging variation, circle the arms forward and up overhead 3 times without changing the position of the torso.

Reverse Horseback

Begin by straddling the long box facing the straps with the straps in the hands and the elbows straight. Pull the straps down and back as the pelvis rises off the box and the legs straighten. The pelvis, spine and torso should be neutral in the final position rather than flexed. Add Arm Swings or Arm Circles for an advanced variation.

Low Reformers

When performing this exercise on a floor height Reformer, bend the knees to keep the feet from hitting the floor.

CUEING AND IMAGERY

- Lift the pelvis off the box.
  - Light shows under your hips when you rise up into the horseback position.
- Hold the position and lower with control.
  - Rise up and down as if on a merry-go-round horse, not a bucking bronco.
- Maintain the abdominal connection.
  - Keep the abdominals engaged throughout the exercise.
- **Instructor** note: Spot the client by placing a hand on the top of the chest to keep them from toppling forward.

PURPOSE

- Strengthen abdominals.
- Strengthen adductors, gluteus maximus and hamstrings.
- Strengthen the shoulders.
- Balance and coordination.

PRECAUTIONS

Avoid with pregnancy, groin strains and some SI joint injuries.

1. Reverse Horseback starting position. Straddle the box facing the straps with the hands in front of the chest.

2. Lift the hips up and press the arms back.

LONG BOX SWAN

ADVANCED • 4 REPS

Springs: 2R | Box: Long | **Bar:** None

Prerequisites: Mat Swan, Swan Dive, Ladder Barrel Swan Dive

STARTING POSITION

Lie prone on the long box with the hips at the footbar end of the box, the knees bent with the legs turned out and the balls of the feet on the inside edge of the Reformer. The arms reach toward the feet to begin.

Safety note: When using the Allegro 1, make sure the standing platform is securely latched down.

MOVEMENT SEQUENCE

Exhale: Engage the abdominals, straighten the legs and lift the torso off the box to form a straight line with the legs.

Inhale: Extend the back as the arms reach out to one of the following positions:

- Level 1: Arms reach toward feet
- Level 2: Arms reach out to the side (2nd position)
- Level 3: Arms reach overhead (high 5th)

Bend the knees while maintaining the position of the back to increase the range of motion.

Exhale: Straighten the legs and lower the torso to the straight line position, bend the knees and lower the torso back onto the box to return to the starting position.

1. Starting position. Hip crease at edge of box, knees bent, feet on frame.

2. Straighten the legs and reach the arms overhead.

MODIFICATIONS

Pelvic discomfort

If the lip of the box is uncomfortable, place a pad or towel underneath each ASIS to take the pressure off the front of the pelvis, or use the contour box.

CUEING AND IMAGERY

- Engage the abdominals to support the back.
- Pull the navel to the spine before extending the back.
- Don't break at the hips.
- Keep a long curve from the knees to the torso as if the front of the body is a wheel.
- Keep the head in line with the spine.
- Don't break the neck at the back or look down at the floor.

PURPOSE

- Strengthen spinal extensors.
- Strengthen gluteus maximus and hamstrings.
- Increase back extension flexibility.
- Stretch abdominals.

PRECAUTIONS

Knee injuries: Limit knee flexion in the starting position or avoid.

Shoulder injuries: Use level 1 arm position to minimize shoulder discomfort.

Pregnancy: Avoid after 12 weeks.

Avoid with back problems that do not tolerate extension.

3. Lift the torso up into back extension.

4. Bend the knees to increase the extension.

LONG BOX GRASSHOPPER

SUPER ADVANCED • 3 REPS

Springs: 3R **Box:** Long **Bar:** None

Prerequisites: Mat Swan Rocking or Swan Dive, Reformer Long Box Swan

STARTING POSITION

Lie prone on the long box facing the footbar with the hip bones just behind the front edge of the box and the legs straight with the hips turned out. Place the hands on the footbar or the standing platform and straighten the elbows to bring the torso into extension. If the lip of the box is uncomfortable, place a pad or towel underneath each ASIS to take the pressure off the front of the pelvis.

MOVEMENT SEQUENCE

Inhale: Bend the elbows to tip the torso forward. Maintaining the extension of the back, lift the legs up toward the ceiling as far as you can.

Exhale: Bend the knees and cross the ankles 4x.

Inhale: Straighten the legs maintaining the extended position of the body. The bending and straightening can be repeated 3x or move onto the next step and return to the starting position as the legs straighten.

Exhale: Reach the legs long and straighten the arms to return to the starting position.

1. Starting position. Hip bones behind front edge of box, legs turned out, hands on footbar with arms straight.

2. Bend the elbows, reach the legs toward the ceiling.

MODIFICATIONS

Pelvic discomfort:

If the lip of the box is uncomfortable, place a pad or towel underneath the ASIS on each side to take the pressure off the front of the pelvis, or use the contour box.

CUEING AND IMAGERY

- Control the motion from the core.
- Engage the abdominals to support the back.
  - Pull the navel to the spine before extending the back.
- Don't break at the hips.
  - Keep a long curve from the knees to the torso as if the front of the body is a wheel.
  - Keep the front of the hips open as the knees bend and straighten.
- Keep the head in line with the spine.
  - Don't break the neck at the back or look down at the floor.

PURPOSE

- Strengthen spinal extension.
- Strengthen gluteus maximus, external hip rotators and hamstrings.
- Increase back extension flexibility.

PRECAUTIONS

Low back injuries: Client must tolerate extreme lumbar extension.

Avoid with pregnancy, SI joint and shoulder injuries.

3. Bend the knees and cross the ankles.

4. Straighten the legs toward the ceiling.

LONG BOX ROCKING

SUPER ADVANCED • 3-6 REPS

Springs: B to R **Box:** Long **Straps:** Short

Prerequisites: Mat Rocking

STARTING POSITION

Lie prone on the long box facing the footbar with the straps on the ankles or arches. Reach back with the hands to hold the ankles, keeping the abdominals supported.

1. Starting position. Hold ankles with feet in straps. Rock forward using hamstrings, rock back using back extension.

MOVEMENT SEQUENCE

Inhale: Rock forward on the box by initiating the motion from the hamstrings and pressing the feet up toward the ceiling.

Exhale: Rock back on the box initiating the motion from the extension of the back and hips rather than by tossing the head.

CUEING AND IMAGERY

- Engage the abdominals to support the back.
  - Pull the navel to the spine before extending the back.
- Keep the elbows straight.
- Control the motion from the core and the legs.
  - Roll forward by engaging the gluteals and hamstrings.
  - Roll back by lifting the abdominals up and in.
- Don't throw the head to initiate the motion.
  - No bucking.
- Move smoothly and continuously.

PURPOSE

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

PRECAUTIONS

Avoid with low back injuries that do not tolerate extreme extension.

Avoid with shoulder injuries.

Avoid with pregnancy.

Use padding under the pelvis if necessary.

ROWING BACK I ROUND BACK

ADVANCED • 4-5 REPS

Springs: B to RB **Straps:** Regular with Handles **Headrest:** Down **Footbar:** No bar

Prerequisites: Roll Down, hamstring/back flexibility to sit up with the legs straight out from the hips, strong shoulders

STARTING POSITION

Sit on the carriage facing the straps with the hips at least one hand width from the front edge of the carriage and the legs extended through the shoulder rests. Sit up on the sit bones without rounding the back. Hold the straps in the hands. Pull the arms into the chest with the elbows out to the sides.

MOVEMENT SEQUENCE

Exhale: Engage the abdominals, round the back and roll down keeping the hands about 6 inches from the sternum.

Inhale: Open the arms out to the side with the palms facing back and press the arms back.

Exhale: Round the torso forward as the arms continue to press back until the hands are behind the body and the torso is over the legs.

Inhale: Keeping the torso forward, circle the arms up and around to the front.

Exhale: Pull the abdominals in and roll up until the torso is straight over the hips.

Inhale: Pull the straps in toward the sternum with the elbows wide.

MODIFICATIONS

Tight hamstrings

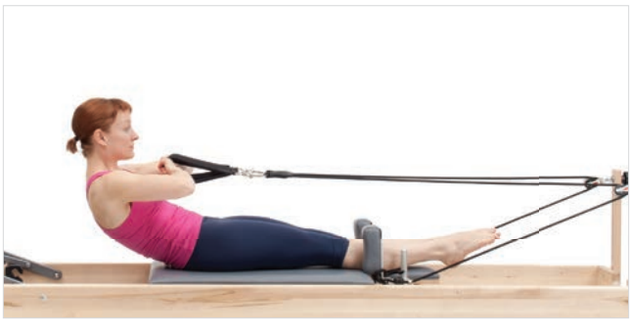
Bend the legs slightly to stay up on the sit bones.

Rowing breakdown

Teach this exercise in steps.

- **1st step:** Pull the straps into the chest, roll down and up.
- **2nd step:** Pull the straps into the chest, roll down, open the arms and press back. Bring the arms back in front of the chest and roll up.
- **3rd step:** Teach the full exercise.

1. Starting position. Sitting up, legs straight, pull arms into the chest with the elbows out.



2. Engage the abdominals and roll back.

5. Press the arms back.

6. Circle the arms up.

CUEING AND IMAGERY

- Engage the abdominals and tuck the tailbone under to roll down.
  - Pull the sit bones together and the navel to the spine to roll back.
- Maintain an open curve in the spine throughout the exercise.
  - Get taller as you roll back.
  - Imagine you are rounding over a large beach ball.
  - Imagine someone is lifting your torso off your femurs as you roll back.
- Move smoothly through the entire exercise.
  - Connect the dots between all the parts of the exercise.
- You control the straps, they don't control you!
  - Even if the straps lose tension during parts of the exercise, continue to move smoothly through each transition.
  - Practice this exercise without the straps several times first to get the flow.

PURPOSE

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

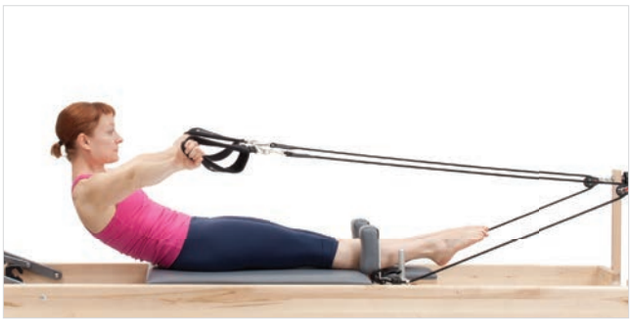
PRECAUTIONS

Shoulder, arm and wrist injuries: Keep the weight light. Don't press the arms back.

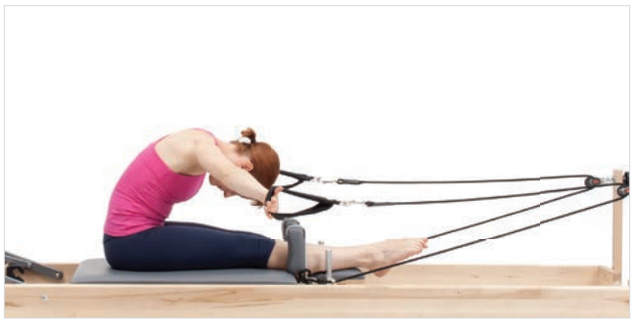
Tight hamstrings and low back injuries: Bend the knees slightly if that makes it possible to sit up on the sit bones. Because of the roll back it doesn't work well to pad the hips or sit cross legged.

Pregnancy: Caution after 16 weeks.

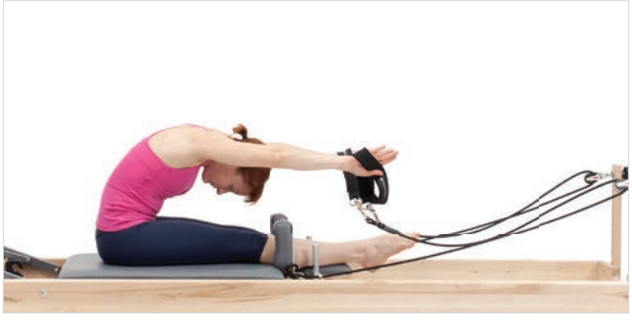
Avoid with osteoporosis.



3. Open the arms out to the sides, palms back.



4. Round forward.



7. Circle the arms to the front.

8. Roll the torso up to the starting position.

ROWING BACK II FLAT BACK

ADVANCED • 4-5 REPS

Springs: B to RB **Straps:** Regular with Handles **Headrest:** Down **Bar:** No bar

Prerequisites: Reformer Short Box Abdominals with flat back, hamstring and back flexibility, strong abdominals

STARTING POSITION

Sit on the carriage facing the straps with the hips at least one hand width from the front edge of the carriage and the legs extended through the shoulder rests. Sit up on the sit bones without rounding the back. Hold the straps in the hands with the arms straight out from the torso.

MOVEMENT SEQUENCE

Exhale: Engage the abdominals and lean back keeping the arms and elbows in a 90 degree position.

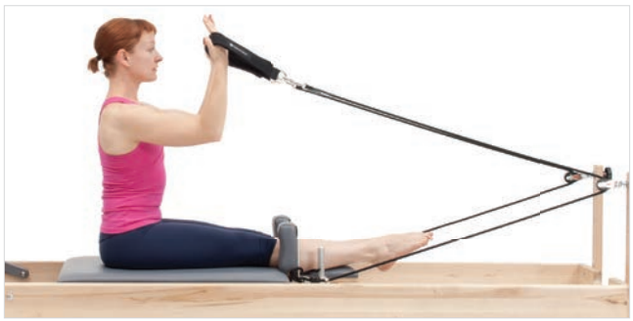
Inhale: Hinge forward from the hips as the arms reach forward on a high diagonal and the chest lifts up.

Exhale: Round the back over as the arms come forward beside the legs then circle the arms around to the back.

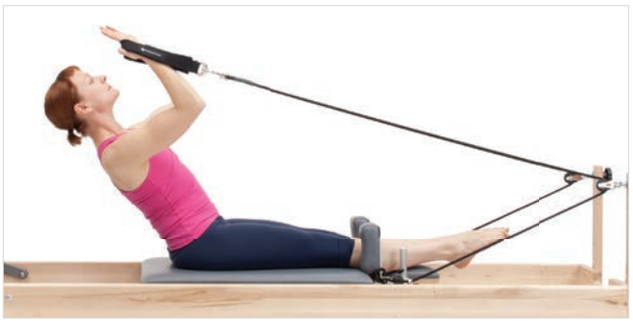
Inhale: Bend the elbows and bring the back of the hands to the back of the waist.

Exhale: Reach the arms back and around as the torso stacks up to return to the seated tall position.

Inhale: Bend the elbows to 90 degrees with the palms facing you. Keep the upper arm parallel to the carriage to return to the starting position.



1. Starting position. Sitting up, legs straight, elbows bent, palms toward face.



2. Lean back keeping the torso in a neutral position.

5. Circle the arms down toward the floor and behind the torso.

6. Bend the elbows and bring the back of the hands to the waist.

CUEING AND IMAGERY

- Engage the abdominals to support the back as the torso leans back.
  - Imagine your torso is being supported by boards on the front and back of the body.
  - If your spine is a sandwich, imagine you have an equal amount of bread on either side to balance the abdominal and spinal musculature.
- Reach the chest up as the arms lift to the ceiling.
  - Imagine you have a light shining out of the center of your chest toward the ceiling.
- Keep the chest open, the shoulders away from the ears and the eyes looking straight ahead.
- Move smoothly through the entire exercise.
- You control the straps, they don't control you!
  - Even if the straps lose tension during parts of the exercise, continue to move smoothly through each transition.
  - Practice this exercise without the straps several times first to get the flow.

PURPOSE

- Strengthen the arm and shoulder muscles including the biceps, brachialis, 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 and back.
- Increase dynamic torso stabilization.
- Improve coordination.

PRECAUTIONS

Tight hamstrings and low back injuries: Bend the knees slightly if that makes it possible to sit up on the sit bones. Because of the roll back it doesn't work well to pad the hips or sit cross legged.

Pregnancy: Caution after 16 weeks.

Avoid with shoulder injuries and osteoporosis.

3. Reach the arms overhead.

4. Lean forward over the legs.

7. Reach the arms back.

8. Circle the arms to the front and stack the spine up to return to the starting position.

REVERSE ABDOMINALS

SUPER ADVANCED • 10 REPS

Springs: B to 3R **Bar:** None **Straps:** Regular

Prerequisites: Mat Double Leg Stretch and Double Straight Leg Stretch, Reformer Kneeling Abdominals, lumbar stability

STARTING POSITION

Lie supine on the carriage with the back of the thighs close to the shoulder rests and the straps around the thighs with the knees bent. Support the head with the hands and open the elbows just to the edge of your peripheral vision The spine is in the position of maximum spinal stability which is imprinted or supported neutral if you are a beginner and neutral for a very advanced student.

MOVEMENT SEQUENCE

Exhale: Maintaining the position of the back, hollow out the abdominals and pull the knees in toward the chest. Keep the elbows wide.

Inhale: Return to the starting position without changing the position of the back.

1. Starting position. Hands behind the head, knees above the hips.

2. Lift the torso up and draw the knees in toward the chest.

OBLIQUE VARIATIONS

Elbow to knee

Rotate the torso to the right as you pull the knees in to the chest. Repeat 4 – 8 times on each side and switch or switch on each repetition.

1. Oblique variation 1. Hands behind the head, rotate to one side with the knees bent.

Hand to opposite hip

To make it easier, reach one hand across to the opposite knee rather than keeping both hands behind the head.

1. Oblique variation 2. Reach one hand toward the opposite hip.

CUEING AND IMAGERY

- Engage abdominals before moving the legs.
  - Draw the hip bones together and stabilize the back before pulling the straps.
- Do not move the back as the legs come in.
  - **Instructor note:** Monitor low back for stability during the exercise.
- For low back safety, use an imprinted spine or supported neutral position.
  - The low back cannot move as the legs release.
- Keep the shoulders down and the chest open.
  - Keep the elbows wide and a light touch on the back of the head for support.

PURPOSE

- Strengthen abdominals.
- Strengthen iliopsoas and hip flexors.
- Balance abdominal and iliopsoas engagement.

PRECAUTIONS

For neck and shoulder injuries: Keep the hands behind the head.

Pregnancy: Avoid after 16 weeks.

Avoid with osteoporosis, active lumbar disc injuries, sciatica and hip flexor injuries.

LONG SPINE MASSAGE

ADVANCED • 3 EACH WAY

Springs: 2R to 3R **Bar:** None **Straps:** Long **Head rest:** Down

Prerequisites: Short Spine Massage

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

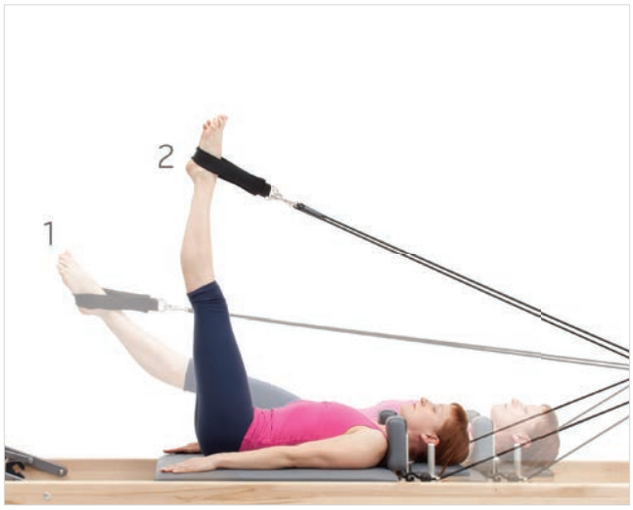
Inhale: With the legs parallel and the inner thighs together, bring the hips to 90 degrees of flexion.

Exhale: Roll up smoothly keeping the feet pointed toward the ceiling and the carriage still. Do not roll up past the top of the shoulder blades.

Inhale: Open the legs shoulder width apart.

Exhale: Roll down keeping the legs straight up to the ceiling and the carriage still.

Inhale: Bring the legs back to the starting position once the sacrum is anchored on the carriage. Reverse by rolling up with the legs shoulder width apart, bring the legs together at the top and roll down.



1. Starting position. Straps on feet at 45 degrees, hands at sides. Flex the hips to 90 degrees.

2. Roll the spine off the mat with the feet to the ceiling. Open the legs hip width apart and roll down without moving the carriage.

CHALLENGES

Leg circles

Roll up as in the standard version, open the legs shoulder width apart in external rotation, roll down until the sacrum is anchored, circle the legs out and around to the starting position. Do 3 times then reverse.

Airplane

Roll up as in the standard version. Keeping the legs together extend the hips until the body is in one line from the shoulders through the pelvis to the feet. Lower the body in one line toward the carriage. The carriage will move as the body lowers.

CUEING AND IMAGERY

- Roll up just to the top of the shoulder blades.
- Press the upper arms into the carriage to press the torso up.
- Complete the roll down of the spine before moving the legs.
- Roll symmetrically down the back.
  - Imagine the back spreading out on to the carriage like pancake batter as you roll down.
- Don't move the carriage as you roll up and down.
- Keep the feet pointing straight toward the ceiling.
- **Instructor note:** Once the student has rolled up, press down evenly on both heels to help them control the roll down.

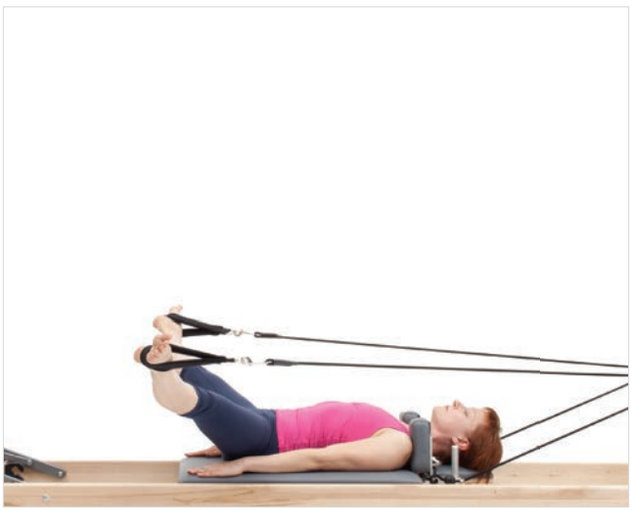
PURPOSE

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

PRECAUTIONS

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

Avoid with osteoporosis.



2. Leg circles variation. Open the legs and circle them out and around.

3. Return to the starting position.

JACKKNIFE

SUPER ADVANCED • 3-4 REPS

Springs: RB to 2R **Bar:** None **Straps:** Regular **Head rest:** Down

Prerequisites: Mat Roll Over and Jackknife, Reformer Short Spine

STARTING POSITION

Lie supine on the carriage with the straps in the hands, the arms reaching toward the ceiling and the legs at 90 degrees of hip flexion.

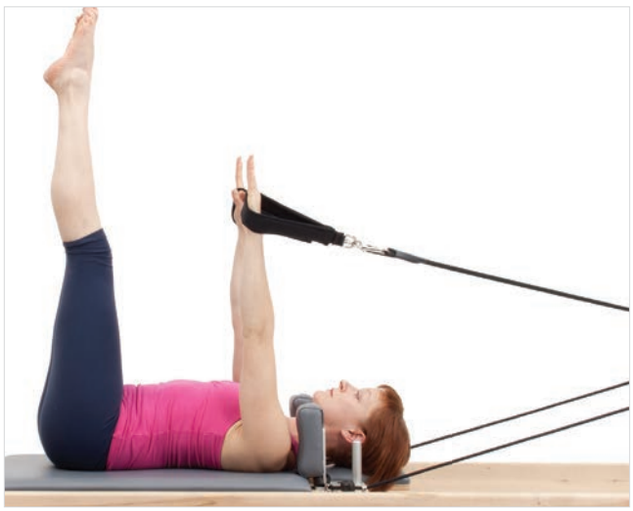
MOVEMENT SEQUENCE

Inhale: Lower the arms to the carriage.

Exhale: Roll the spine up off the mat until the legs are parallel to the floor.

Inhale: Extend the hips and reach the legs toward the ceiling.

Exhale: Roll down from the Jackknife placing one vertebra at a time onto the mat.



1. Starting position. Hands in straps, arms straight above shoulders, legs straight and over the hips.

2. Bring the arms down to the carriage.

CHALLENGE

Arm raise

To increase the challenge to torso control, lift the arms up to the starting position as the torso rolls down to the mat.

CUEING AND IMAGERY

- Don't roll up on to the neck.
  - Stop at the top of the shoulder blades.
- Bring the arms to the carriage first for safety.
- Keep the feet as high as you can during the exercise.
  - Imagine your feet are suspended from the ceiling as you roll down.
- Move smoothly and with control.
  - Control each part of the roll up and the roll down as if you are moving one vertebra at a time.
- **Instructor note:** Once the student has rolled up, press down evenly on both heels to help them control the rolling down.

PURPOSE

- Increase spinal flexibility.
- Increase torso control.
- Strengthen abdominals.
- Strengthen hamstrings and gluteus maximus.
- Scapular stabilization.
- Coordination.

PRECAUTIONS

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

Avoid with osteoporosis.

3. Roll up to the top of the shoulder blades.

4. Reach the legs up toward the ceiling before rolling down.

THIGH STRETCH

ADVANCED • 4 REPS

Springs: B to RB **Straps:** Short

Prerequisites: Torso stability in kneeling, Reformer Chest Expansion, quadriceps strength

STARTING POSITION

Kneel on the carriage facing the straps with the hips on the heels and the straps in the hands.

MOVEMENT SEQUENCE

Inhale: In one movement, pull the straps back with the elbows straight and rise up onto the knees until the hands are level with the hips.

Exhale: Lean back keeping the hips extended and the arms parallel to the body.

Inhale: Return to upright kneeling and lower the thighs on to the calves while keeping the arms beside the body.

Exhale: Return the arms to the starting position.

CHALLENGE

Arched back

From the high kneeling position with the hips extended, arch the upper body back aiming the top of the head toward the carriage. Return to upright and lower the hips to start again.

1. Starting position. Kneeling on heels, arms straight in front of chest.

2. Rise up onto the knees and bring the straps to the hips.

CUEING AND IMAGERY

- Engage the abdominals first.
  - Zip on a pair of tight jeans before leaning back.
- Keep the chest open, the shoulders away from the ears and the eyes looking straight ahead.
  - Lift the chest up to the ceiling as if there is a headlight on it.
- Keep the wrists straight.
  - Flex them slightly to begin.
- Extend the back in one line from the knees.
  - Don't break at the hips.
  - Press the hips forward throughout the exercise.

PURPOSE

- Strengthen and stretch the quadriceps.
- Strengthen the posterior shoulder muscles including the posterior deltoid, teres major, latissimus dorsi and triceps.
- Increase torso stabilization.
- Increase back extension strength and flexibility.

PRECAUTIONS

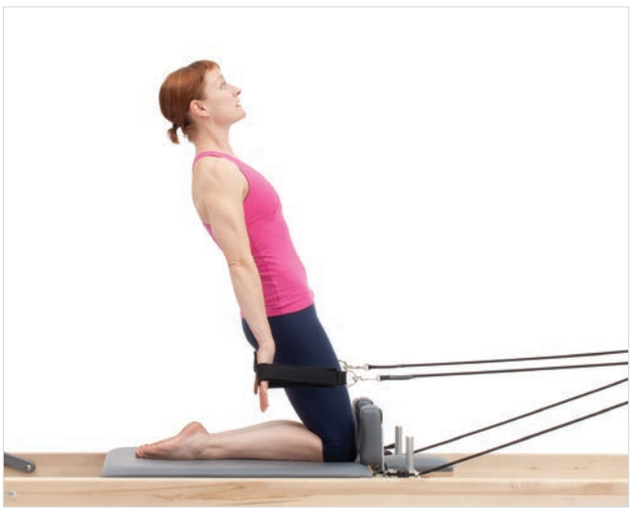
Shoulder, arm and wrist injuries: Keep the weight light and make sure the arms don't go so far back that the shoulders roll forward. Keep the wrists straight. Avoid if symptoms increase.

Knee injuries: Pad the knees or avoid.

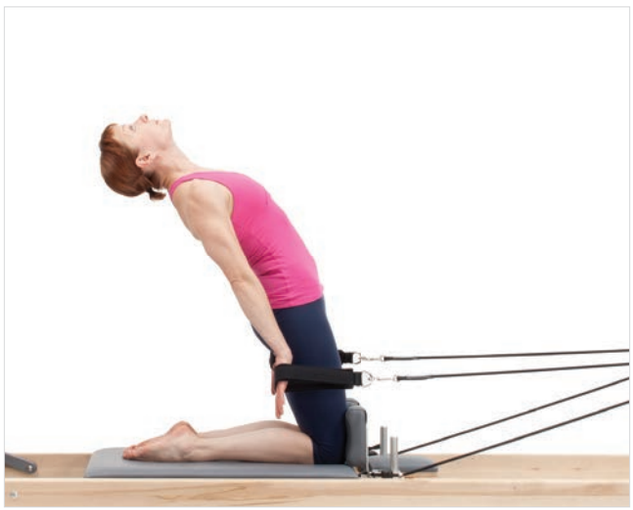
Lower back injuries: Client must tolerate back extension or avoid.

Neck injuries: Use lighter weight, limit range of motion or avoid.

Pregnancy: Caution after 16 weeks.



3. Lean back hinging at the hips.



4. Advanced version. Arch back.

TENDON STRETCH

ADVANCED • 4 REPS

Springs: R to 2R **Bar:** High or Low Pad under foot

Prerequisites: Mat Leg Pull Up, Reformer Elephant, adequate hamstring flexibility, adequate shoulder strength

STARTING POSITION

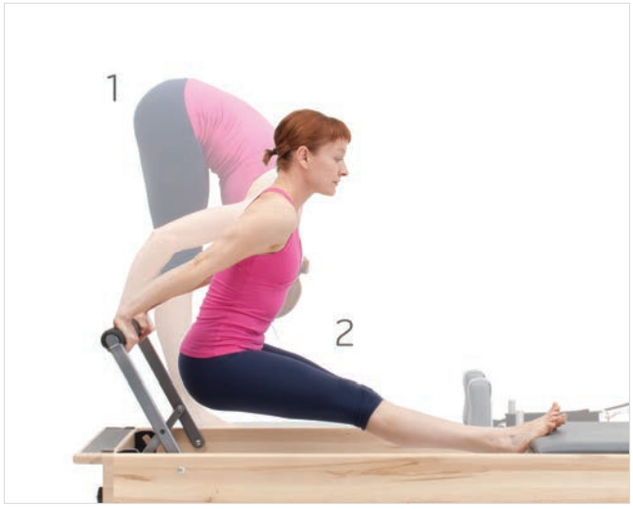
Sit on the footbar with the legs straight and the arches of the feet on the edge of the Reformer carriage. Place the hands on the footbar with the fingers pointing to the body. Round the torso forward over the legs, bring the carriage in to the stoppers and send the hips up to the ceiling.

Instructor note: Stabilize the carriage for your client or spot their hips as they are learning the exercise.

MOVEMENT SEQUENCE

Inhale: Press the carriage out keeping the torso as rounded as possible. The hips will slide down past the footbar.

Exhale: Engage the abdominals and bring the carriage back in to the bumper as the hips rise up over the footbar with control.



1. Begin with the hips up to the ceiling. 2. Press the carriage out and lower the hips toward the floor.

3. Pull the carriage back in to the starting position.

CHALLENGES

Single Leg Variation: Side

With one foot on the carriage, reach the other leg out to the side behind the supporting arm. Press the carriage out and return.

1. Single Leg Variation - Side. Reach one leg to the side.

Single Leg Variation: Back

With one foot on the carriage, reach the other leg straight back behind the footbar. Press the carriage out and return. Don't let the angle between the legs change as the carriage moves out.

1. Single Leg Variation - Back. Reach one leg back.

CUEING AND IMAGERY

- Keep the shoulders away from the ears throughout the exercise.
  - Press the footbar away and widen the space between the scapulae.
- Maintain abdominal control throughout the exercise.
  - Hold the scoop!
- Keep the head down.
- Keep the torso, hips and head as flexed as possible.
  - Keep the eyes on the knees or up on the abdomen throughout the exercise.
- Press the carriage away only as far as the shoulders can tolerate.
  - Instructor spotting is recommended.
- Control the return of the carriage.
  - Don't slam into the bumpers.

PURPOSE

- Strengthen the shoulder including the rotator cuff, latissimus dorsi, teres major, serratus anterior and lower trapezius.
- Strengthen the abdominals and hip flexors.
- Stretch the anterior shoulder.
- Stretch the hamstrings.
- Stabilize the scapulae.
- Develop coordination.
- Develop full bodied integration.

PRECAUTIONS

This is an advanced exercise. Client must have very strong shoulder stability and core control before attempting.

Shoulder, arm and wrist injuries: Grip the footbar to take the pressure off the wrists or avoid with anterior shoulder pain or a history of shoulder dislocations.

Pregnancy: Caution after 16 weeks.

Avoid with neck injuries.

Avoid with osteoporosis.

LONG BACK STRETCH (SLIDE)

SUPER ADVANCED • 3 REPS EACH SIDE

Springs: R to 2R **Bar:** High or Low

Prerequisites: Reformer Tendon Stretch, Mat Leg Pull Up, shoulder flexibility and strength

STARTING POSITION

Sit on the footbar with the legs straight, the hands on the footbar and the fingers pointing toward the body. Keeping the shoulders down, reach the feet to the shoulder rests and slide the hips off the footbar. For shorter clients, place a small box or foam roller in front of the shoulder rests or adjust the footbar horizontally until the hips are just off the footbar and the feet are on the shoulder rests.

Instructor note: Stabilize the carriage for your client as they are getting into the starting position.

MOVEMENT SEQUENCE

Inhale: Press the shoulder blades down and lift the hips off the footbar.

Exhale: Bend the elbows to lower the hips down toward the carriage without raising the shoulder blades.

Inhale: Press the carriage out and the hips up to the ceiling as the arms straighten.

Exhale: Pull the abdominals in and fold at the hips to return to the starting position. Repeat 3 times in each direction.

1. Starting position with the arms straight and the feet against the shoulder rests. 2. Bend the elbows and lower the hips toward the floor.

3. Press the hips up and the carriage forward as the arms straighten
4. Flex the hips to pull the carriage back to the stoppers and return to the starting position.

MODIFICATION

Scapula Glide

From the starting position with the hips off the footbar, inhale and lower the hips toward the carriage by keeping the elbows straight and sliding the scapulae up the rib cage. Exhale and lift the torso up by pressing the shoulder blades down.

CUEING AND IMAGERY

- Keep the shoulders away from the ears as the elbows bend and throughout the exercise.
  - Begin with the scapula glide until you are able to keep the shoulders down.
- Maintain abdominal engagement throughout.
- Press the carriage away only as far as the shoulders can tolerate.
  - You should feel no discomfort in the front of your shoulders.

PURPOSE

- Strengthen the shoulder including the rotator cuff, latissimus dorsi, teres major, serratus anterior, lower trapezius and triceps.
- Strengthen the gluteus maximus and hamstrings.
- Strengthen the abdominals.
- Stretch the anterior shoulder.
- Stabilize the scapula.
- Develop coordination.
- Develop full bodied integration.

PRECAUTIONS

This is an advanced exercise. Client must have very strong shoulder stability and core control before attempting.

Shoulder, arm and wrist injuries: Grip the footbar to take the pressure off the wrists or avoid with anterior shoulder pain or a history of shoulder dislocations.

Avoid with neck injuries.

1. Scapula Slide. Lower the hips toward the carriage keeping the arms straight and slide the shoulders up toward the ears.

2. Press the shoulders away from the ears and slide the shoulder blades down the back. .

1. Modified starting position. Place a small box or foam roller in front of the shoulder rests for shorter clients.

SNAKE

SUPER ADVANCED • 3 EACH WAY

Springs: R to 2R **Bar:** Low

Prerequisites: Reformer Long Stretch, Elephant, strong torso stability

STARTING POSITION

Stand at the side of the Reformer. Place the hand closest to the carriage on the far shoulder rest and place the hand closest to the footbar on the front edge of the carriage. Place the leg closest to the footbar on the footbar or inside the frame of the Reformer and cross the opposite foot in front of the ankle. The hips will be flexed.

Instructor notes: Stabilize the carriage at the bumpers as your client is getting into the starting position.

Spot their hips by holding the pelvis with both hands as they are learning the exercise.

MOVEMENT SEQUENCE

Inhale: Press the carriage out and lower the hips until the head is looking over the back end of the Reformer. The legs, pelvis and lower back should be in one line with the thoracic spine and head in extension.

Exhale: Return by engaging the lower abdominals and hip flexors in order to bring the carriage back into the bumpers.

Repeat to the other side.

1. Getting into position. Place the left hand on the shoulder rest and the right hand on the front edge of the carriage. Keeping the carriage steady, place the right foot on the footbar.

2. Starting position. Cross the left leg over the right and flex the hips toward the ceiling.

3. Press the carriage out while lowering the hips until the legs, pelvis and lower back are straight. Look toward the back end of the carriage and extend the thorax, neck and head.

CUEING AND IMAGERY

- Keep the shoulders away from the ears throughout the exercise.
  - Open the space between the shoulder blades.
- Maintain abdominal control throughout the exercise.
- Press the carriage away only as far as the torso remains in alignment.
  - Instructor feedback recommended.
- Don't drop the hips toward the carriage.
- Control the return of the carriage.
  - Don't bump the bumper.

PURPOSE

- Strengthen the shoulder including the rotator cuff, latissimus dorsi, teres major, serratus anterior and lower trapezius.
- Strengthen the abdominals and hip flexors.
- Stretch the hamstrings.
- Stabilize the scapula.
- Develop coordination.
- Develop full bodied integration.

PRECAUTIONS

This is an advanced exercise. Client must have very strong shoulder stability and core control before attempting.

Shoulder, arm and wrist injuries: Pad the shoulder rest to take the pressure off the wrist or avoid with shoulder instability, pain or weakness.

Pregnancy: Caution after 16 weeks.

Avoid with osteoporosis, lower back and sacroiliac problems.

TWIST

SUPER ADVANCED • 3 EACH WAY

Springs: R to 2R **Bar:** Low or None

Prerequisites: Reformer Long Stretch, Twist, Mat Mermaid and Twist, strong torso stability

STARTING POSITION

The starting position is the same as for Snake on the previous page. See Snake for instructions and photos.

Instructor notes: Stabilize the carriage at the bumpers as the client is getting into the starting position.

Spot client's hips by holding the pelvis with both hands as they are learning the exercise.

MOVEMENT SEQUENCE

Inhale: Press the carriage out, rotate the torso and lower one hip toward the carriage as you look back toward the feet. It is easier to go out then to return so begin by going only a short distance.

Exhale: Return by engaging the lower abdominals and hip flexors to flex the hips toward the ceiling and bring the carriage back into the bumpers.

Repeat to the other side.

1. Starting position. Left leg crossed over right, hips flexed to ceiling.

2. Press the carriage out lowering the left hip to the carriage. Look towards the feet.

CUEING AND IMAGERY

- Keep the shoulders away from the ears throughout the exercise
  - Slide the shoulders down the back of the ribs and anchor them there.
- Maintain abdominal control throughout the exercise.
- Press the carriage away and twist only as far as your strength allows.
  - Instructor should spot the hips to assist with the return until the client finds the range they can support.
  - Keep it small, keep it safe.
- Control the return of the carriage.
  - Don't bump the bumper.

PURPOSE

- Strengthen the shoulder including the rotator cuff, latissimus dorsi, teres major, serratus anterior and lower trapezius.
- Strengthen the abdominals and hip flexors.
- Stretch the hamstrings.
- Stretch the lateral torso.
- Stabilize the scapula.
- Develop coordination.
- Develop full bodied integration.

PRECAUTIONS

This is an advanced exercise. Client must have very strong shoulder stability and core control before attempting.

Shoulder, arm and wrist injuries: Pad the shoulder rest to take the pressure off the wrist or avoid with shoulder instability, pain or weakness. Limit the range of motion on the first few attempts as it is easy to strain the latissimus and intercostals if the client goes too far out without control.

Pregnancy: Caution after 16 weeks.

Avoid with osteoporosis, lower back and sacroiliac problems.

CONTROL FRONT FACING CARRIAGE

ADVANCED • 4 REPS

Springs: R to 2R **Bar:** Low

Prerequisites: Mat Leg Pull Down, shoulder strength and flexibility

STARTING POSITION

Place both hands on the shoulder rests and the feet on the footbar in plank position facing the carriage.

To get into the starting position easily, begin in all fours with the knees on the carriage and the hands on the shoulder rests. Place one foot on the footbar and extend the knee to press the carriage out. Place the second foot on the footbar.

MOVEMENT SEQUENCE

Inhale: Use the arms to press the carriage away from the bumpers while lifting one leg off the footbar. Pulse the leg 3 times.

Exhale: Return to the starting position.

Alternate sides for a total of 4 sets.

1. Starting position. Hands on the shoulder rests and feet on the footbar.

2. Press the arms forward.

3. Lift one leg off the footbar.

MODIFICATION

No leg lift

Move the carriage without taking the foot off the footbar.

CUEING AND IMAGERY

- Maintain a long line from the top of the head to the tail.
  - As if your body is a plank of wood.
- Keep the head in line with the spine.
  - Direct the gaze to keep the head in line.
- Maintain the position of the shoulders and upper body during the exercise.
  - Press the hands into the shoulder rests and keep the space wide between the shoulders.
  - Don't sink the chest.
- Maintain the alignment of the torso as the leg moves.
  - Don't sink or lift the hips. The leg moves all by itself.

PURPOSE

- Strengthen the torso.
- Strengthen scapular stabilizers and the chest including serratus anterior, lower trapezius and pectoralis major.
- Strengthen the hamstrings and gluteus maximus
- Increase scapular stability.

PRECAUTIONS

Shoulder, arm and wrist injuries: Grip the shoulder rests or pad them to take the pressure off the wrists. Avoid if the arms won't tolerate being flexed above shoulder height or if symptoms increase.

Pregnancy: Caution after 16 weeks.

CONTROL BACK FACING CEILING

SUPER ADVANCED • 4 REPS

Springs: R to 2R **Bar:** Low

Prerequisites: Mat Leg Pull Up, shoulder strength and flexibility

STARTING POSITION

Sit on the carriage facing the footbar with the hands on the shoulder rests and the feet on the footbar. Straighten the arms and press the hips up off the carriage as far as the shoulders will allow. The eyes are looking straight ahead.

1. Starting position. Sit on the carriage with the hands on the shoulder rests and the feet on the footbar. Press the hips up with straight arms.

2. Press the hips up toward the ceiling and extend the shoulders.

3. Press the shoulder rests back and lift one leg off the footbar.

MOVEMENT SEQUENCE

Inhale: Use the arms to press the carriage away from the bumpers while pressing the hips up and lifting one leg off the footbar. Pulse the leg 3 times. The angle of the head depends on how high the hips rise. The lower the hips, the lower the gaze, the higher the hips, the higher the gaze.

Exhale: Return to the starting position.

Alternate sides for a total of 4 sets.

MODIFICATION

No leg lift

Move the carriage without taking the foot off the footbar.

CUEING AND IMAGERY

- Press the hips up as high as possible and keep them there.
  - Bring the torso up into as straight a line as possible.
- Balance the head on the body.
  - Use the gaze to find the most comfortable position for the head during the exercise.
- Maintain the position of the shoulders and upper body during the exercise.
  - Don't sink the chest and let the shoulders slide up.
- Maintain the alignment of the torso as the leg moves.
  - Don't drop the hips to lift the leg.
  - Imagine someone is holding your hips up for you as the leg lifts.

PURPOSE

- Strengthen the torso.
- Increase scapular stability.
- Strengthen scapular stabilizers including serratus anterior, lower trapezius and pectoralis major.

PRECAUTIONS

This is an advanced exercise. Client must have very strong shoulder stability and core control before attempting.

Shoulder, arm and wrist injuries: Grip the shoulder rests to take the pressure off the wrists or avoid with anterior shoulder pain or a history of shoulder dislocations.

Pregnancy: Caution after 16 weeks.

Avoid with neck injuries.

STAR/SIDE SUPPORT

SUPER ADVANCED • 3 REPS

Springs: R to 2R **Bar:** Low or High

Prerequisites: Mat Side Plank, Twist, Mermaid

Side Support

STARTING POSITION

From the Plank

Begin in the plank position on the Reformer with the hands on the footbar. Rotate the feet so the outside of the bottom foot is on the carriage supported by the back shoulder rest and the inside of the top foot is on the carriage supported by the front shoulder rest. Move the supporting hand to the middle of the footbar, slightly in front of the shoulder, take the other hand off the bar and rotate the torso to face directly to the side.

From the Floor

Stand at the side of the Reformer. Place the hand closest to the footbar in the center of the footbar. Place the top leg in front of the farthest shoulder rest and the bottom leg in front of the farthest shoulder rest. Press the carriage out until the torso is in a plank position.

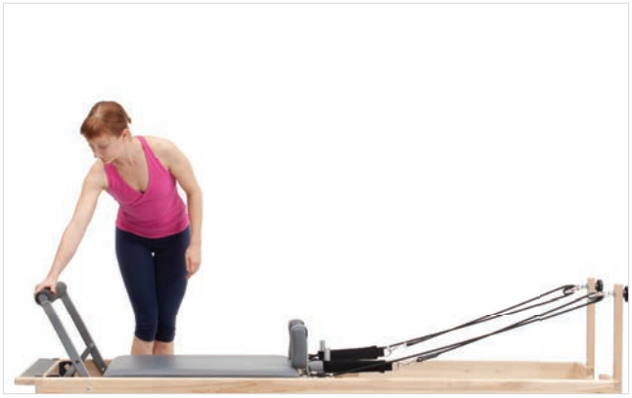
Instructor note: Support the hips of the client as they are learning the exercise.

MOVEMENT SEQUENCE

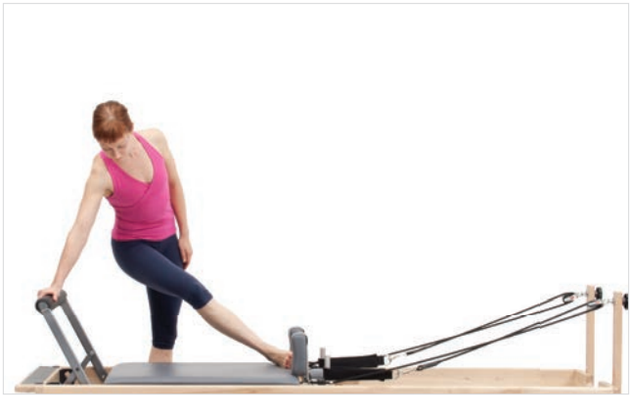
Inhale: Press the carriage away from the footbar by abducting the supporting shoulder. Abduct the top arm as the carriage moves out.

Exhale: Bring the carriage back in and lower the top arm to return to the starting position.

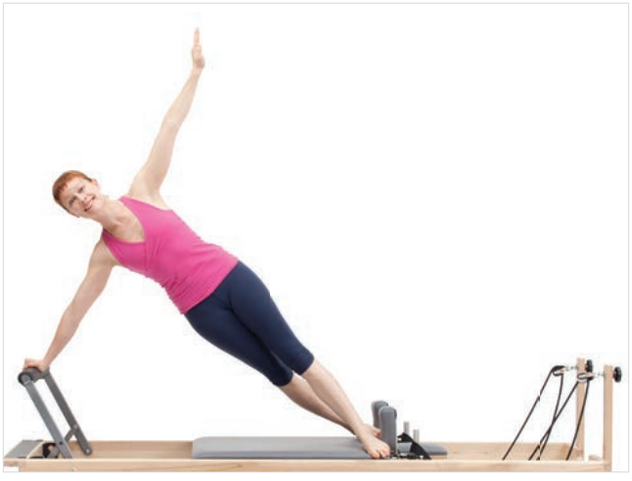
Repeat 3 times to each side.



1. From side of Reformer, place right hand on footbar.



2. Place right foot at closest shoulder rest.



3. Side Support starting position.

Star

STARTING POSITION

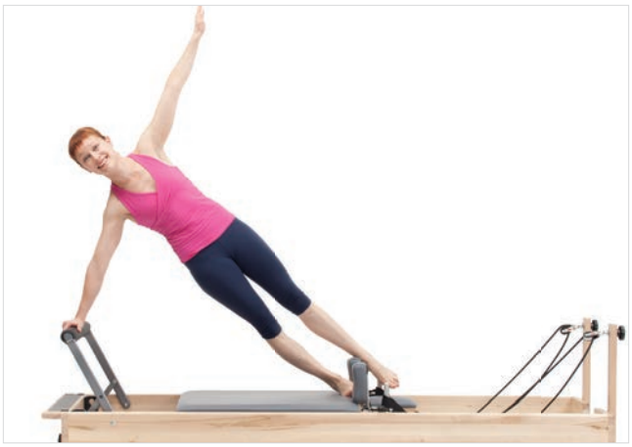
Same as for Side Support except the top leg is off the carriage and placed on top of the bottom leg.

MOVEMENT SEQUENCE

Inhale: Press the carriage out with the bottom arm while lifting the top arm and leg up to the ceiling.

Exhale: Bring the arm and leg back to the starting position.

Repeat 3 times to each side.



1. Star starting position. Lift hips up to bring torso into straight line. Top leg hovers over shoulder rests.

2. Reach the top leg up as the carriage moves out.

MODIFICATION

Knees on carriage

Sit on one hip with the knees bent facing sideways on the carriage. Press up onto the knees with the body in one line from head to tail as you push the carriage out. Add shoulder abduction on the lower arm if client is strong enough.

1. Knees on carriage. Sit on one hip with the knees bent facing sideways.

2. Lift the hips keeping the knees bent.

CHALLENGE

Arm and leg swing

Reach the arm forward and swing the leg back while maintaining the stability of the torso. Reverse the swing. Repeat 3 times in each direction.

1. Arm and leg swing. Swing the top arm back, the top leg forward.

2. Swing the top arm and leg the other way.

CUEING AND IMAGERY

- Keep the torso aligned.
  - Imagine your torso is sandwiched between two plates of glass.
  - Keep the shoulders in line with the hips.
- To stabilize the standing shoulder, press into the footbar with the supporting hand.
  - Imagine you are pushing the footbar away.
- Move only as far out as the arm is comfortable.
- Develop strength in Side Support first before attempting Star.
  - Start with side plank position on the mat.

PURPOSE

- Strengthen the lateral torso including the latissimus dorsi, oblique abdominals, gluteus medius and minimus.
- Strengthen the rotator cuff.
- Stabilize the scapula.
- Coordination and balance.

PRECAUTIONS

This is an advanced exercise.
Client must have very strong shoulder stability and core control before attempting.

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

Pregnancy: Caution after 16 weeks.

SPLITS

SUPER ADVANCED • 4 REPS

Springs: R to 2R **Bar:** Middle or Low

Prerequisites: Reformer standing, adequate adductor and hamstring flexibility, excellent balance

Front Splits Facing the Footbar

STARTING POSITION

Place both hands on the footbar and one foot against the shoulder rest with the ball of the foot on the carriage. Place the free leg on the footbar with the knee bent.

Beginning version: Keep the hands on the footbar.

Advanced version: Take both hands off the footbar and stand up with the front knee bent.

Instructor note: Spot your client by standing in front of them and holding their hands as they move into the standing position. Stay in position as they do the exercise.

1. Starting position, hands on footbar. Place one foot on the footbar and the other against the shoulder rest.

MOVEMENT SEQUENCE

Inhale: Straighten the front leg and move the carriage out until the legs are in the splits.

Exhale: Bend the front knee to bring the carriage into the bumper.

CHALLENGE

Russian Splits

Begin as in the Front Splits with the front knee bent. Straighten the front leg into the Splits. Keeping the legs straight, pull the carriage in, press back out into the splits and bend the front knee to return to the starting position.

2. Press the carriage out by straightening the front leg.

1. Russian Splits. Bring the carriage in with both legs straight.

1. Starting position, hands up. Place the front foot on the footbar and the back one against the shoulder rest. Lift the torso up over the hips with the arms out to the side.

2. Press the carriage out by straightening the front leg.

Back Splits Facing the Straps

Place one hand on each shoulder rest, one foot on the carriage between the shoulder rests with the knee bent and the other foot on the footbar with the leg straight.

Beginning version: Keep the hands on the shoulder rest.

Advanced version: Take both hands off the shoulder rest and stand up.

Instructor note: Spot your client by standing in front of them and holding their hands as they move into the standing position. Stay in position as they do the exercise.

MOVEMENT SEQUENCE

Inhale: Straighten the front leg and move the carriage out until the legs are in the splits.

Exhale: Bend the front knee to bring the carriage into the bumper.

CHALLENGE

Russian Splits

Begin as in the Back Splits with the front knee bent. Straighten the front leg into the Splits. Keeping the legs straight, pull the carriage in, press back out into the splits and bend the front knee to return to the starting position.

1. Starting position, hands on shoulder rests. Place back foot on footbar and bend the front knee placing the foot on the carriage.

2. Straighten the front leg to push the carriage out.

1. Russian Splits. Bring the carriage back in with the legs straight.

1. Starting position, hands up. Place the back foot on the footbar and the front foot between the shoulder rests. Lift the torso and take the arms out to the sides.

2. Straighten the front leg to push the carriage out.

Side Splits Facing the Side of the Reformer

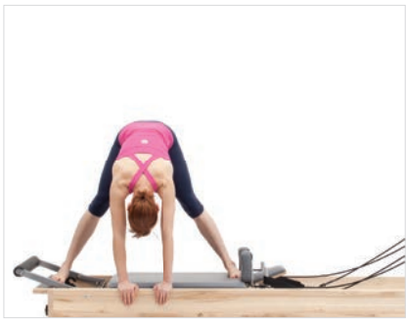
STARTING POSITION

Place both hands on the frame of the Reformer being careful not to put your fingers between the frame and the carriage. Place one foot against the back shoulder rest and the other foot on the standing platform.

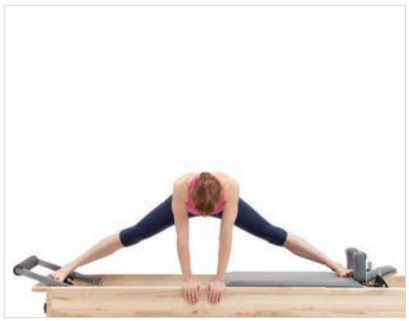
Beginning version: Keep the hands on the Reformer frame.

Advanced version: Take both hands off the frame and stand up.

Instructor note: Spot your client by standing in front of them and holding their hands as they move into the standing position. Stay in position as they do the exercise.



1. Starting position, hands on the frame. Facing side, place one foot on the standing platform and the other in front of the shoulder rests.



2. Press the carriage out keeping both legs straight.

1. Starting position, hands up. Place hands on hips and bring the torso upright.

MOVEMENT SEQUENCE

Inhale: Press the carriage out.

Exhale: Pull the carriage in keeping the legs straight.

CUEING AND IMAGERY

- Engage the abdominals to begin.
  - Zip up the deep abdominals and pelvic floor before moving the legs.
- Avoid hyperextending the knees.
  - Keep the knees slightly bent and the thighs engaged to protect the knees.
- Keep both hip bones facing forward.
  - Imagine your hip bones are headlights and keep them pointing in line with the Reformer.
- Keep the hips, knees and ankles lined up.
- Keep the chest open, the shoulders away from the ears and the eyes looking straight ahead.

PURPOSE

- Stretch and strengthen the hip flexors, adductors and hamstrings.
- Improve balance.
- Improve standing posture.

PRECAUTIONS

Tighter clients: Limit the range of motion to what is comfortable. It is easier to press the carriage out in to the splits than to return.

Knee and hip injuries: Limit range of motion in the knees and hips as needed or avoid.

Balance problems: Perform only the beginning version, spot the client or avoid.

For pregnancy: Avoid.

Advanced 1: Classical order

The Classical Advanced sequence is a full bodied workout designed to challenge every part of the body in a variety of ways. It is a great goal to work towards for your more athletic clients. It is not appropriate for clients with any significant physical limitations.

WARM UPS ON THE MAT AND REFORMER

- Standing arm lifts inhale arms up, exhale arms down Plies and squats
- Reformer 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

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

100: 1 set

Short Spine Stretch: 6 reps

Coordination: 6 reps

Rowing
- Front I – Flat Back: 6 reps
- Front II – Round Back: 6 reps
- Back I – Round Back: 4 reps
- Back II – Flat Back: 4 reps

Long box
- Back Stroke: 6 reps
- Teaser: 4 reps
- Breaststroke: 4 reps

Long Stretch series
- Up Stretch: 4 reps
- Down Stretch: 4 reps
- Elephant: 8 reps

Long Back Stretch: 3 reps each direction

Stomach Massage
- Round Back: 10 reps
- Chest Up: 10 reps

Tendon Stretch: 6 reps

Jackknife: 4 reps

Semi-circle: 4 reps each direction

Chest Expansion: 4 reps

Thigh Stretch: 4 reps

Twist: 4 reps

Corkscrew: 2 reps each direction

Short Box Abdominals
- Fire Baton: 4 reps
- Oblique: 4 reps
- Climb a Tree: 4 reps

Long Spine Stretch: 3 reps each direction

Knee Stretch
- Curved: 10 reps
- Flat: 15 reps
- Knees off: 8 reps

Running in Place: 30 sets

Pelvic Press: 6 reps

Standing: 10 reps each side

Splits
- Front: 3 reps each side
- Side: 3 reps each side

Mermaid: 4 reps each side

Super Advanced 2: Romana Kryzanowska's order

Romana's Super Advanced program is a full bodied workout using a wide range of exercises to strengthen the entire body. It is not appropriate for clients with any significant physical limitations.

WARM UPS ON THE MAT AND REFORMER

- Standing arm lifts inhale arms up, exhale arms down Plies and squats
- Reformer 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

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

100: 1 set

Jackknife: 4 reps

Coordination: 6 reps

Rowing
- Front I – Flat Back: 6 reps
- Front II – Round Back: 6 reps
- Back I – Round Back: 4 reps
- Back II – Flat Back: 4 reps

Long box
- Backstroke: 6 reps
- Teaser: 4 reps
- Breaststroke: 4 reps
- Horseback: 4 reps
- Swan Dive: 6 reps

Long Stretch series
- Up Stretch: 4 reps
- Down Stretch: 4 reps
- Elephant: 8 reps
- Arabesque
  - Releve: 3 each side
  - Flat foot: 3 each side
  - Foot on shoulder rest: 3 each side

Long Back Stretch: 3 reps each direction

Stomach Massage
- Round Back: 10 reps
- Chest Up: 10 reps
- Twist: 4 reps each side

Tendon Stretch: 6 reps

Short Spine Stretch: 6 reps

Semi-circle: 4 reps each direction

Chest Expansion: 4 reps

Thigh Stretch: 4 reps

Kneeling Side Arms: 4 each side
- Pull Across
- Draw a Sword
- Overhead Press
- Side Bend Press

Twist: 4 reps

Corkscrew: 2 reps each direction

Long box
- Rocking
- Swimming

Short Box Abdominals
- Fire Baton: 4 reps
- Oblique: 4 reps
- Climb a Tree: 4 reps

Long Spine Stretch: 3 reps each direction

Knee Stretch
- Curved: 10 reps
- Flat: 15 reps
- Knees off: 8 reps

Running in Place: 30 sets

Pelvic Press: 6 reps

Splits
- Front: 3 reps each side
- Side: 3 reps each side

Controls Front and Back: 4 reps

Star: 4 reps each side

Mermaid: 4 reps each side

Super Advanced 3: Michele Larsson's order

Shelly's Super Advanced program is a full bodied workout using a wide range of exercises to strengthen the entire body. It is not appropriate for clients with any significant physical limitations.

WARM UPS ON THE MAT AND REFORMER

- Standing arm lifts inhale arms up, exhale arms down Plies and squats
- Reformer 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

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

100: 1 set

Jackknife: 4 reps

Coordination: 6 reps

Rowing
- Front I – Flat Back: 6 reps
- Front II – Round Back: 6 reps
- Back I – Round Back: 4 reps
- Back II – Flat Back: 4 reps

Hug a Tree

Salutes

Long box
- Swan
- Pulling Straps
- Backstroke: 6 reps
- Teaser: 4 reps
- Breaststroke: 4 reps
- Horseback: 4 reps
- Swan Dive: 6 reps

Long Stretch series
- Up Stretch: 4 reps
- Down Stretch: 4 reps
- Elephant: 8 reps
- Arabesque
  - Releve: 3 each side
  - Flat foot: 3 each side
  - Foot on shoulder rest: 3 each side

Long Back Stretch: 3 reps each direction

Tendon Stretch: 6 reps

Stomach Massage
- Round Back: 10 reps
- Chest up: 10 reps
- Twist: 4 reps each side

Short Spine Stretch: 6 reps

Semi-circle: 4 reps each direction

Chest Expansion: 4 reps

Thigh Stretch: 4 reps

Kneeling Arm Circles: 6 reps each direction

Snake: 4 reps each side

Corkscrew: 2 reps each direction

Short Box Abdominals
- Roll backs: 4 reps
- Spear a Fish: 4 reps
- Around the World: 4 reps
- Climb a Tree: 4 reps

Long Spine Stretch: 3 reps each direction

Knee Stretch
- Curved: 10 reps
- Flat: 15 reps
- Knees off: 8 reps

Running in Place: 30 sets

Cleopatra: 3 reps each side

Splits
- Front: 3 reps each side
- Side: 3 reps each side

Lunge: 3 reps

Mermaid: 4 reps each side

Advanced 4: Strong shoulders and arms

Strong Shoulders and Arms is a full body workout that focuses on upper body strength. Shoulder stability is an element of many of the exercises and the arms are moved in every possible direction. This is a good workout for men and athletes such as swimmers, gymnasts and pitchers.

WARM UPS ON THE MAT AND REFORMER

- Standing arm lifts inhale arms up, exhale arms down Plies and squats
- Reformer 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

Footwork: 10x each (add arm work)
- Heels, toes, flex releve, V, wide,

Supine Arm Work: 6 reps each
- Pull downs
- Lat pulls
- Circles

100: 1 set

Coordination: 6 reps

Rowing
- Front I – Flat back: 6 reps
- Front II – Round back: 6 reps

Hug a Tree

Salutes
- Back I – Round back: 4 reps
- Back II – Flat back: 4 reps

Long box
- Pulling Straps: 6 reps
- Breaststroke: 4 reps
- Backstroke: 6 reps (preps and full)
- Teaser: 4 reps (with arm swings)
- Swan Dive: 6 reps

Long Stretch series
- Long Stretch: 4 reps (with push ups)
- Up Stretch: 4 reps
- Down Stretch: 4 reps
- Elephant: 8 reps

Kneeling Side Arms: 6 reps each
- Pull Across
- Draw a Sword
- Overhead Press

Long Back Stretch:
3 reps each direction

Tendon Stretch: 6 reps

Short Spine Stretch: 6 reps

Semi-circle: 4 reps each direction

Chest Expansion: 4 reps

Thigh Stretch: 4 reps

Kneeling Arm Circles:
6 reps each direction

Snake: 4 reps each side

Twist: 4 reps each side

Corkscrew: 2 reps each direction

Short Box Abdominals
(can use weighted bar)
- Round back: 4 reps
- Spear a Fish: 4 reps
- Around the World: 4 reps
- Climb a Tree: 4 reps

Long Spine Stretch:
3 reps each direction

Knee Stretch
(try one arm off the footbar)
- Curved: 10 reps
- Flat: 15 reps
- Knees off: 8 reps

Running in Place: 30 sets

Side Support: 3 reps each side

Star: 3 reps each side

Splits
- Front: 3 reps each side
- Side: 3 reps each side

Lunge: 3 reps

Cleopatra: 4 reps each side

Advanced 5: Powerful legs

Powerful Legs is designed to strengthen the lower body for improved endurance and power for running, jumping and dancing.

WARM UPS ON THE MAT AND REFORMER

- Standing arm lifts inhale arms up, exhale arms down Plies and squats
- Reformer 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

Footwork: 10x each (add pulses)
- Heels, toes, flex releve, V, wide
  - Single leg

100: 1 set

Coordination: 6 reps

Feet in the Straps: 8 reps each
- Leg lowers (with magic circle)
- Circles
- Scissors

Long box
- Pulling Straps: 6 reps
- Backstroke: 6 reps
- Teaser: 4 reps
- Breaststroke: 4 reps
- Double leg kicks: 6 reps
- Swan Dive: 6 reps
- Grasshopper: 3 reps

Long Stretch series
- Up Stretch: 4 reps
- Down Stretch: 4 reps
- Elephant: 8 reps
- Arabesque
  - Releve: 3 each side

Long Back Stretch: 3 reps each direction

Tendon Stretch: 6 reps

Stomach Massage
Round Back: 10 reps

Chest Up: 10 reps

Single Leg: 4 reps each side

Short Spine Stretch: 6 reps

Bridging: 6 reps each
- 2 legs
- Single leg

Semi-circle: 4 reps each direction

Thigh Stretch: 4 reps

Kneeling Arm Circles: 6 reps each direction

Knee Stretch
- Curved: 10 reps
- Flat: 15 reps
- Knees off: 8 reps

Snake: 4 reps each side

Corkscrew: 2 reps each direction

Short Box Abdominals
- Round Back: 4 reps
- Spear a Fish: 4 reps
- Around the World: 4 reps
- Climb a Tree: 4 reps

Long Spine Stretch: 3 reps each direction

Footwork on the footplate: 6x each direction
Roll Throughs

Jumping on the footplate
- 1 leg to 1 leg
- 2 legs to 2 legs

Splits
- Front: 3 reps each side
- Side: 3 reps each side

Mermaid: 4 reps each side

TRAINING THE UPPER BODY

Pilates exercises and equipment provide an effective training environment for the upper body for daily activities, sport specific training and post rehabilitation. As clients progress into the advanced Pilates exercises, shoulder strength and stability become essential for safe and effective workouts. For many instructors the upper body is the most challenging part of the body to understand and learn to work. Gaining a basic understanding of anatomy and learning a few key exercise principles can help you on your way to successful training the upper body.

Anatomy Review

THE SHOULDER CONSISTS OF 3 PRIMARY BONES

- Clavicle (collar bone)
- Scapula (shoulder blade)
- Humerus (upper arm bone)

AND 4 PRIMARY JOINTS

- Sternoclavicular (between the sternum and the clavicle)
- Acromioclavicular (between the acromion of the scapula and the clavicle)
- Glenohumeral (between the glenoid fossa of the humerus and the scapula)
- Scapulothoracic: this is not a traditional joint but consists of the myofascial complex that connects the scapulae to the thorax.

Each of the joints of the shoulder is designed for mobility not stability as you can see from the structure of the joints. Unlike the deep ball and socket of the hip or the nicely fitted facet joints of the spine, the joints of the shoulder are simply places where two bones overlap (as in the sternoclavicular and acromioclavicular joints) or where a very big ball is attached to a very shallow socket (as in the glenohumeral joint) or where muscles alone connect bones together as in the scapulothoracic joint. This means that the stability of these joints is created exclusively by the ligaments and muscles that hold them together. As a teacher, your goal is to develop balanced strength, stability and mobility in all the joints of the shoulder.

The muscles of the shoulder can be roughly categorized into 3 different groups:

Glenohumeral stabilizers including the rotator cuff muscles

- Subscapularis (humeral internal rotation)
- Supraspinatus (humeral abduction)
- Infraspinatus (humeral external rotation)
- Teres minor (humeral external rotation)

Muscles that move the humerus

- Pectoralis major (humeral horizontal adduction, elevation and depression)
- Deltoids (humeral abduction, flexion and extension)
- Latissimus dorsi (humeral internal rotation, adduction and extension)
- Teres major (humeral internal rotation, adduction and extension)

Muscles that move the scapula

- Rhomboids (scapular retraction and elevation)
- Serratus anterior (scapular protraction, elevation and depression)
- Trapezius (scapular retraction, upward rotation, elevation and depression)

Key Training Principles

In order to effectively train the shoulder it is important to do four things:

- Develop glenohumeral stability
- Create an appropriate balance between mobility and stability of the scapula
- Create balanced strength around the joints
- Develop coordination between the torso and the shoulder

Each of the principles requires specific ways of working with a client which are outlined below.

Principle 1: Develop Glenohumeral Stability

Glenohumeral stability is created by the rotator cuff and is essential for good shoulder function because the rotator cuff holds the humerus in the glenoid fossa and adjusts the motion of the humerus in the joint. Creating balanced strength in the rotator cuff allows the humerus to move appropriately in any direction and decreases wear and tear on the joint. The rotator cuff is more of an endurance muscle group than a strength muscle group so training in this area should focus on light resistance and high reps. The rotator cuff strengthening exercises included here are repeats from the Movement Principles section.

INTERNAL ROTATION

Exercise sequence:
Begin standing and holding a theraband or theratube attached to a connection point in line with the side of the body. Bend the elbow and place a folded towel between the elbow and the side of the torso. Pull the band across the body by keeping the upper arm in place and moving the humerus into internal rotation. Choose a resistance where the client can tolerate 20 to 30 reps without discomfort. After an injury doing the exercise without any resistance may be sufficient for a while.

EXTERNAL ROTATION

Exercise sequence:
Begin standing and holding a theraband or theratube attached to a connection point that is in line with the side of the body on the opposite side from the arm that is holding the band. Bend the elbow and place a folded towel between the elbow and the side of the torso. Pull the band across the body by keeping the upper arm in place and moving the humerus into external rotation. Choose a resistance where the client can tolerate 20 to 30 reps. After an injury doing the exercise without any resistance may be sufficient for a while.

Principle 2: Balance Scapular Mobility & Stability

For optimum function, the scapula must have the right balance between mobility and stability. The scapula is like a plate suspended in a sea of muscles that move it in all directions. Without enough mobility, the surrounding joints will be under more stress and pain and discomfort can result. Without enough stability the surrounding muscles will have to work too hard to hold it all together. As a first step with any client, it is useful to assess where they fall on the stability/mobility spectrum. Two exercises from the Pilates Movement Principles section that can be used for this assessment are the All Fours Opposite Arm and Leg Lift to assess scapular stability and the Pinwheel to assess scapular mobility. In the All Fours Opposite Arm and Leg Lift, the client should be able to hold the scapula still on the supporting side when they lift up the other arm. In the Pinwheel, there should be a smooth flow in the coordination between the movements of the spine, scapula and humerus and the scapula should move easily throughout the entire range. If the Pinwheel is too much for a client because of an injury or a limitation in their range of motion, use the Telescope Arms as a first step instead.

Basic exercises for developing scapular stability are covered in the Pilates Movement Principles section and are repeated here for reference.

SCAPULAR STABILIZATION EXERCISES

Sternum Drop
Exercise sequence:
Begin in the all fours position. Keeping the arms straight, drop the sternum down towards the mat as the shoulder blades slide together. Press into the hands and slide the shoulder blades apart until the upper spine is pressed up toward the ceiling.

Imagery and Cueing:
Imagine you have a suitcase handle on the your upper back and it is being lifted up toward the ceiling.

Keep the elbows straight and focus on sending the spine between the shoulder blades up toward the ceiling.

Used for:
To strengthen the serratus anterior and mobilize the upper back.

WALL PUSH UPS

Exercise sequence:
Begin standing in front of a wall with the nose and toes touching the wall and the hands placed just wider than the shoulders with the elbows bent. Step away from the wall until the arms are straight and the torso is parallel to the wall. Maintaining a straight torso and without moving the scapula bend the elbows and lower the torso toward the wall. The hand position can be varied with the fingers pointing towards each other and the elbows wide.

Imagery and Cueing:
Keep the body straight from the feet to the head without sagging in the hips.

Used for:
Teaching scapular stabilization and for strengthening the shoulders and the torso.

PLANK POSITION AND PUSH UPS

Exercise sequence:
Begin from an all fours position with the fingers either pointing straight ahead or in towards each other and step back onto one foot and then the other keeping the body in a straight line or plank position. Keep the scapula wide and stable then bend the elbows trying to maintain the stability of the scapula as the arms bend.

To make it easier the client can rest their knees on the ground while still keeping the torso straight as they do the push up.

Imagery and Cueing:
Keep the body straight from the feet to the head without sagging in the hips.

Used for:
Teaching scapular stabilization and for strengthening the shoulders and the torso.

Principle 3:
Balancing Strength Around the Joint

The next stage which often happens concurrently with the first two principles involves creating balanced strength around the shoulder joint so it can be supported when moving in any direction. One way to consider shoulder movements is to think of four primary movements that address all of the primary shoulder functions. These four movements and exercises that are associated with them are:

PULLING (HUMERAL EXTENSION AND/OR ELBOW FLEXION)

Mat
- Single Leg Stretch
- Rolling Like a Ball
- Leg Pull Up

Reformer
- Seated Arm Work Facing the Straps
- Rowing Face Back
- Kneeling Arm Work
- Chest Expansion

Trapeze Table
- Breathing
- Rowing Face Back
- Roll Downs with Biceps Curls

PUSHING (HUMERAL FLEXION AND/OR ELBOW EXTENSION)

Mat
- All Fours
- Push Up
- Leg Pull Down

Reformer
- Seated Arm Work Facing Front
- Rowing Front
- Knee Stretch
- Long Stretch

Trapeze Table
- Rowing Front

Chair
- Chest Press
- Any of the Triceps Press variations

PUSHING OVERHEAD (HUMERAL ABDUCTION OR FLEXION, ELBOW EXTENSION)

Reformer
- Long Box Overhead Press
- Long Box Breast Stroke

Trapeze Table
- Teaser
- Carola's Breathing

Chair
- Hamstring Stretch 1 and 2 with Triceps Variation
- Cat

PULLING DOWN (HUMERAL ADDUCTION OR EXTENSION, ELBOW FLEXION)

Reformer
- Long Box Pulling Straps

Each of these primary movement categories has endless variations and refinements but this provides a simple checklist to make sure you are including exercises for all the key muscle groups.

Principle 4:
Coordination Between the Torso and the Shoulder

Functionally the shoulder works in cooperation with the spine, pelvis, rib cage and arm and including exercises that create coordination between all the players is essential when training the shoulder. These exercises include any of the rotation and lateral flexion exercises from the Mat or Apparatus repertoire such as:

Mat
- Seated Side Stretch
- Pinwheel
- Saw
- Spine Twist

Reformer
- Seated Arm Work Facing Front Twist
- Seated Arm Work Facing Back Twist
- Mermaid

Trapeze Table
- Mermaid
- Scapula Glides

Chair
- Scapula Mobilization with rotation

As your client becomes strong, stable and flexible in their shoulders you can start progressing them towards the more advanced work on the Mat, Reformer and Chair.

PILATES FOR SPORTS

Pilates can be a very useful training tool for athletes at all levels from the weekend warrior to the professional. Depending on what sport or activities the athlete participates in you can use Pilates to increase their power, speed, agility, coordination, balance and flexibility.

LEARNING ACTIVITIES

- As a test of the knowledge you have gained in your Pilates instructor training course, see if you can name a Pilates Reformer exercise for each of the general principles listed below.
- Get together in groups of 2 or 3 and create a Reformer program for a particular activity to share with the group. This can be done during class time or as homework.

GENERAL RECOMMENDATIONS

Athletes work best with instructors who understand their particular needs in both physical training and mind set. The more proficient the athlete you are working with, the more they will test your knowledge and understanding of their sport or activity.

If you want to work with athletes, do your homework. Do what it takes to understand not just the physical demands of their activity but the specific language used by coaches and trainers in the sport. If you are training tennis players you have to understand the difference between a forehand and a backhand and you have to understand what to train to improve them. If you have experience in their particular activity, use your understanding to develop an appropriate program.

If you don't have experience, take a few lessons yourself, watch the sport on TV to learn how to recognize optimum movement patterns and listen carefully to your client to see what they really need. Take a class in teaching Pilates or training clients in that activity if it is available or ask other instructors if they have experience that they can share.

Whether you are training weekend warriors and casual golfers or elite athletes, the problem solving involved in understanding complex movement patterns will improve your skills as a Pilates instructor and movement educator.

Specific Sports

Athletic activities fall roughly into 3 categories each of which has it's own particular training requirements. These categories include:

- **Triathlete activities:** Running, Biking, Swimming and Hiking
- **Ball sports:** Golf, Tennis and Racquet Sports, and team sports such as Baseball, Basketball, Football and Soccer
- **Dance based activities:** Dance, Ice Skating, Gymnastics, Circus Arts and Martial Arts

CATEGORY 1: TRIATHLETE ACTIVITIES

Running, Biking, Swimming and Hiking

The primary characteristics of these sports include

- Movements that are primarily bilateral and occur primarily in the sagittal plane
- Movements that are relatively simple and repetitive
- Movements that involve repetitive stress on certain joints

In training clients in these activities, the principles to emphasize include:

- Fine tuning alignment and biomechanics to minimize the stress from repetitive activities
- Observing and correcting the alignment of the hip, knee, ankle and foot
- Creating balanced movement patterns on each side of the body
- Focusing on shoulder mobility for swimming
- Focusing on scapular stability and balance for biking
- Cross train with rotation, lateral torso flexion

SOME SPECIFIC TIPS FOR EACH ACTIVITY:

Running

- **Flexibility:** anterior hip, ITB, quadriceps, calves
- **Strength:** hip flexion and extension, hip abduction, knee flexion and extension, ankle plantar and dorsiflexion, core strength

Biking

- **Flexibility:** anterior hip, ITB, quadriceps, calves, low back, chest, hamstrings
- **Strength:** hip flexion and extension, hip adduction, knee flexion and extension, ankle plantar and dorsiflexion, scapular stability, back extension

Swimming:

- **Flexibility:** shoulders, hips – flexion, extension, adduction depending on stroke, shoulders, chest, spine
- **Strength:** shoulders – all angles depending on stroke, hip flexion/extension, neck extension and rotation, core strength, back extension

CATEGORY 2: BALL SPORTS

Golf, Tennis and Racquet Sports, Baseball, Basketball, Football and Soccer

The primary characteristics of these sports include:

- Movements that are primarily unilateral and include rotation
- Movements that are relatively complex and variable
- Movements that are reactive (i.e. reaching to hit a forehand)
- Movements that involve extreme ranges of motion on certain joints (i.e. pitching or tennis serves)
- Movements that are not performed equally on both sides

In training clients in these activities, the principles to emphasis include:

- Developing balanced flexibility and strength
- Correcting misalignments
- Choosing or creating exercises to improve specific skills

Teaching and practicing correct leg alignment in a variety of positions

- Creating flow and rhythm in the movement
- Teaching follow through
- Cross training to balance rotation, flexibility and strength on both sides of the body
- Balancing joint mobility and stability in areas subjected to excessive stress as in the shoulder joint for pitchers
- Improving coordination and timing in movements involving the whole body

SOME SPECIFIC TIPS FOR EACH ACTIVITY:

Golfing

- **Flexibility:** internal/external hip rotation, spinal rotation
- **Strength:** rotation through the whole body, core strength, shoulders, legs, back
- **General:** coordination and follow through, Rotation in torso, hips and legs
  - Develop mind body awareness

Tennis

- **Flexibility:** calves, shoulder, hips
- **Strength:** core, legs, shoulders, aerobic capacity
- **General:** coordination and follow through, improve leg strength and alignment in parallel, turned out and turned in
  - Develop shoulder flexibility and strength for serving
  - Develop upper body strength for hitting

Baseball and other throwing sports

- **Flexibility:** shoulders, anterior hip, latissimus, back
- **Strength:** shoulders – especially rotator cuff, core, triceps
- **General:** Coordination and follow through,
  - Develop upper body strength and flexibility
  - Rotation in torso, hips and legs

CATEGORY 3: DANCE BASED ACTIVITIES

Dance, Ice skating, Gymnastics, Circus Arts and Martial Arts

The primary characteristics of these activities include:

- Movements that are relatively complex and variable
- Movements that are often aesthetic rather than functional
- Movements that involve extreme ranges of motion on certain joints
- Movements that are not performed equally on both sides

In training clients in these activities, the principles to emphasis include:

- Correcting misalignments and imbalances in posture
- Developing strength and control at extreme ranges of motion
- Creating exercises to improve specific skills
- Identifying and correcting strength and flexibility imbalances
- Developing balance and strength in the whole body

SOME SPECIFIC TIPS FOR EACH ACTIVITY:

Dancing

- **Flexibility:** everywhere
- **Strength:** everywhere
- **General:** Core strength and stability
  - Develop or balance flexibility in legs, hips and torso
  - Develop external rotation
  - Develop spinal mobility
  - Correct alignment flaws
  - Work on aesthetic elements
  - Train specific skills

Ice Skating

- **Flexibility:** anterior hip and lumbar extension
- **Strength:** core, leg muscles for power, can work with a weight on the ankle to mimic a boot
- **General:** core strength and stability, develop leg power for strokes, jumping and lifting leg with skate, coordination
  - Develop or balance flexibility in legs, hips and torso
  - Develop and balance rotation
  - Coach aesthetic elements
  - Train specific skills

Gymnastics and Circus Arts

- **Flexibility:** everywhere
- **Strength: depends on sex, level and specific events, General:** core strength and stability, coordination and balance, upper body strength and flexibility, power in jumping, lifting, pushing, pulling, train specific skills

Working with athletes to improve specific skills or to overcome specific limitations can be very rewarding. It will teach you how to see movement and movement patterns with more accuracy and it will push you to deepen your understanding of the principles of Pilates.

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

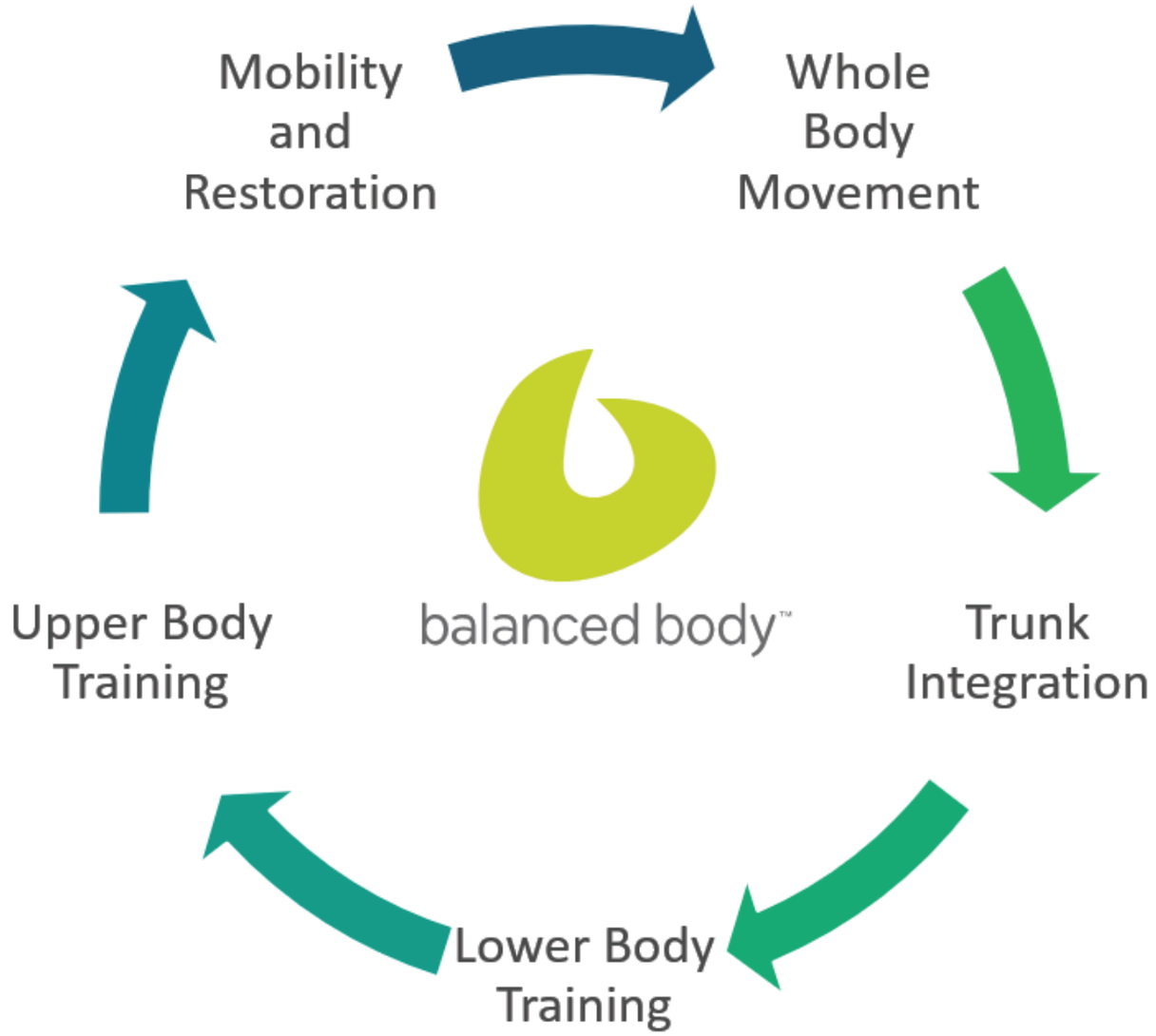
The body requires a balance of effort and relaxation to recharge and refresh. This section includes information on:

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

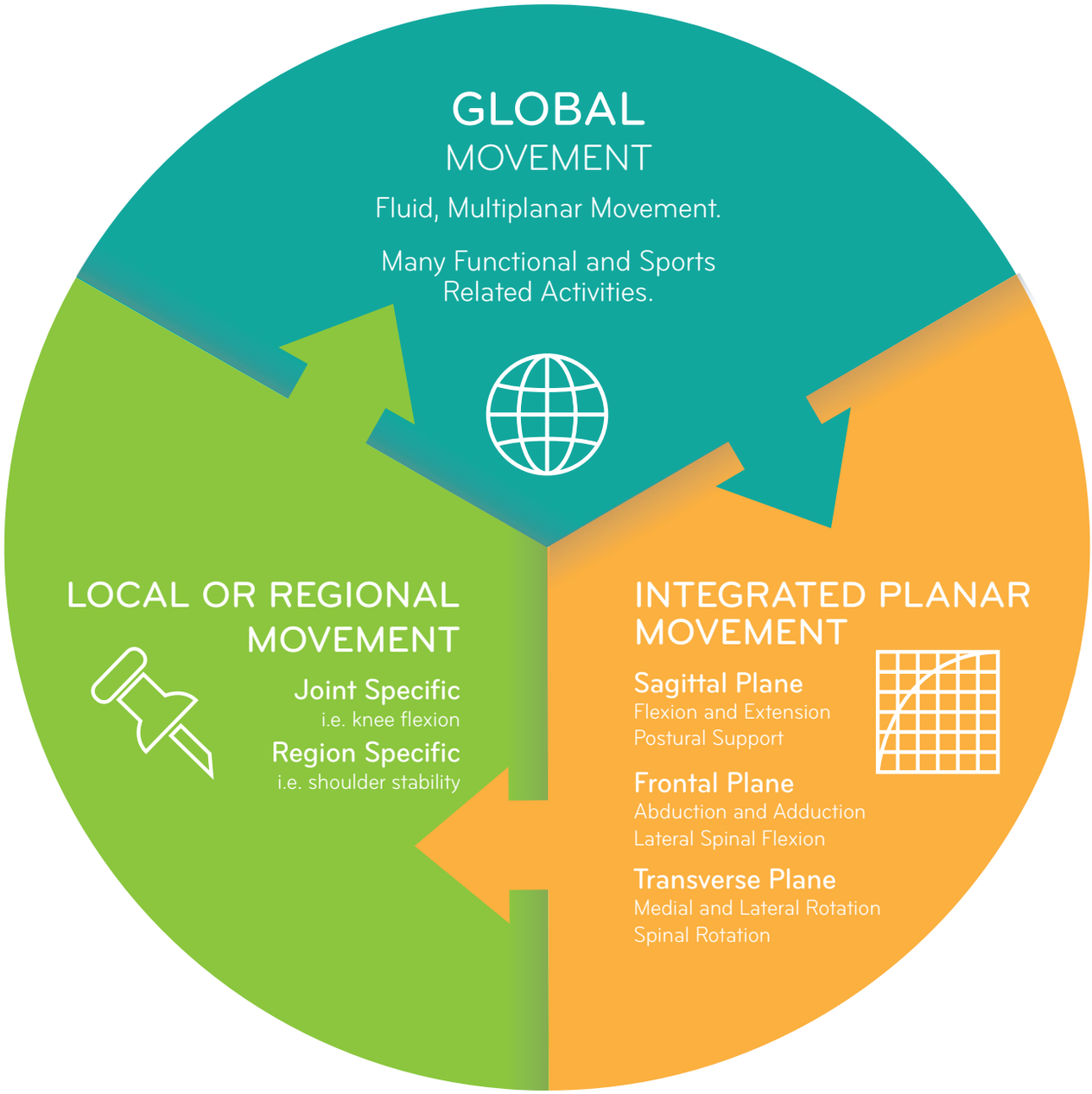
Understanding whole body or global movement can be very complex and difficult to analyze. Breaking down the observation of global movement into movement in the sagittal, frontal and transverse planes helps teachers more easily analyze what they are seeing.

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.

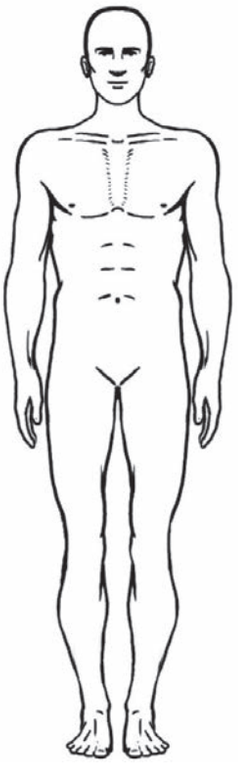
SIDE VIEW

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

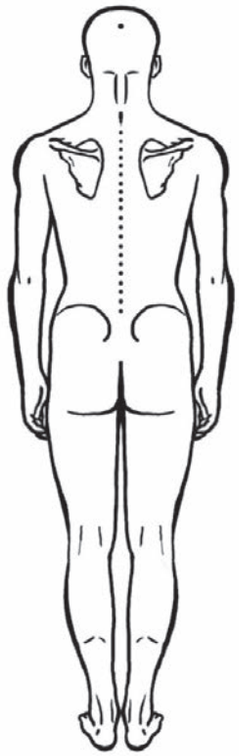
VERTICAL OBSERVATION POINTS



- 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

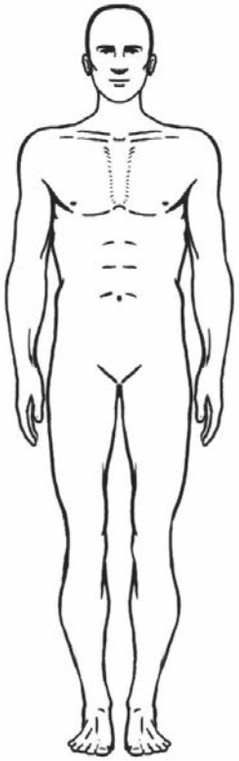
VERTICAL OBSERVATION POINTS



- 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

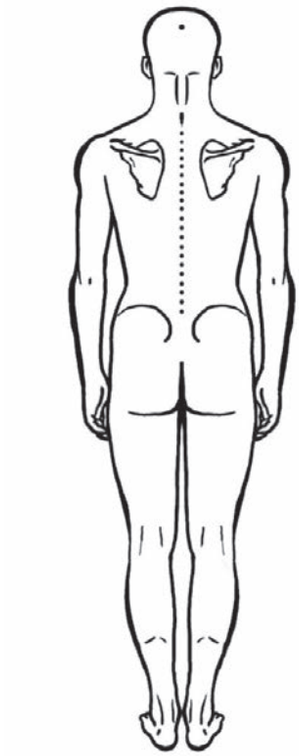
HORIZONTAL OBSERVATION POINTS



- 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

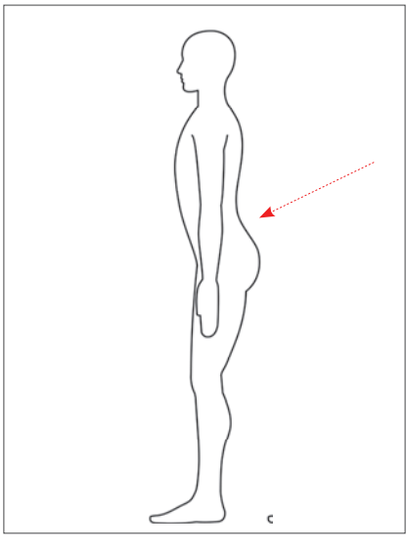
Scoliosis

- **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

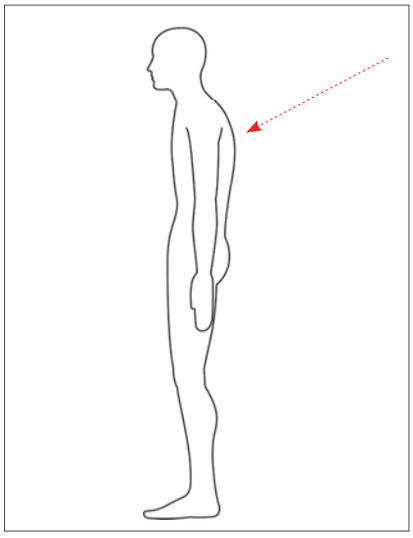
- **Definition:** A spinal curve toward the front of the body. There is supposed to be a small forward curve or lordosis in the lumbar and the cervical sections of the spine. An excessive curve can be called a lordosis or more accurately a hyperlordosis.
- **General guidelines:**
  - Lumbar lordosis 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

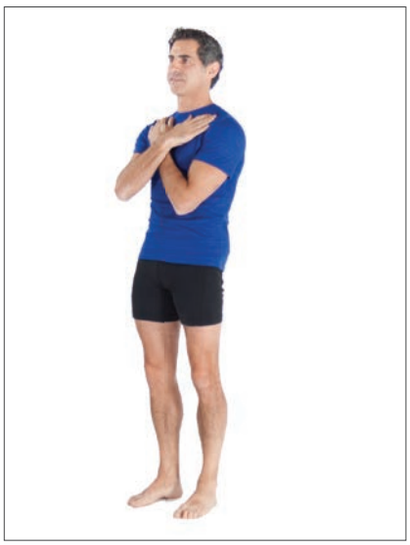
Anterior pelvic tilt

- **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

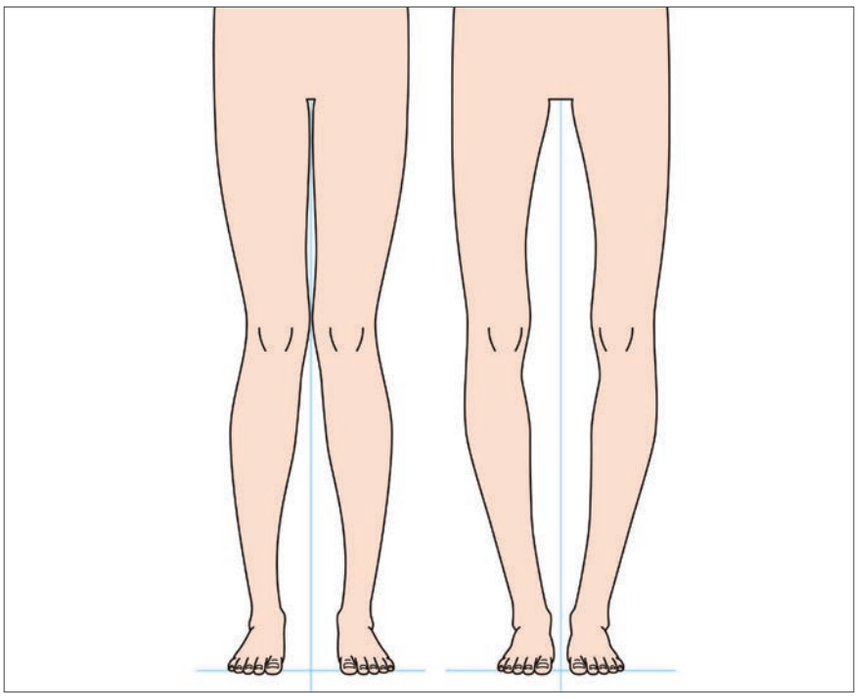
- **Definition:** In standing alignment viewed from the side, the knees are posterior to the plumb line. This is usually caused by hypermobility of the knee.
- **General guidelines:**
  - Make sure the knees do not hyperextend in any weight bearing exercises.
  - Focus on balance between hamstrings and 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

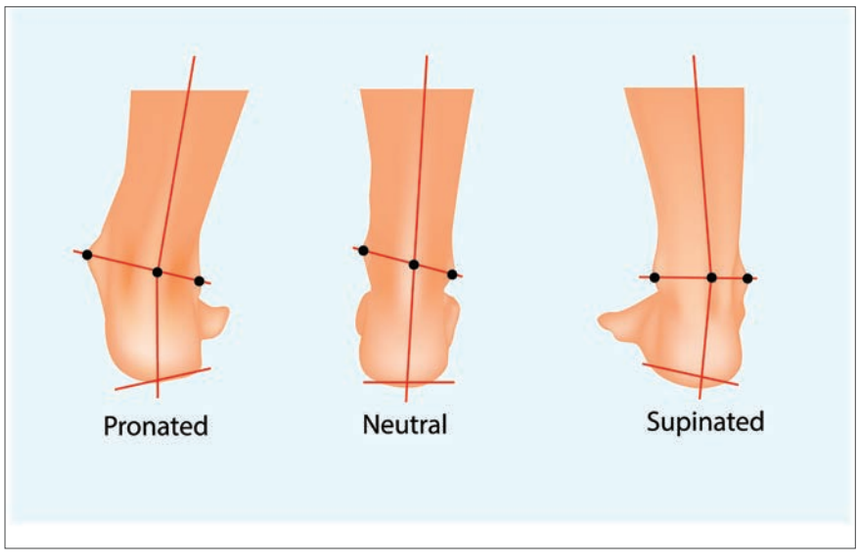
- **Definition:** In standing alignment, the arch flattens toward or contacts the ground and the Achilles tendon bows toward the medial side of the foot. In pronation the weight is carried on the medial side of the foot when standing. This generally indicates a lack of strength and stability on the medial 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

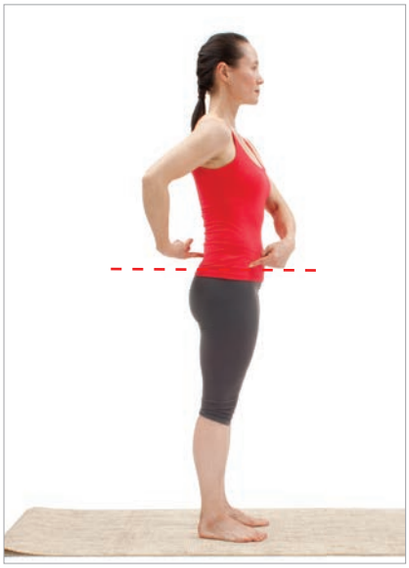
Using the bones
Place the heel of each hand on the ASIS and the second or third finger on the pubic bone to create a triangle with the point facing down. Notice which way the triangle is tipped.

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.

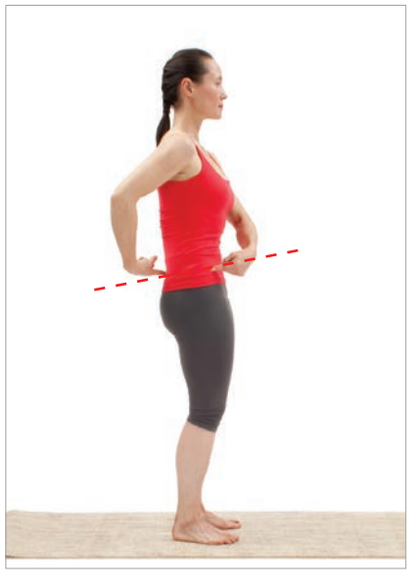
Using imagery
Imagine the pelvis is a bowl full of water balanced over the legs. If the bowl is level, the water won't spill. If the pelvis is anteriorly tilted, the water will spill out the front. If the pelvis is posteriorly tilted, the water will spill out the back.

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

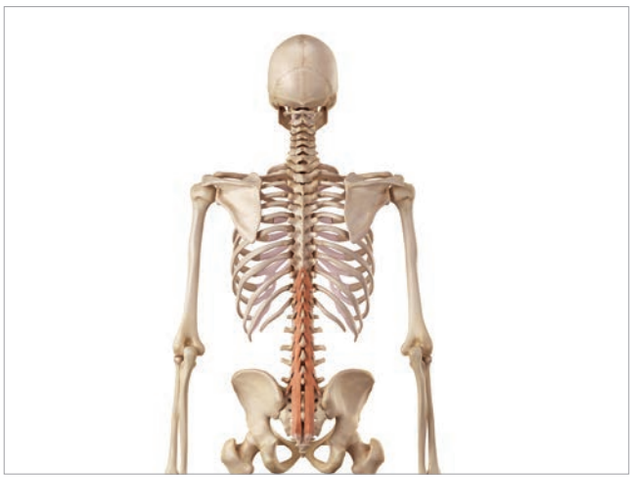
- The muscle fibers of the transversus abdominis wrap horizontally around the abdomen creating the deepest layer of the abdominals. The transversus abdominis acts like a corset to draw in the abdominal muscles and decrease the diameter of the waist.
- The transversus abdominis provides structure to the 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.

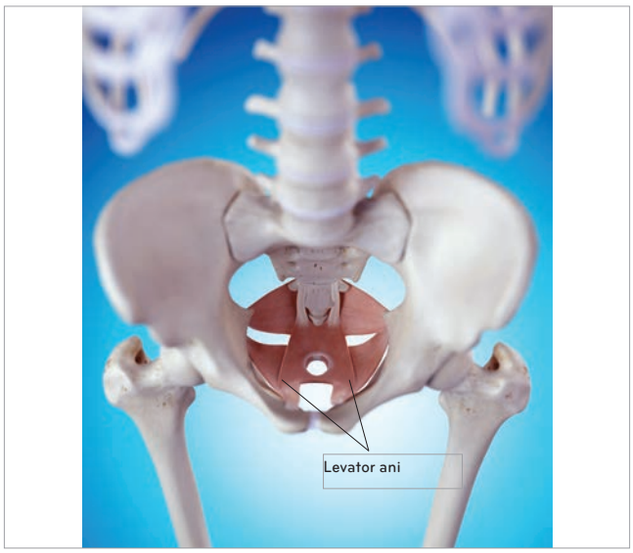
Pelvic Floor

- 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

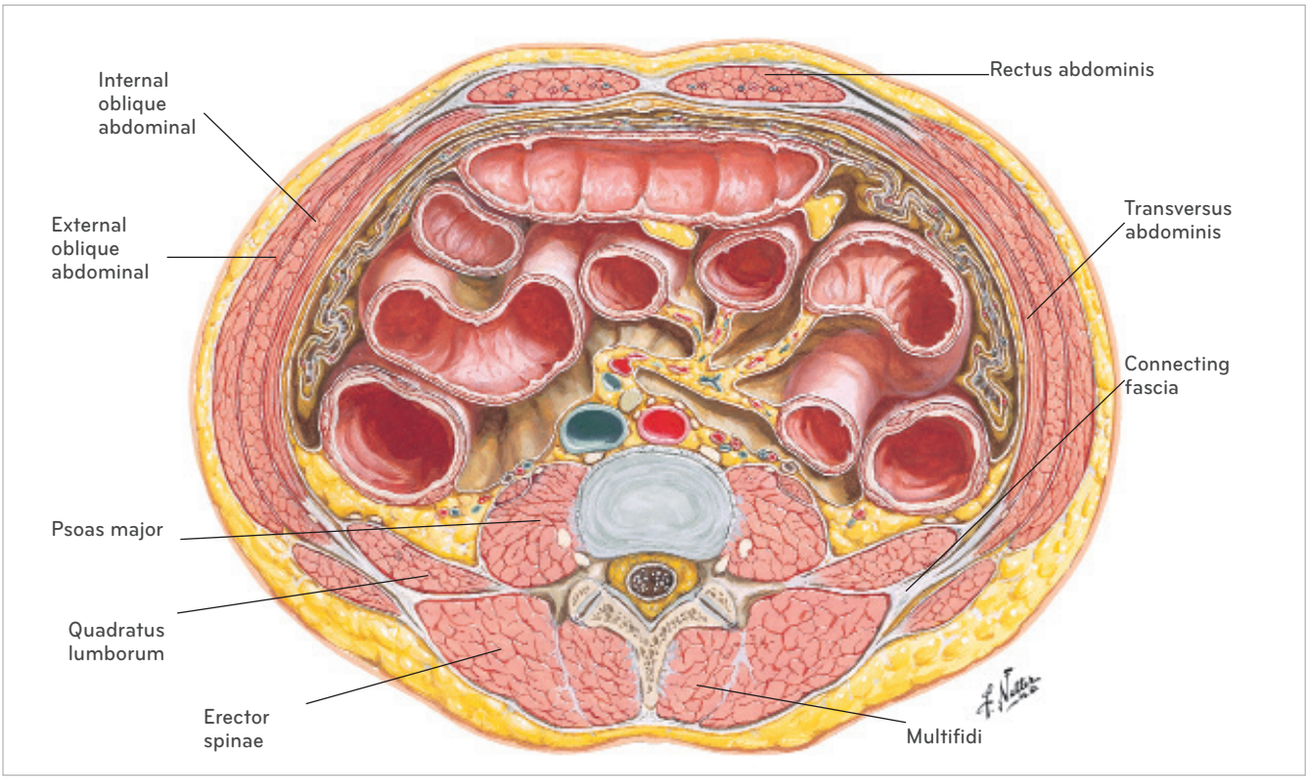
The inner unit stabilizes the lumbar spine through the myofascial connections between all of the elements of the inner unit. The myofascia consists of the muscles (myo) and their associated fascia. Fascia is the connective tissue that surrounds and interpenetrates all of the muscles and creates connections 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

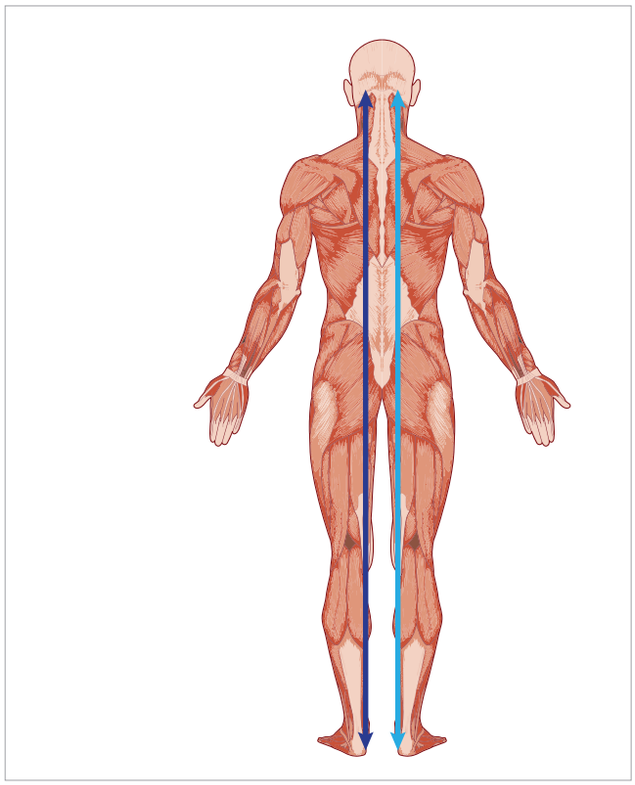
The Outer Unit consists of four subsystems, the Deep Longitudinal System, Lateral System and Anterior and Posterior Oblique Slings. These four systems work together to integrate and coordinate movement between the shoulder girdle, thorax, spine, pelvis and femurs. The Outer Unit creates movement and stability in the sagittal, frontal and transverse planes to produce fully balanced three dimensional movement.

THE DEEP LONGITUDINAL SYSTEM: SAGITTAL PLANE INTEGRATION

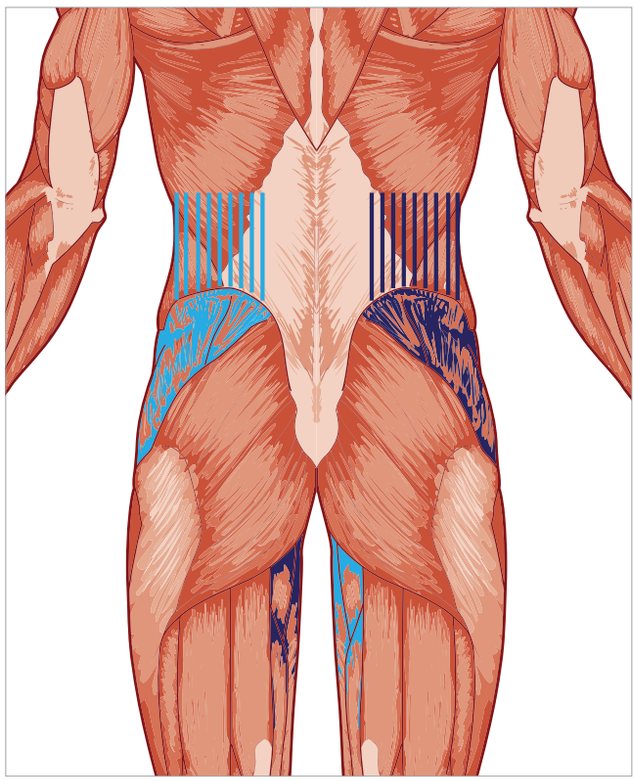
- The deep longitudinal system includes the erector spinae, sacrotuberous ligament, biceps femoris, gastrocnemius and plantar fascia.
- It supports the body upright against gravity.
- It is responsible for spinal extension when activated bilaterally and lateral flexion when activated unilaterally.
- 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

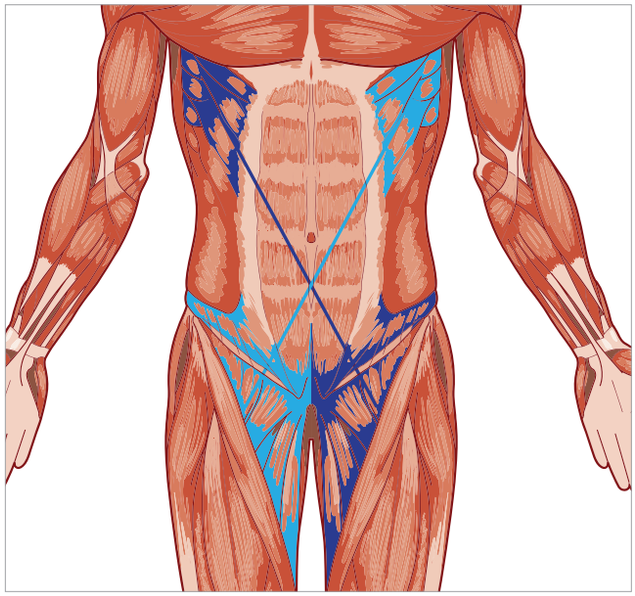
The anterior and posterior oblique slings (AOS and POS) are responsible for integrating the upper limbs, torso, spine, pelvis and lower limbs in whole body exercises such as running, throwing and swimming. The opposing slings (left to right AOS and right to left POS) create rotation while the parallel 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

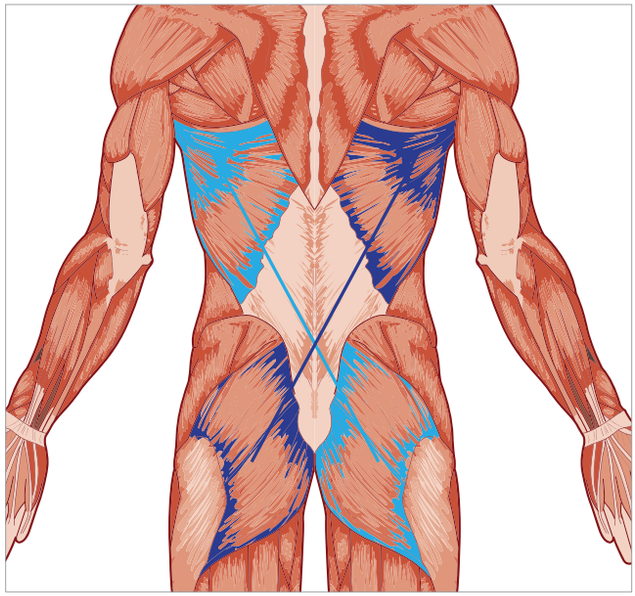
THE POSTERIOR OBLIQUE SLING SYSTEM

- 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.



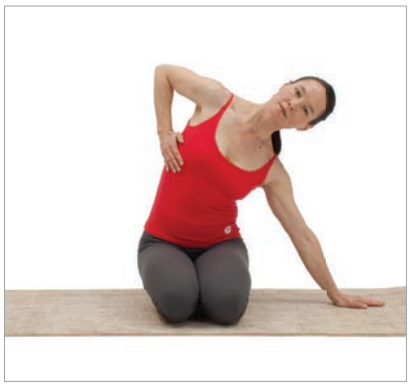
Posterior Oblique Sling

TRUNK INTEGRATION

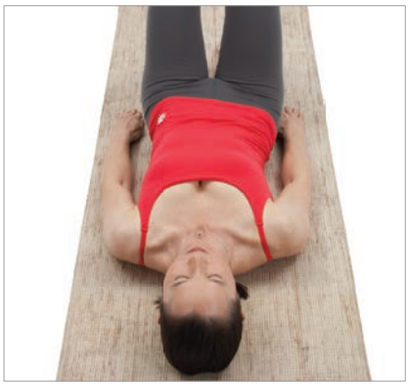
EXERCISE PROGRESSIONS: BREATHING AND INNER UNIT ACTIVATION

Diaphragmatic Breathing

Posterolateral Breathing



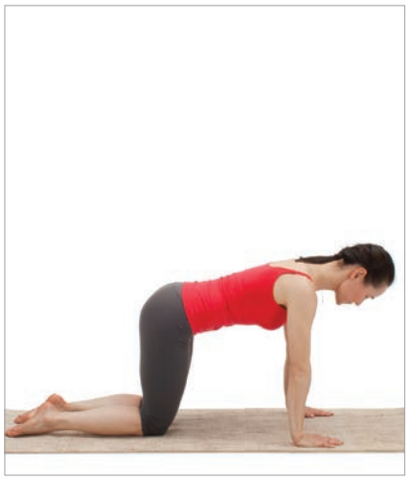
One Lung Breathing



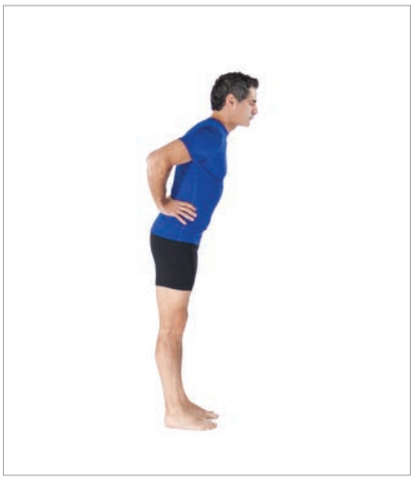
Pelvic Clock

Fingertip Abdominals

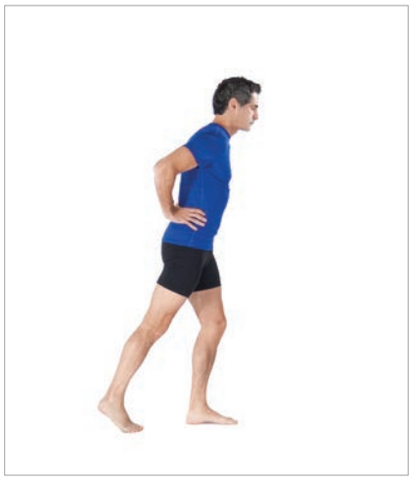
Pelvic Floor Activation



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:

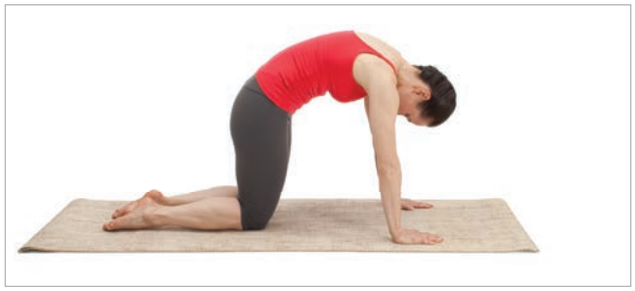
- Flexion
- Extension
- Lateral Flexion
- Rotation

Spinal Flexion

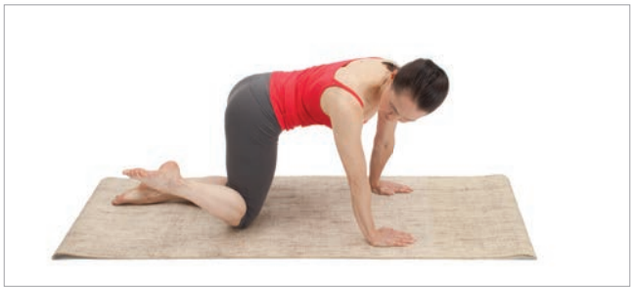
Spinal Extension

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

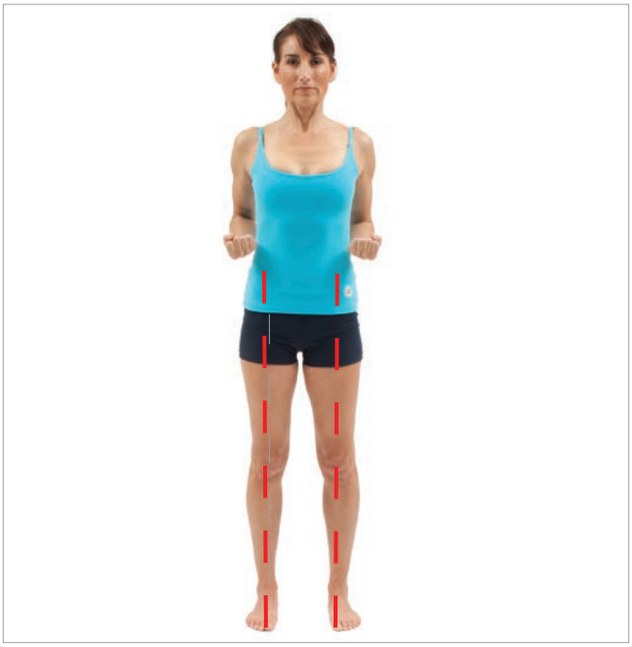
- Agility, balance and coordination are essential skills for the lower body.

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

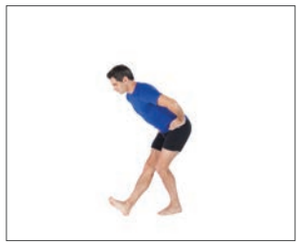

Hip adduction


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.

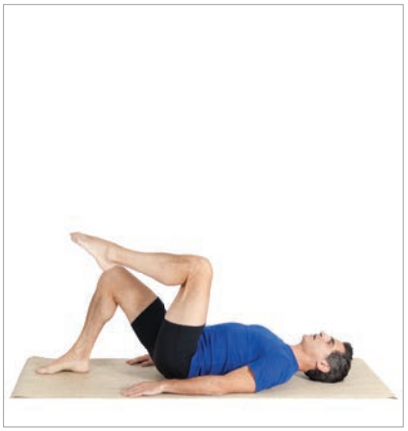
In designing an exercise program for the lower body, the goals and condition of the client will dictate which elements to focus on. If the client is strong but very tight, mobility may be the focus. If the client has had repeated knee injuries, alignment, balanced muscle development and mobility may 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

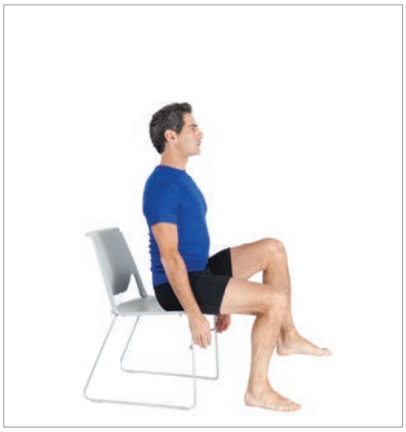
Balance

Coordination

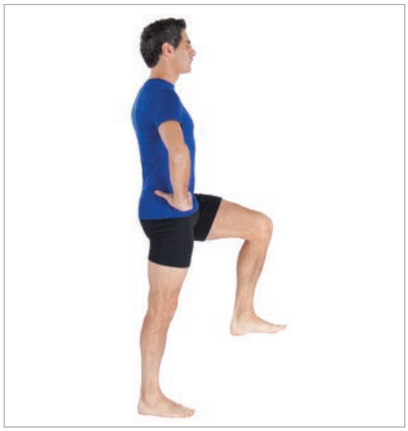
Hip Flexion above 90°



Marching Supine

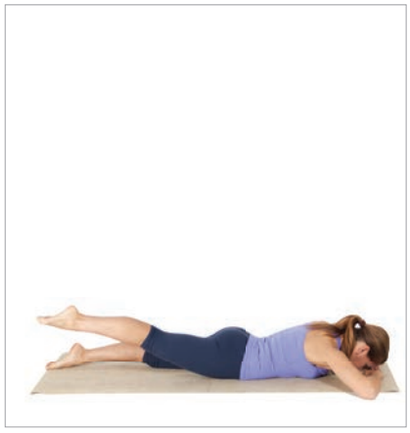


Marching Seated

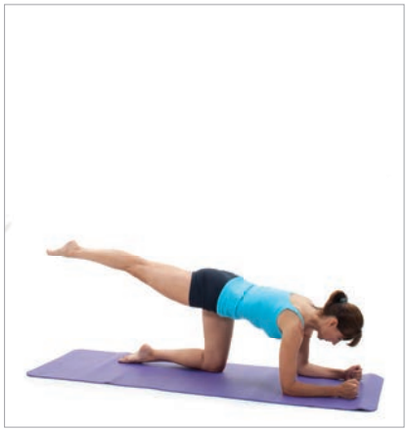


Marching Standing

Hip Extension



Hip Extension Prone



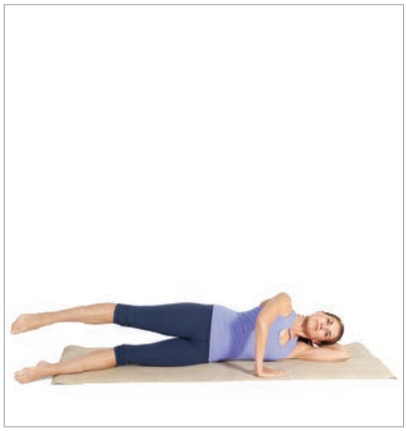
Hip Extension All Fours

Hip Extension Standing

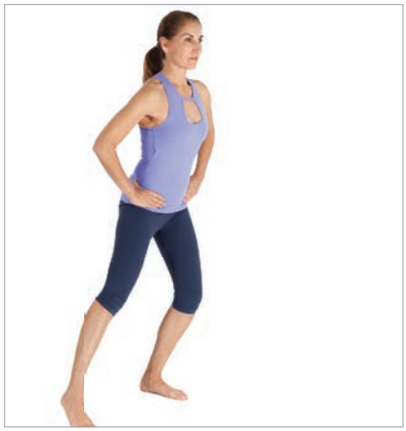
LOWER BODY TRAINING

EXERCISE PROGRESSIONS: HIP ABDUCTION AND ADDUCTION

Hip Abduction



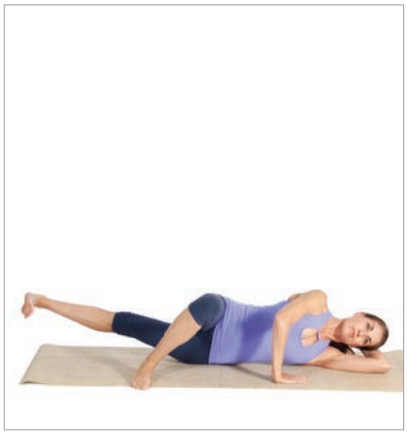
Side Lying Leg Lifts - Abduction



Stepping Out Abduction

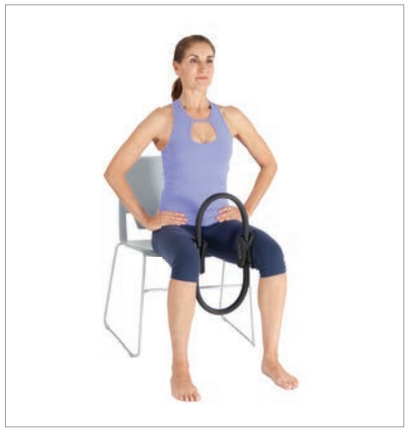
Standing Leg Lifts - Abduction

Hip Adduction



Side Lying Leg Lifts - Adduction

Standing Leg Lifts - Adduction

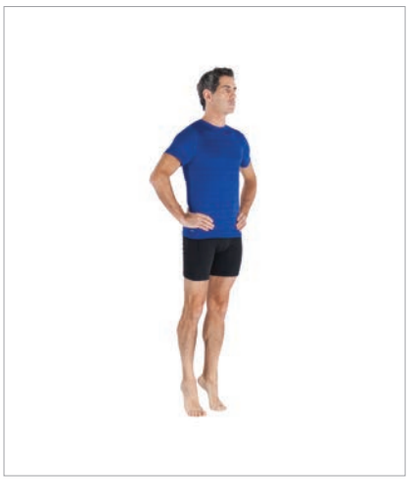


Seated Isometric Adduction

Foot and Ankle Strength

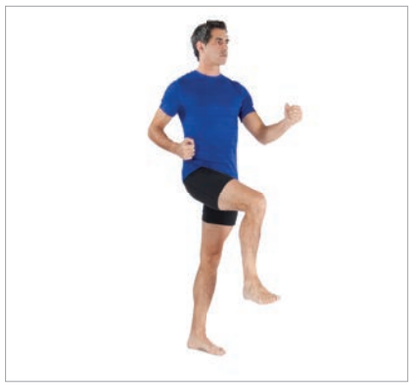
Plantar Flexion

Dorsi Flexion

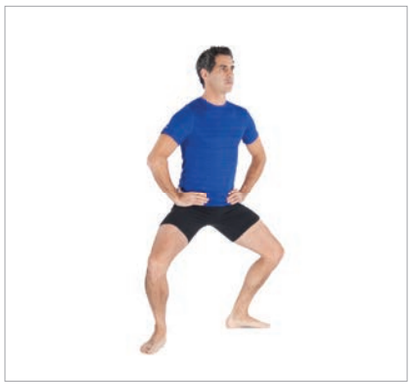


Heel Raise

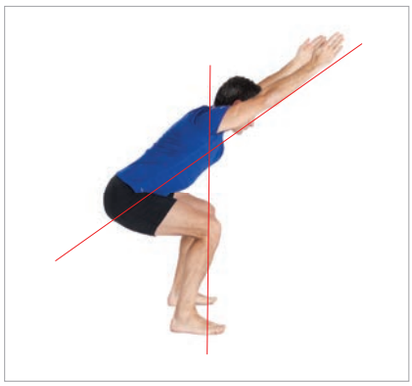
Functional Movements



Marching with Arm Swings



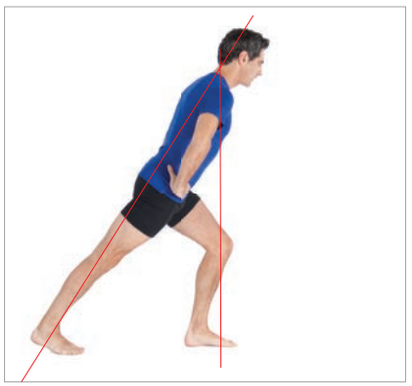
Knee Bends



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.

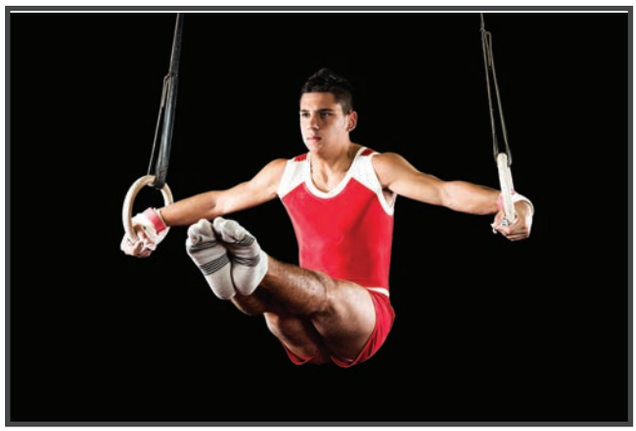
SCAPULAR MOBILITY AND COORDINATION

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.



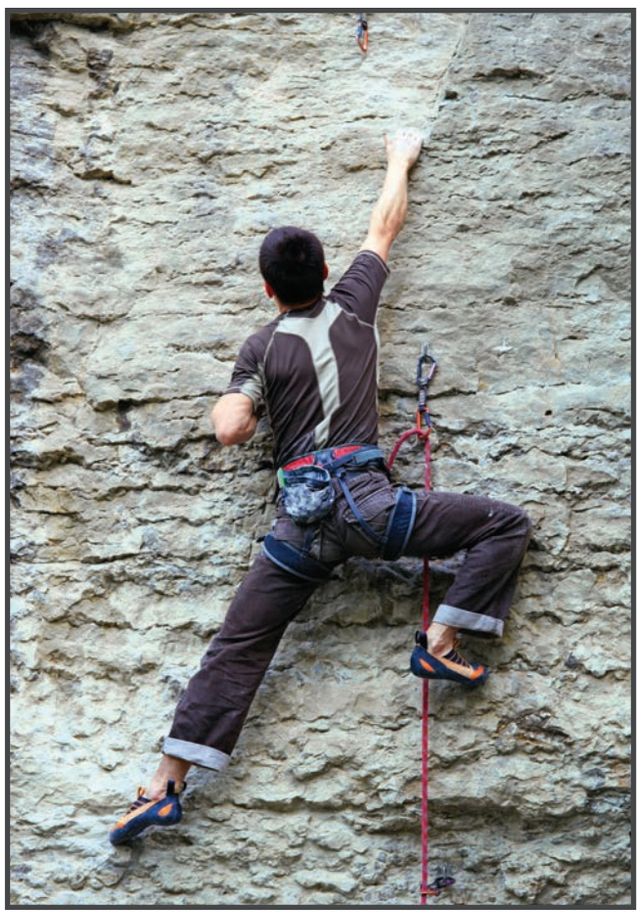
PULLING, PUSHING AND LIFTING

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.



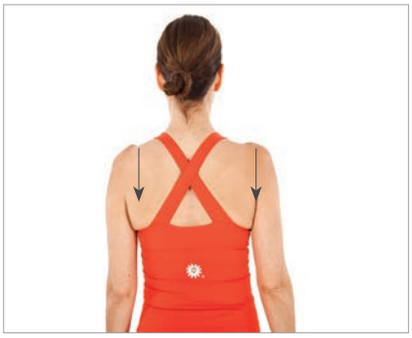
Shoulder Stability, Mobility and Muscle Balance

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.

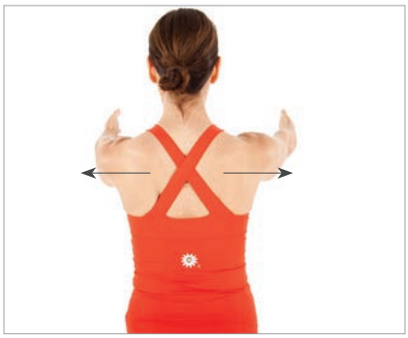
Scapular elevation



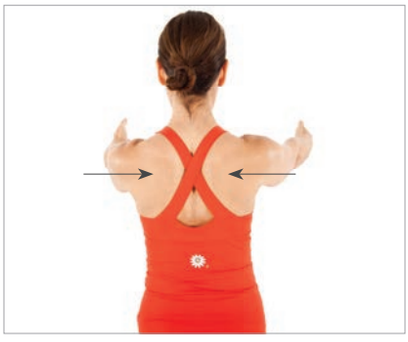
Scapular depression

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

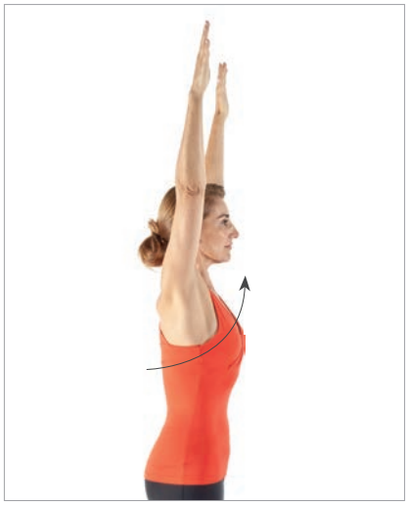
The humerus rotates in the glenoid fossa into medial (internal) and lateral (external) rotation. The rotators are responsible for positioning the humerus in the glenoid fossa so the larger, more superficial power muscles can move the humerus safely.

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.

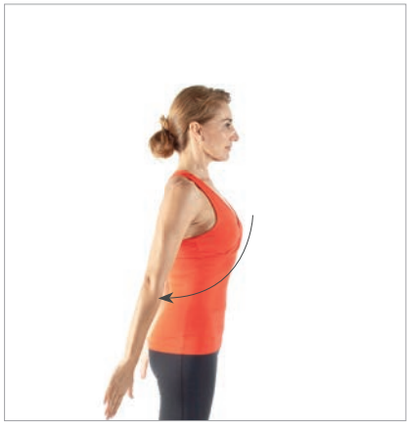


Shoulder flexion

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

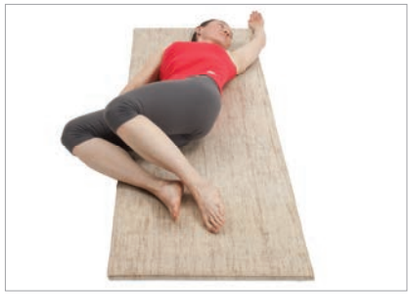
Lateral Glenohumeral Rotation

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

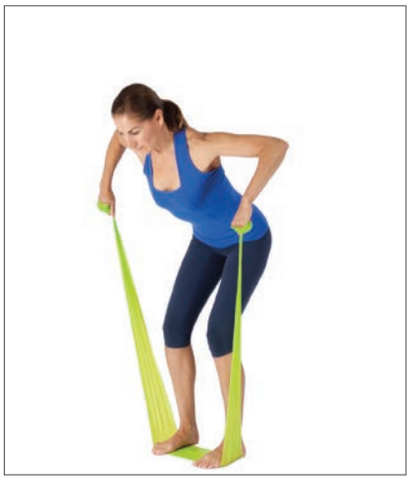
Side Plank - Feet Staggered

Side Plank - Feet Stacked

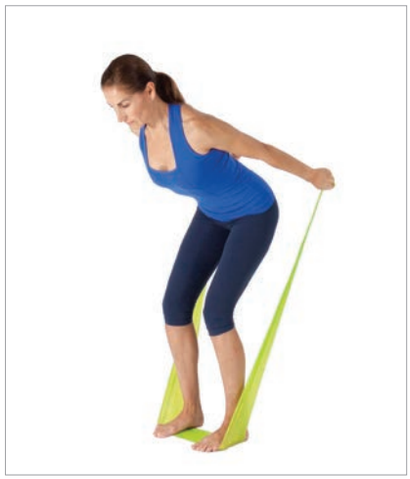
Side Plank with One Leg Lifted

Side Forearm Plank or Hover

Activating the Posterior Shoulder

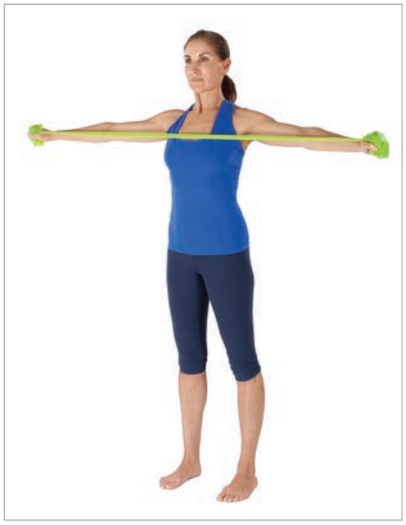


Rows



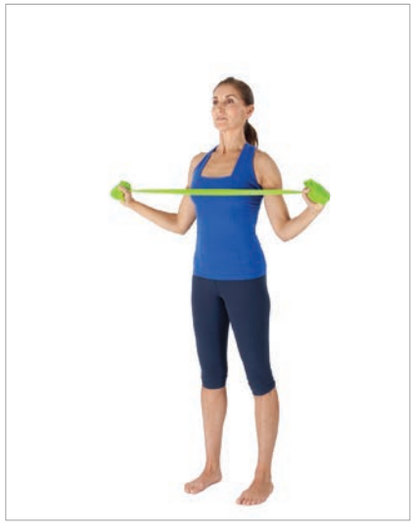
Triceps Press

Triceps Dip



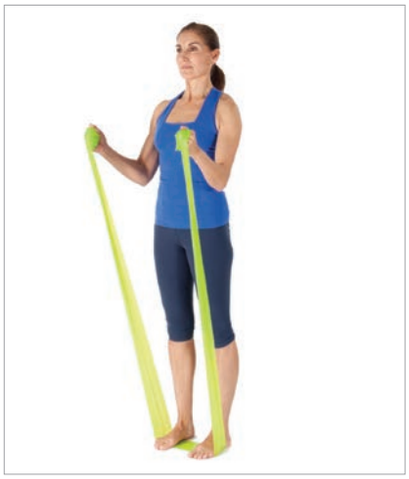
Lateral Press

Overhead Press

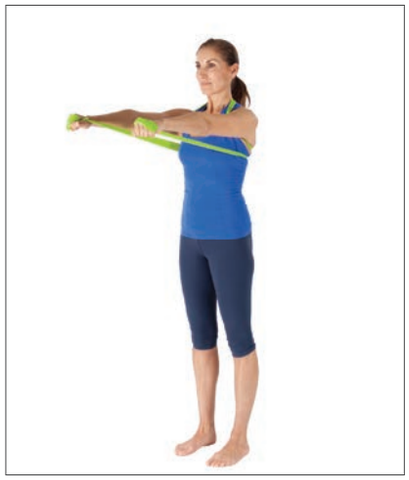


Pulling Down

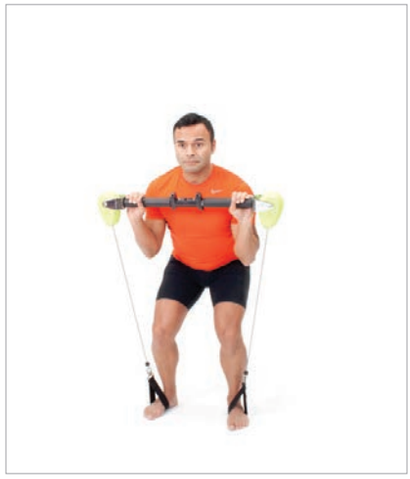
Activating the Anterior Shoulder



Biceps Curl

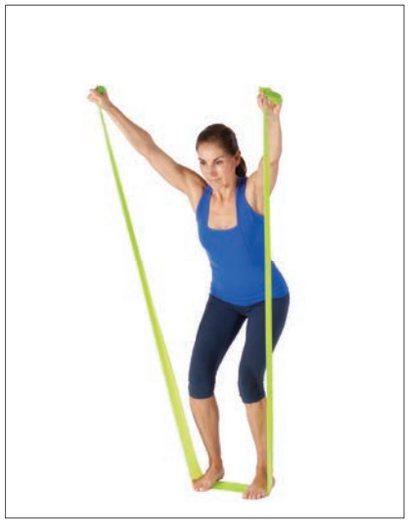


Chest Press

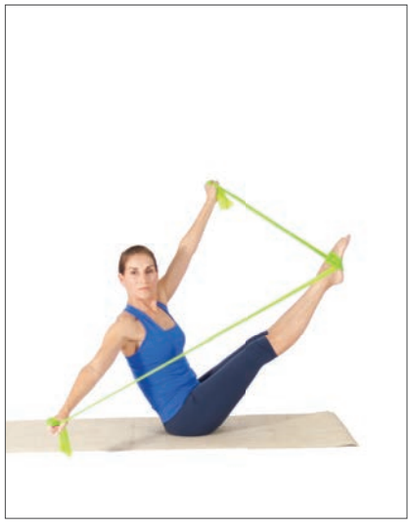


Lifting

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

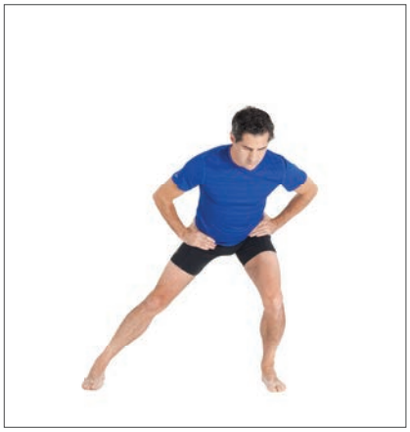
Abductors/Lateral Leg

Adductors

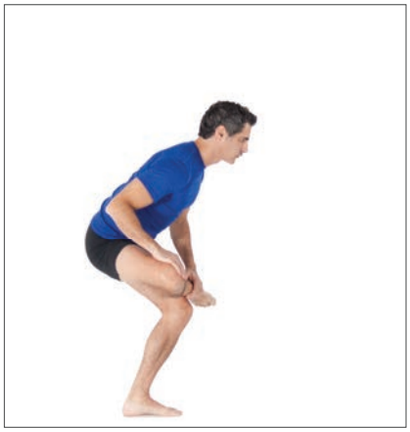
Hip Lateral Rotators

Standing Stretches

Hip Flexors



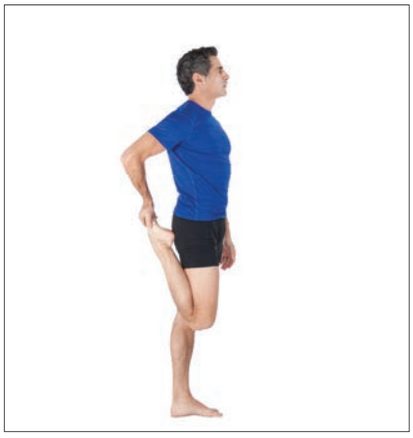
Adductors



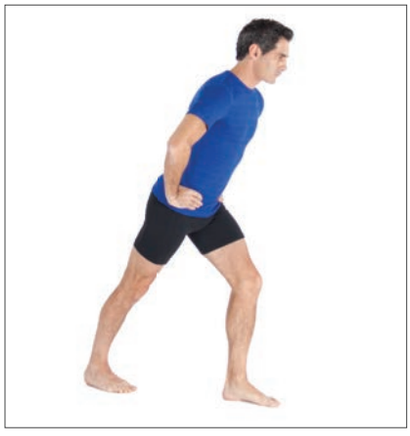
Hip Lateral Rotators

Hamstrings

Abductors/Side Body



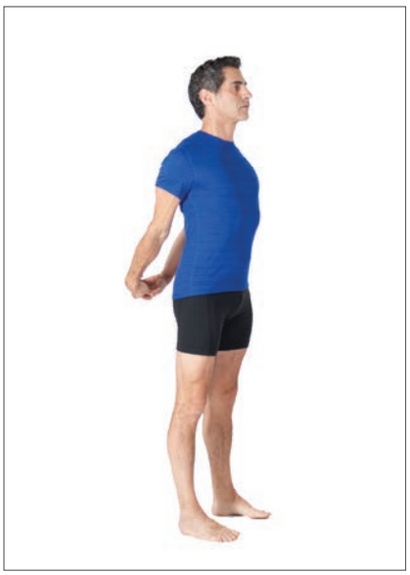
Quadriceps



Calf

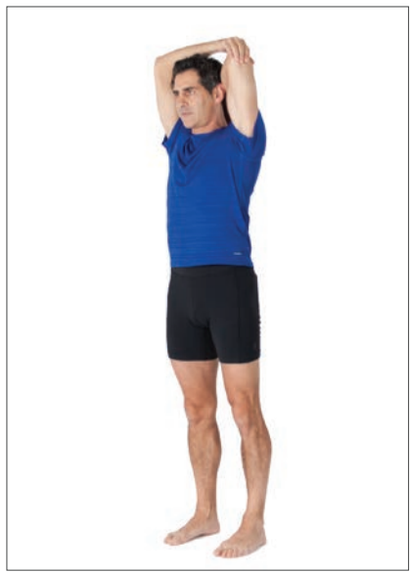
Soleus

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

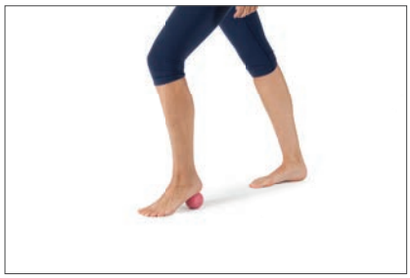
Bookends Starting Position

Bookends Stretch

Flip Flops

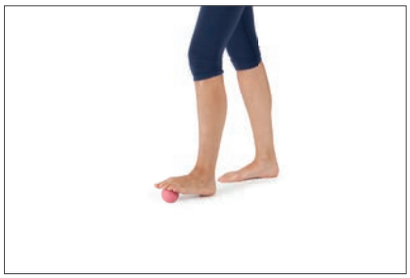
Angels in the Snow

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