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Clinical Use of the Reformer for the Upper Body

Rhondi Miller, PT, MS, SCS, ATC

Introduction

- Rhondi Miller, PT, MS, SCS, ATC
- Over 25 years of orthopedic experience
- Board Certified APTA: Sports Clinical Specialist
- Certified Pilates Teacher- Pilates Method Alliance
- Comprehensively Certified Pilates Teacher- Balanced Body. Faculty: CoreAlign, MOTR
- Certified Athletic Trainer
- PT at Viverant (Mpls, MN) Director of PT/Pilates program

Course Sequence

- Pilates exercises are used frequently by PTs, however further detail on how patients can more fully benefit from Pilates is needed.
- There will be four courses in this series: Pilates Fundamentals for the PT Patient, Clinical Use of the Reformer for Core Integration, Clinical Use of the Reformer for the Lower Body, and Clinical Use of the Reformer for the Upper Body.
- The background and basis for Pilates is presented in course 1. Then is further developed in courses 2-4 on the reformer. Many outpatient clinics have a reformer. These courses will teach clinically-relevant exercises that address correcting dysfunctional movement patterns for the entire body.
- This will progress from basic local isolation, to regional interdependence and finally to global, whole-body integration.

Learning Outcomes

- List at least two faulty movement patterns commonly seen in upper quarter dysfunction.
- List three exercises effective in improving scapular control.
- List three exercises effective in promoting glenohumeral stability.
- Describe two exercises effective in integrating the core and upper body.

Brief Pilates History[1,2]

- Developed by German-born, Joseph Pilates
- Used background in physical exercise from boxing, gymnastics, martial arts, and experience as "rehab aide" in WWI to devise his regimen called "contrology"
- Contrology eventually was called "Pilates"
- Immigrated to US in 1926
- Inventor of many devices
- His vision was to bring Contrology to the masses to increase mind-body health of the people
- Patent expired in 2000 and since then it has grown exponentially

Pilates Principles [1, 12]

- 1) Breathing- connect mind/body, tissue oxygenation, supports performance
- 2) Concentration- cognitive attention while performing the exercises
- 3) Control- postural management, just the right amount of energy to perform
- 4) Centering- core, powerhouse, all work radiates outward from there
- 5) Precision- perform correctly, proper patterning, accurate movement
- 6) Relaxation- balance between work/relaxation, release unnecessary tension
- 7) Rhythm/Flow- smooth, coordinated transitions/movement
- 8) Balanced muscle development- all sides of the joint, all planes
- 9) Whole body movement- integration, global systems in sync thruout

Rehab Benefits of Pilates

- Improves posture, balance(3,4) and alignment(3)
- Effectively activates the mm's of the inner unit(5, 6, 7, 8, 9, 10)
- Increases strength(3,5, 7), mobility(3, 7,11) and flexibility(7,11)
- Decreases pain in chronic LBP patients (3, 12, 13, 14, 15)
- Increase Functional outcomes (3, 12, 13,14)

Benefits of Pilates

- Increases lung capacity and circulation (method of breathing)
- Creates muscle balance around a joint (OKC & CKC)
- Non-compressive to joints
- Much of the work is eccentric- controlling a load while mm is lengthening
- Can be applied to all ages, all levels of fitness
- Improves coordination- muscular and mental
- Improves bone density and joint health
- Improves body awareness

Definition of Core [15, 16, 17]

INNER UNIT	OUTER UNIT
▪ Transversus abdominis ▪ Diaphragm ▪ Multifidi ▪ Pelvic floor	▪ Deep Longitudinal system ▪ Anterior Oblique sling ▪ Posterior Oblique sling ▪ Lateral system

Training the Scapula on Reformer:

- A shoulder rehab exercise program must include ex's that promote scapular external rotation, posterior tilting & upward rotation. (18)
- Conscious activation of abdominals improves serratus anter, upper/mid/lower traps during dynamic exercises (19)- healthy subjects.
- Core activation decreased upper trap and increased serratus activity. (20)
- Fair relationship between scapular mm endurance & lateral trunk/core endurance (21) -side plank.

Training the Scapula on Reformer:

- Qped shoulder flexion was found to have highest activity in serratus anterior, low trap and posterior delt. (22)
- Adding trunk rotation (with scaption, ER exercises & prone scap retract) shows improved scapular ER and posterior tilt as well as improved lower trap activation. (23)
- Verbal and/or tactile feedback elicited higher EMG amplitude in serratus and upper/middle trap than no feedback during exercise. (24) -CUE!

Shoulder training on the Reformer:

- Serratus Anterior & Low trap need to be trained/corrected before the RTC in OH athletes.(22)
- Scapular mm's need to position the glenoid fossa dynamically in order to have effective GH mobility. (25)
- Lats & pec major are overactive in patient's w instability. (26)
- Pec minor stretching program decreased pain & improved function in shld pain patients. (27)

Neuromuscular Control: [28]

- Definition:
  - The unconscious activation of dynamic restraints occurring in preparation and in response to joint motion and loading for the purpose of maintaining functional joint stability.
  - Shoulder:
    - Coactivation of glenohumeral & scapulothoracic musculature
    - Reflex stabilization
    - Preparatory activation
    - Muscle stiffness

Neuromuscular Control & Functional joint stability- [28]

- Coactivation of glenohumeral & scapulothoracic musculature- synergistic activation of GH & ST dynamic stabilizers
- Reflex stabilization- occurs at spinal cord level, regulates both extrafusal & intrafusal length, preventing jerky mvt, allowing fluidity.
- Preparatory activation- prepares the joint before a load is placed on shoulder. Offers quick compensatory responses.
- Muscle stiffness- resists stretching episodes, stiffens joint which may make shoulder a more functionally stable joint.

Neuromuscular Control:

- The reformer addresses Neuromuscular control
  - With exercises that are effective in co-activating both GH and scapulothoracic dynamic stabilizers
  - The moving carriage provides constant feedback that the patient has to accommodate to in order to be successful.
  - Unique mode of exercise in which movement of the arm, causes mvt of the body/carriage, and the resultant synergistic response with the rest of the body.
  - Facilitates balance between static & dynamic components of the shoulder girdle- ex. Qped- stance arm & moving arm are both working, at all times.

Neuromuscular Control:

- Easy to reproduce PNF patterns by incorporating spiral and diagonal patterns of motion that require neuromuscular control.
- Challenges patient's proprioception and control during the eccentric phase: often patient cannot see the carriage landing/closing, so therefore has to "feel" where the carriage/their body is in space, and learn to gauge a proper effort.

Neuromuscular Control:

- Plyometrics- elicit preparatory muscle activity as patient prepares for the eccentric load, followed by the reactive (reflexive) contraction from increased muscle spindle stimulation. (28) Plyos can be performed on the reformer in a relatively offloaded fashion (shown in upcoming video).
- Reformer can be used to incorporate specificity of functional activities/patterns, including sport specific positions.

Creating Healthy Movement: in the upper body.[22, 29]

Faulty Pattern:

1) Overuse of upper trapezius and superficial neck mm's

2) Overuse of anterior side of shoulder(pec)/underuse of posterior side(RTC/mid/low trap)

3) Scapular dyskinesis- winging, abnormal timing/coordination

Corrective Strategies:

1) Cue lower trap engagement, head in line with spine, and effective core activation.

2) Cue posterior shoulder mm's, opening of anterior side of shoulder, ER of humerus/arm spiral.

3) Cue force couple of low trap & serratus to offload upper trap. (28, 32, 33) Cue controlled eccentric lowering from flex/scaption/abd. Work in successful ranges first.

Creating Healthy Movement: in the upper body.

Faulty Pattern:	Corrective Strategies:
4) Over-gripping with hand/lack of proximal initiation/control of mvt.	4) Cue motion to be initiated proximally. Cue whole arm activation, relax grip of hand, focus on upper back/low scap assisting with arms.
5) Poor ribcage/arm control, lack of dissociation of arm/trunk.	5) Teach arms to feed into serratus into external oblique, into inner unit. Teach stable ribcage/T-spine while arm encounters resistance.
6) Forward head, rounded shoulders, kyphotic T-spine	6) Cue tall posture with head over shoulders/shoulders over ribcage/ ribcage over pelvis; scap retraxn

Movement is our profession:

- APTA Vision Statement on the profession of physical therapy=

  "Transforming society by optimizing movement to improve the human experience" (30)
- The Pilates Reformer is an intervention that a PT can use to train fundamental movement patterns and correct chronic, unhealthy movement in patients. The reformer allows for 3-D, whole body training & integration.

CONTINUED

Supine Arm work:

- BILATERAL: (R-2R)
  legs in table-top, shoulders 1" away from shld rests, hold handles
- Arm pull downs: shld extension/flexion
- Arm circles: large/small, clockwise/ccw
- Triceps: arms bent at side, extend/bend
- T Pulls: start w arms at side, then abd to 90 (or scaption)
- Asymmetric pattern- start w arms at side, then 1 arm does shoulder flexion while other abducts (cheerleader arms)

Cueing: initiate the mvt from proximal arm; engage upper back, scapula and arm together; serratus feeds into external oblique, into deep core; elongate spine; keep chest open/wide

CONTINUED

Supine Arm work:

- Unilateral (B or R)
  legs in table-top, shoulders 1" away from shld rests, hold handle
  - Pull Downs: shld extension/flexion
  - Triceps: arm bent at side, extend/bend, arm in line w torso
  - Add curl up: upper body curl up as pull arm down
  - Add leg extension: add leg reach away as curl up, pull arm down.

Unilateral creates an asymmetry in which the body has to adjust. Rotational stabilizers in the trunk have to work to maintain neutral.

Sidelying Arms: (Y-B)

- Sidelying with head on headrest, stacked torso, knees bent, legs pulled up.
  - Arm pull downs (adduc/abd)- hand moves to mid thigh
  - Arm sweep forward/back (shoulder flexion/extens)
  - Triceps w arm in line w torso
  - Circles: large/small

  Cueing- work to come from whole arm; initiate proximally; Arm-ribcage-core connection; no joint compression; relax neck/UT

Can progress intensity by performing while sidelying on the reformer box, or in a kneeling side plank position w forearm on headrest. This requires more whole body integration due to holding up head/torso/hips (not in video).

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Sidelying Arms: (Y-B)

- Can progress intensity by performing while sidelying on the reformer box (not shown), or in a kneeling side plank position w forearm on headrest. This requires more whole body integration due to holding head/torso/hips in alignment. Stance arm: cue elongation, arm spiral, scapular stabilizers. Moving arm: scapulohumeral rhythm, proximal engagement, arm spiral (21).

[no video]

CONTINUED

Seated Arms: may sit on box or tall kneel

- Face back: (R-RB) facing pulleys
- Chest expansion: holding handles/ropes, pull straight arms back while cueing upper back and low scapular muscle activation, Extend thoracic spine without allowing head or ribs to move anteriorly. Maintain spinal elongation, relax neck/UT.
- T-pulls: holding ropes in front, horiz abduct arms to move carriage. Cue proximal initiation, Maintain centered-head of humerus, scap retractiong without UT involvement.
- Cross straps:
  - Rows: add resistance, hold higher up on rope to have resistance in more of the ROM. Use scapular retraction to pull arms back. Narrow, wide or 45-degree rows. Keep chest open, watch GH jt.

CONTINUED

Seated Arms: may sit on box or carriage

- Face back: facing pulleys
  - External Rotation (Y): Bilateral or unilateral shoulder ER: can do at 0, 45 or 90 (31) abduction.
  - Unilateral row (R or B) with torso rotation: grasp opposite strap, initiate motion from scap retraction, pull into row and add rotation to the same side. Cue core to activate and ribs to rotate, & elongation.
- ½ roll-down position with abs supporting spine (R-RB)

  Sit 6" from back edge of carriage, knees bent, hold ropes w arms straight. Initiate posterior pelvic tilt with abs to move carriage and attain ½ roll down position. While holding this, add:
  - Bicep curls: holding upper arms stable at 60-90 degress, flex elbows, supinate forearms to move carriage.
  - Rows: pull arms back using scapular retraction/depression, poster delts.

As pull, keep core engaged to decompress/support spine. Use breath.

Seated Arms- seated on box or tall kneeling

Facing Side: (Y-B)

- PNF D2 Flex/ext ("sword")- outside arm pulls into horiz abd as elbow extends. Varied PNF patterns.
- Overhead reach- inside arm (scapular plane- 25, 31)
- External Rotation- outside arm. Work from neutral to end range. Can do at side, 30, 45 degrees.

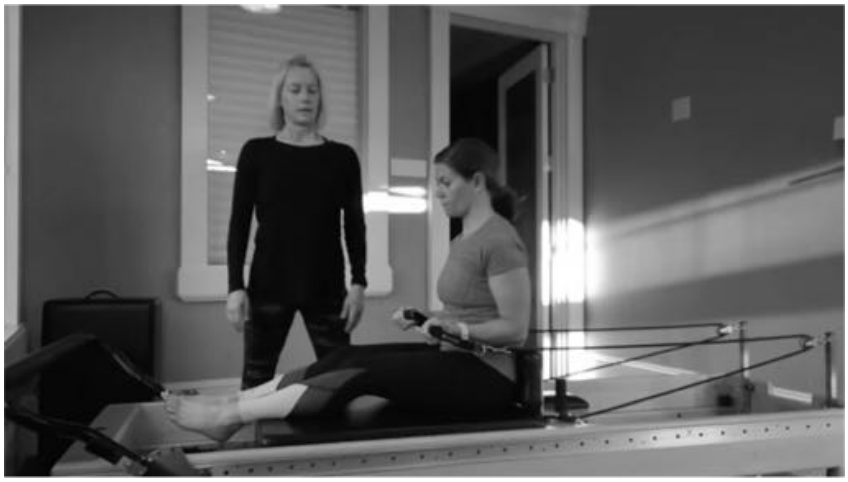
Cueing: avoid compressing GH joint; balance work b/t poster/anter shoulder; cue scapular control/timing; work both concentric/eccentrically; don't overgrip; share the load with the whole arm.

Seated Arms

- Facing front: (B-R) facing footbar

Carefully grasp 1 handle at a time due to shoulder extension needed to reach handle in order to get into starting position of arms in line with torso.

- Serve a tray- start w elbows bent at side, supinated. reach arms forward. Can reach forward or diagonally (scapular plane). Can open arms into abduction as well.
- Circles working on control thru the whole range as well as scapular timing. (cw/ccw)
- Hug a tree- Horiz adduc/abd focusing on serratus being active, upper back as active as pecs (31).
- Unilateral punch: with or without torso rotation, cue serratus and core producing the trunk rotation.



Quadruped Arms:

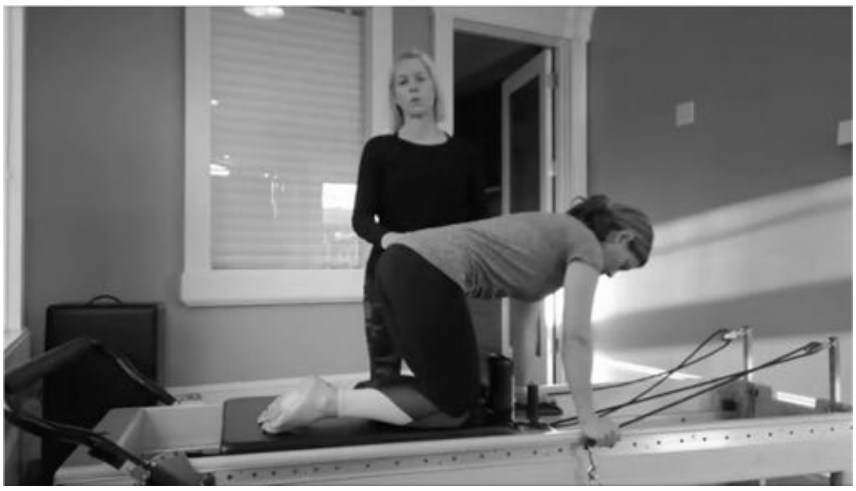
- Face Back: (B-R)
- Arm Pull backs- Hand on headrest, kneeling to side of reformer, tall stance arm, grasp rope above clip/tape.
  - Straight arm pull back into extension.
  - Triceps: elbow extens/flexion.
  - Circles: small or larger
  - Static carriage: lift & lower (horiz abd/add)

Cues: open, broad chest; initiate proximally; use upper back, scap & arm together; keep humeral head centered as pull rope; stance arm lengthened & aligned; cue humeral ER/arm spiral.

Quadruped Arms

- Side facing on carriage
  - Horiz abduction, draw sword- outside arm (Y)
  - Horiz adduction, hug tree- inside arm (B)
- Face front (footbar)
  - Press outs: (1R-RB) both hands on footbar (1 notch down from regulation), kneel w hips at 90. Press carriage out & in with arms, while maintaining a stable trunk/hip position.
  - Shoulder elevation: (Y) Unilateral arm while kneeling with feet thru shoulder rests. Work eccentrics too. (think 'Y')

(22)



Prone Arms: prone on box

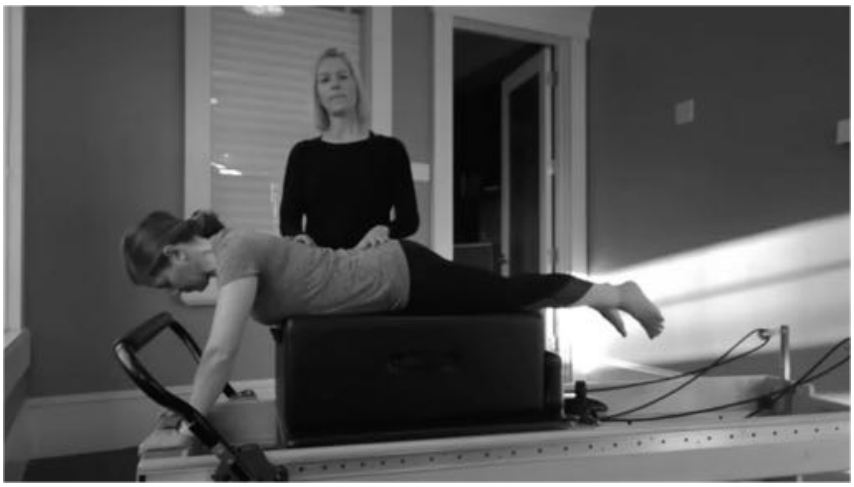
- Face Front (footbar): hold footbar, lie on box w knee caps off back, abs and legs active.
  - Overhead press
    - Bilateral: elbows narrow or wide (1R-2R): press both arms out to move carriage, imagine resistance on the return motion being like a pull up.
    - Unilateral (1Bor R): 1 arm on bar, other behind back or out to side, perform press out/in.
      - Narrow or wide elbow

-Cue posterior shoulder to work just as much as anterior, decompression of GH joint, arm spiral, engaged abdominals, spinal elongation

Prone Arms: on box

- Face back: pulleys
  - Pulling straps series: (B or R)
  - Shoulder extension- in Neutral or ER- grasp ropes w elbows straight, pull straps to move carriage.
  - 'T' pulls: Pull from 120 abd to hips in scapular plane
  - Circles: small or large, think scapular participation
  - Triceps: start w arms straight at hips, bend elbows to move carriage, extend back out.
- Pullups (holding risers) (Y): bilateral or unilateral

Cue spinal elongation, low traps, whole arm contribution (not just grip/hands), humeral ER/arm spiral.



Dynamic Upper Body Integration:

- Plank: Face front (RY-RB).

  Hands on footbar, feet up against shoulder rests, press out into plank position, open/close carriage w arms while maintaining plank. Squeeze abs, glutes, adductors for support. Breathe.

  -Can modify to kneeling plank (R): hands on footplate, shins over shld rests. Repeat as above.
- Plank pushups: while holding plank as above, perform push ups. Emphasize role of serratus anterior.

Dynamic Upper Body Integration:

- Seated on footbar, feet on frame, facing back: rows, biceps (Y- B)
- Triceps Dips: Holding foot bar, facing back, in table-top bridge. Hold carriage off bumper as lift/lower body w triceps (R)

Dynamic Upper Body Integration:

- Face back plank with shoulder flex/exten (Y-B) forearms on carriage, feet on footplate; press out into plank, while holding plank, use shoulder flex/exten to move carriage.

(no video)

Dynamic Upper Body Integration:

- ½ kneeling: face back- arm pull back series (B-R) kneel with front foot on head rest, grasp rope with oppos arm, pull arm back while maintaining posture/whole body stability. Can add torso rotation as pull arm back.
- ½ kneeling: face side (B-R). shoulder ER, sword, PNF/Func patterns (28). Kneel diagonally on carriage w front foot in corner closest to footbar, grasp back handle to perform arm/torso motions.

Cue: maintain tension on the rope at all times; control in both directions; front/back legs pull toward each other with hams/core respectively; align head/ribcage/pelvis; integrate breath & core w mvt.

Dynamic Upper Body Integration:

- Standing on floor, face back: shld extens,triceps (Y)
  - Standing diagonally alongside the carriage facing back, lunge to create stable base, grasp handle w inside arm, perform straight arm extens & triceps press.

  Cue: proximal initiation of mvt, humeral head centering, humerus ER, scap retraction, core engagement, control in both directions.
- Standing on floor face side: Hug tree (31), torso twist (Y)
  - Grasp handle w arm closest to shld rest, perform hug a tree (horiz adduc) w emphasis on serratus working w scap prot/retraction. Can add squatting w mvt or holding carriage stable.

Upper Body Plyometrics:

- Seated- side facing arm push-offs (Y)
  - Jumpboard on or can use footbar.
  - Articulate thru hand. Can't see hand land=proprioceptive training, keep torso upright.
  - Add rotation: try to get both hands fully on board, try not to flex spine, use breath to assist rotation.
  - Variations: add clapping, other planes of motion (sidebend)
- Quadruped face front (Y-B)
  - As above: can do bilateral, unilateral, add rotations, lift/lower torso to increase challenge. Cue low trap.

Upper Body Plyometrics:

- Prone on box face front (Y)
  - Lie prone on long box, scoot forward so chest is off front. Keep core & legs active throughout.
  - Bilateral jumps
    - Add end range reach, thor extens
  - Unilateral jumps
    - Nonjumping arm in small of back, or abducted to 90
    - Add rotation, hand behind head rotation.

Caution with neck/head position. Maintain spinal elongation. Cue low traps, core and breath.

Upper Body Plyometrics:

- Infinity bar (Y)
  - Side seated dynamic arm pulls- controlled release
    - Keep torso upright, quick activation of serratus, deceleration with serratus/lats. Cue core.
    - Can add rotation or side bending.
  - Tall Kneeling face back
    - Quick, dynamic activation of shoulder extensors, upper back & retractors.

    Try to keep anterior hips open.

Upper Body Release:

Upper Traps (B): standing on floor side facing, grasp handle/rope arm closest to FB, walk a few steps toward FB in order to pull carriage off bumper, allow carriage to try to return to close as side bend head away, thus creating traction to stretch UT. Rotate head down to bias levator, or rotate head up to bias scaleni/SCM (cue decompression/pure side bend)

Pecs (R): same as above but rotate body away from arm grasping the rope in order to stretch pec.

Upper Body Release:

- Lats : can 'Z' sit, partial 'Z' sit or sit on box.
  - Seated mermaid (R), plus rotation. Sit sideways on carriage close to foot bar, place hand on FB in scapular plane, press carriage out with arm as sidebend toward FB. Head in line w spine, elongation throughout spine. Add rotation toward/away from FB
- Reverse seated mermaid (Y, B)
  - Hold handle in hand closest to FB. Perform sword to tension rope, allow arm to go overhead while side bending torso away from FB. Use other hand for support. Rope provides add'l tension to increase stretch.

Upper Body Release:

- Golfer's Stretch (no springs): standing on floor side facing w R shld nearest FB, move carriage to middle of frame, abduct legs so that shld rests are located in middle. Grasp front shld rest with R hand, back shld rest w L hand, rotate upper body to L causing carriage to move L, lean R shld down onto/toward mat. Keep arms straight. Stretch felt in upper back. Hold 4 breaths.

Upper Body Release

- **Resisted Child Pose**: (Y)
  - Kneel on carriage facing back, walk hands along frame until you can grasp risers, sit back into heels allow carriage to try to close thus increasing the stretch. Watch tolerance to extreme shoulder/hip/knee flexion. Breathe deeply for 4-5 breaths to stretch thoracodorsal fascia, intercostals, upper back, lats, shoulders.
  - Optional: add pull of arms and lift of chest to move carriage a little toward risers while extending thoracic spine without compression. Cue scapular depress/retraction.
  - Optional: add lateral flexion: both hands hold L riser, hips sit to R in order to stretch R side more. Repeat other side

Upper Body Release:

- **Quadruped Shoulder flexion-extreme** (R-RY)
  - This is for a tight patient, **not** a hypermobile patient
  - Kneel facing FB hands on FB in scapular plane, feet up against shld rests. Press out to a flat back position, hips/knees at 90. Patient stretches into their end-range, comfortable shld flexion in order to stretch inferior shld structures as well as upper back.
- **Seated Pec stretch facing back** (Y-B)- (27)
  - Sit on back edge of carriage, knees bent, feet flat, hands supinated and on foot plate. Press carriage out with arms which causes shld extension. Cue shld ER/arm spiral & opening of anter shld in order to stretch pecs. Caution w neck position. This is ADVANCED use caution.

Dysfunctional Postural patterns[1]: Upper Crossed Syndrome

- Upper Crossed
  =forward head, rounded shoulders
- Tight/Active: levator scap, middle/upper traps, SCM, scaleni, lats, pec major/minor, biceps/flexors
- Weak/Inactive: low trap, serratus anter, rhomboids, Infra & supraspinatus, deltoid, deep neck flexors, triceps/extensors
- Rehab Goal: open anterior chest/shoulder/thoracic spine/ribs, strengthen upper back, scapular stabilizers/depressors/retractors; strengthen deep neck flexors and infra/supraspinatus. Cue posture: head over shoulders, ribcage over pelvis.

Correcting upper-crossed syndrome:

Reformer Exercise choices:

- Chest expansion to activate upper back, align head over thorax and open chest
- Face back T-pulls for scap retraction and posture training, activation of posterior line.
- Face back Quadruped arm pulls- triceps/delts on moving arm as well as scap stabilizers in moving/static arms.
- Prone on box OH press series cue eccentric return from low traps. Cue out of upper traps.
- Side seated shoulder work: sword & shld ER.
- Proper initiation of core to avoid superficial neck flexors,UT

(plus various stretching)

Dynamic Kinetic Chain Integration

- Regional→ Regional dynamic → Global → Global dynamic
- Example: progression for upper body: scapular stabilizers
  - Supine arm pull downs, T's: ribcage arm connection
  - Qped facing back arm pulls: focus on stance arm
  - Qped facing side arm abduction/sword & hug a tree
  - Qped facing front pressouts
  - Tall Kneeling rowing
  - Prone on box facing back pulling arm series
  - Plank w hands on footbar: varied series, whole body

Clinical Pearls

- Watch for overgripping with muscles
- Watch for the path of least resistance
- Cue ease and efficient movement, if they can't move efficiently, step back and analyze. Stop and correct- cue better, regress, break into parts, put back together. May need manual intervention.
- Continue to push their edge in order to see what strategies the patient chooses. Do they revert to their old, unhealthy patterns? If so, they are not integrating/applying the learning.

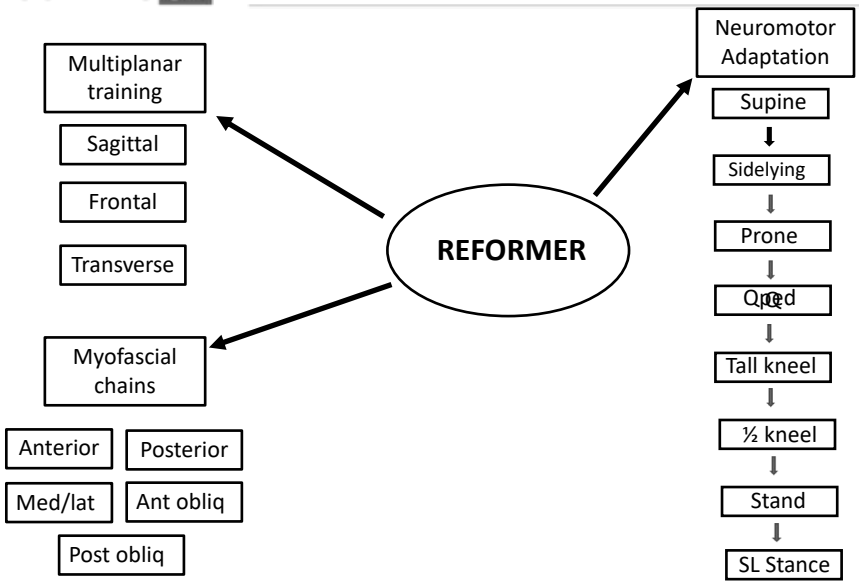
Clinical Pearls

- Remember the stance limb/s or stabilizing limb/s are just as important as the moving ones.
- Just as much energy should be spent controlling the return movement as the initial movement:

  e.g. supine arm pulls-cue control of return motion from triceps
- Breath can help facilitate abdominal and pelvic floor activation. Core activation facilitates serratus, inhibits UT
- Quality over quantity
- Patient keeps learning, as tasks are constantly changing while looking for same, competent patterning.

Clinical Considerations

- Input to patient from:
  - PT's verbal & manual cueing
  - Feedback from reformer: set-up, positioning, straps, springs, level of resistance
- Reformer can be assistive to the patient
  - Helping to facilitate or inhibit patterning just by the set up/exercise you choose
- Whole body integration emphasis on the reformer assists with progression to regional & global movements (after the PT has corrected or worked locally with a joint/injury).



Summary

- The reformer can help train proper neuromuscular response such as co-activation of force couples, dynamic tensioning of the joint capsule, preparatory and reactive muscle activity as well as increased muscle stiffness.
- These are all valuable in rehabilitating and restoring a functional shoulder/upper extremity (28).

Summary

- The Reformer is a powerful rehabilitation tool in the hands of a physical therapist.
- It's assistive, gives much neuromuscular feedback.
- Works neuromuscular control both conc/eccentric.
- Trains movement competency
- Non-compressive to joints and FUN for patients.
- Can easily progress to the functional, global dynamic patterning that allows for Full Recovery.

References/Thank You!!

- References are on separate .pdf

- Rhondi Miller, PT, MS, SCS, ATC
- Feel free to contact me with any questions, rmiller@viverant.com