Striving for Strength:
The Shoulders

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Abstract

Finding the balance between strength and flexibility is challenging. Extreme flexibility can lead to a lack of stability, while excess strength can cause unwanted tension and limitations to movement and range of motion. Emmy is a former figure skater and in addition to practicing Pilates several times per week, she also practices yoga almost daily. One of her main areas of focus continues to be her shoulder region. Through studying Emmy’s tremendous flexibility in her shoulders, we developed a conditioning program that enabled her to strengthen underdeveloped muscles as well as increase strength and stability in a healthy manner. Emmy felt limited in regards to range of motion because in order to make actions such as lifting her arms up alongside her ears or reaching her arms out to the side at shoulder height, she felt unable to do so without making unintended compensations—usually by arching her lower lumbar spine. The ROM limitations were not due to a lack of flexibility, but due to a lack of strength.
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The Anatomy of the Shoulder Region

The shoulder region is comprised of very few bony structures and several important muscles. The only bony attachment to the axial skeleton is via the clavicle at the sternoclavicular joint. The shoulder joint, or glenohumeral joint, is a multiaxial, synovial, ball-and-socket joint, which allows for a wide range of movements in many different directions and rotations. Consequently, this also provides very little stability. Healthy mechanics at the shoulder are incredibly important and involve coordinated and linked movement of the scapula and humerus—i.e. scapulohumeral rhythm. The muscles in this region are responsible for achieving stability. One group of muscles—the trapezius, rhomboids, levator scapulae, pectoralis minor, and serratus anterior—connects the scapulae to the surrounding bones (head, spine, ribcage), and the primary function is to stabilize and move the scapulae so that the arm is able to move as desired. A second group of muscles—the rotator cuff, comprised of the supraspinatus infraspinatus, teres minor, and subscapularis—connect the scapulae to the proximal humerus. Essentially, these muscles provide stability and allow for the more subtle mechanics of the shoulder. Lastly, a third group of larger muscles—including the pectoralis major, deltoids, latissimus dorsi, and teres major—function to produce the grand movements of the arms (Study guide, 87)
Case Study: Working with Very (very, very, very) Flexible Shoulders

Name: Emmy

Age: 22

Limitations: Extreme flexibility in the shoulders combined with a lack of strength across the shoulder region but also in the mid/upper back prevent Emmy from being able to raise her arms out the side or up alongside her ears without severe winging of her scapula. Additionally, her shoulders tend to turn inward when relaxed, and her right shoulder slopes slightly lower than the left.

Rehabilitation treatments: In addition to Pilates, Emmy practices yoga almost daily and

Background: Emmy was a figure skater for over 10 years and struggled with shoulder issues but felt lost as to how to go about improving the situation. When working with different coaches and choreographers, Emmy was limited in regards to arm movements and placements during various on-ice elements. One of the solutions included turning her palms to turn face up towards the sky. This helped create a better line visually, but the problem was that there needed to be external rotation from inside the glenohumeral joint as opposed to just at the forearm.

A “solution,” such as turning the palms to face skyward, is not truly solving anything because it does not address the root of the problem. Additionally, prior to understanding the direct correlation between strength and flexibility, Emmy did not realize that continually giving into her extreme flexibility could be counterproductive in her desire to ameliorate her shoulder issues.
Conditioning Program

Three of many sessions that took place over the course of 6 months:

Warm-up: Roll Up with Roll Up Bar, Mini Roll-Ups, Mini Roll-Ups Oblique; Cadillac, *Warm Up Series*

Footwork: Parallel Heels, Parallel Toes, V Position Toes, Open V Heels, Open V Toes, Calf Raises, Prances, Prehensile, Single Leg Heel, Single Leg Toes; Reformer

Abdominal work: Hundred Prep, Hundred, Coordination

Hip work: Frog, Circles (Down, Up), Openings, Extended Frog, Extended Frog Reverse; Reformer

Spinal articulation: Bottom Lift, Bottom Lift with Extension; Reformer

Stretches: Standing Lunge; Reformer

Full body-integration: Scooter, Round Back, Flat Back; Reformer, *Knee Stretch Series*

Arm work: Extension, Adduction, Up Circles, Down Circles, Triceps; Reformer, *Supine Arm Series*

Full body integration 2: n/a

Leg work: n/a

Lateral flexion/rotation: Side Stretch; Wunda Chair

Back extension: Swan Basic; Wunda Chair

With this first session, we practiced mainly fundamental and intermediate exercises but focused on executing the movements with utmost integrity. For Emmy, this meant heightened awareness of her shoulders during every exercise but especially during all of the arm work on the Reformer as well as Side Stretch and Swan Basic on the Wunda Chair.

In her exercises where she was lying supine, we focused on energetically spreading the collarbones by broadening the backs of her shoulders. The goal was to create open space across the front of her chest without any winging or pinching of the scapula.
We highlighted the principles of awareness, concentration, and precision in an effort to enable Emmy to feel control and efficiency in her movements, especially those that involved her shoulders.

Warm-up: Roll Up with Roll Up Bar, Mini Roll-Ups, Mini Roll-Ups Oblique; Cadillac, *Warm Up Series*
Footwork: Parallel Heels, Parallel Toes, V Position Toes, Open V Heels, Open V Toes, Single Leg Heel, Single Leg Toes; Cadillac
Abdominal work: Round Back, Flat Back, Tilt, Twist, Round About, Climb-A-Tree; Reformer, *Short Box Series*
Hip work: Frog, Circles (Down, Up), Openings, Extended Frog, Extended Frog Reverse; Reformer
Spinal articulation: Bottom lift, Short Spine, Long Spine; Reformer
Stretches: Kneeling Lunge; Reformer
Full body-integration: Up Stretch 1, Elephant, Up Stretch 2, Up Stretch 3; Reformer, *Up Stretch Series*
Arm work: Chest Expansion, Up Circles, Down Circles, Triceps, Biceps; Reformer, *Arms Kneeling Series*
Full body integration 2: Stomach Massage Round Back, Stomach Massage Flat Back, Stomach Massage Reaching; Reformer
Leg work: Parallel Position, V Position, Single Leg Parallel, Leg Changes; Reformer, *Jumping Series*
Lateral Flexion/rotation: Mermaid; Reformer
Back extension: Breaststroke prep; Reformer

After a few additional sessions, we brought more focus to the principles of concentration, center, and efficiency. With these added focuses, Emmy could truly feel why Pilates is considered both a mind and body practice. During the Arms Kneeling Series, concentrating on reaching her sternum forward while reaching her arms back in the Chest Expansion helped Emmy to truly engage her latissimus dorsi muscles. This cue of energetically reaching forward from an open chest had a great impact; even though the cue didn’t mention the shoulders, Emmy was able to both extend the shoulders back using the correct muscular
engagement and maintain a beautiful upright position of her trunk. Additionally, this cue positively influenced the other exercises in the series because Emmy was able to execute the movements while maintaining decent shoulder stabilization and more impressively for her, without winging of her scapula.

When we practiced Mermaid during the lateral flexion/rotation block, we could see that there is still a lot of room for growth in regards to strengthening. In order to maintain control and stability of the free moving arm, Emmy must continue to strengthen her latissimus dorsi muscles. She was able to perform the exercise properly; however, she struggled with keeping her ribs from poking out and her low back from arching.

Warm-up: 3 roll downs and Standing Pike, Cat Stretch Kneeling; Wunda Chair

Footwork: Parallel Heels, Parallel Toes, V Position Toes, Open V Heels, Open V Toes

- Variation: arms interlaced behind the head, reaching out to the side, alongside ears

Abdominal work: Full Pike,

Hip work: Frog, Circles (Down, Up), and Frog, Circles (Down, Up), Hip Extension, Bicycle; Cadillac,

*Single Leg Supine*

Spinal articulation: Monkey Original, Tower Prep, Tower; Cadillac

Stretches: Shoulder Stretch; Cadillac

Full body-integration: Sitting Forward, Side Reach, Kneeling Cat Stretch, Saw, Sitting Back; Cadillac, *Push Through Series*

Arm work: Shoulder Push, Shoulder Push Single Arm, and Deltoid Reach, Cross Arm Pull, Triceps, Arms Overhead; Reformer, *Side Arms Kneeling Series*

Full body integration 2: Balance Control Front, Balance Control Back Prep; Reformer

Leg work: Hamstring Curl, Hip Opener, Frog Front; Wunda Chair

Lateral Flexion/rotation: Side Kneeling Stretch; Wunda Chair
Back extension: Swan on floor; Wunda Chair

This was one of our more challenging workouts, comprising of several advanced exercises, but also, particularly challenging for Emmy because many of the exercises require scapular stabilization. In light of the improvements Emmy has made in recent months, we were able to play with several arm variations during footwork. Additionally, while practicing Full Pike during abdominal work, Emmy’s beautiful performance of the exercise demonstrated her recent increase in strength of muscles in her shoulders, including the serratus anterior, deltoids, and shoulder flexors.

Even though flexibility is not the issue, we still chose to practice the Shoulder Stretch on the Cadillac because when she is in internal rotation, Emmy does not have nearly as much range of motion as when she is in external rotation. Also, the stretch felt quite good as a predecessor to both the Push Through and Side Arms Kneeling series.

The Side Arms Kneeling Series is extremely challenging. However, because Emmy is learning to properly activate previously unused muscles in her upper back and shoulders, we wanted Emmy to get a feel for these exercises in her body. We chose to practice the exercises with a super light resistance load, and for now, this is the perfect place for her to work. The movement alone is challenging, and with time, the spring load can be increased.

This workout was also noteworthy because it emphasized the principles of flow and breath. Remarkably, working in this intelligent and precise manner allowed Emmy to feel centered and created an overall sense of harmony, stemming from within and also intrinsically connected to how she moves.
Conclusion

This program highlights the ten principles of BASI Pilates: awareness, balance, breath, concentration, center, control, efficiency, flow, precision, and harmony. It also incorporates the basic principles of training, such as the overload principle and principle of specificity, which aid in the creation of an effective program. As a former competitive athlete and figure skater for over 10 years, Emmy had developed several habitual movement patterns. Also, she had combated issues with her shoulders for years and years. Understanding the origin of the issue was the first step, and this added level of awareness and concentration enhanced the benefits of the conditioning program exponentially. Through this work, Emmy has strengthened many muscles in her upper back and shoulders that she previously had not used. In the past, she couldn’t figure out how to engage those muscles, so instead, larger muscles would take over. While there continues to be room for improvement, the increase in strength has been incredibly exciting. Emmy feels stronger, more connected to her body, and more capable of making subtle and grand movements she didn’t have access to before practicing Pilates.
Works Cited

_Cadillac_, Movement Analysis Workbook. BASI Pilates, 2013


_Reformer_, Movement Analysis Workbook. BASI Pilates, 2013

_Study Guide_, Comprehensive Course. BASI Pilates, 2013

_Wunda Chair_, Movement Analysis Workbook. BASI Pilates, 2013