Nicole Katz

Case Study Presentation

Increasing Elbow Mobility a Decade Post Operation

This paper is dedicated to Mukunda Stiles.
Though I only met him briefly he changed my life forever.
It will be my life's work to honor his.

With great respect and love I honor my heart, my inner teacher,
Namaste.

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Presented by: Nicole Katz

Case Study "Sandra Summons" aka SS

Introduction

SS (client's name has been changed to secure her anonymity) , a 67-year-old woman, presents with limited range of motion in right elbow flexion. She complains of both physical and mental anguish associated with the injury. The aim of this study is to illustrate how the aforementioned problem was targeted, and to a degree, alleviated using the Joint Freeing Series (JFS) and other Structural Yoga Therapy (SYT) methodology for treatment.

Hypothesis

S.S. is exhibiting reduced of range of movement combined with muscle amnesia and poor patterning. Poor patterning is contributing to a cycle of limited range and weakness. Using the JFS I will seek to help retrain the kinesiology of the elbow and surrounding joints, thereby also increase range of movement and strength.

Patient History

- **Subjective Assessment**:
    - **Story:** It was 10 years ago. I was crossing the highway when a moving car hit me. I was waiting at the light for the pedestrian crossing signal and thought that I heard the light about to change so decided to step out into the street- when out of absolutely nowhere a car making a left turn, collided directly into me. The front end of the car smashed my legs and my right arm went through the windshield. All I remember is the driver not getting out of the car but some other nice driver came and stayed with me. I was in and out of consciousness until waking in the hospital.

      In the hospital they told me both my legs and my elbow were shattered. The elbow was broken so badly that they inserted 10 pins into the different bones to allow for healing. One year later due to extremely limited movement they did another surgery and took the pins out put in a complete elbow joint replacement. I did only a bit of physical therapy and its been like this ever since.
    - **Scale 1-10**: there is only minimal pain but the mental anguish associated with the lack of movement in the elbow is around an eight.
    - **Type of pain:** when there is physical pain it is described as nerve and bone pain.
    - **Other current treatments**: None.
    - **Activities that cause pain**: reaching out and up for things, prolonged weight bearing when using her walker
    - **Activities that alleviate pain**: rest

- **Objective Assessment**
    - **Phone call and initial verbal intake:** Very clear ingrained story. Inserting questions helped to break it up but there is a clear samskara here. It is also prevalent that the biggest issue with the lack of mobility is the mental toll on her

and it plays into the victim role she has become accustomed to assuming. She is basically shut in due to the elbow and other injuries that confine her to a wheelchair or walker, a very slow pace and limited social interactions. The way in which she tells the story to me conveys that there is a great deal of anger and unresolved feelings in regards to the accident and surrounding events. She seems consumed by tamasic characteristics of lethargy and as is evident in our first meeting by the way the house is kept- she seems to be drowning in things from the past. There is however, a lovely glimmer of sattva in her sweet smile. She used to be a dance therapist and yoga instructor, this background I feel will be a useful anchor for our work together.

- **Physical Assessment**
    - **Posture Body Reading** (Performed reading seated in wheelchair, as this is how she is most comfortable and spends the most of her time. SS stands and uses her walker only briefly for outings.)

General from seated:

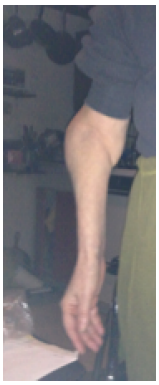
- Extreme thoracic kyphosis
- Head sits a good deal in front of the sternum
- Left shoulder higher than right

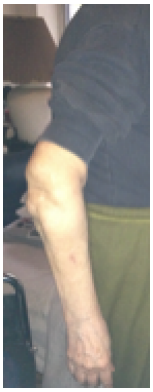
Effected Elbow (Right)

- At rest the forearm pronates while the shoulder externally rotates to a relationship of approximately 45 degrees
- The forearm also has a negative carrying angle of approximately 15 degrees.

  Please note: If you look at the picture below the angle of the forearm is not lateral it is medial about 15 degrees. That is being referred to as “negative carrying angle”.

The negative carrying angle effects the relationship of the wrist joint and causes constant extension at the wrist





- **Range of Motion Assessments**

  SYT assessment was performed for wrist, elbow and shoulder to include surrounding areas and either link or rule out those surrounding joints for participation in the lack of mobility of elbow flexion. Both sides of the body were also tested for comparison and unification.

Reading:		**1st**	**2nd**	**3rd**		**1st**	**2nd**	**3rd**
	Standard	**Right**	**Right**	**Right**		**Left**	**Left**	**Left**
Shoulder								
Extension	50	45	45	50		40	45	80
Flexion	180	120	120	180		130	170	180
External rotation	90	0	90	90		90	90	90
Internal rotation	80	40	100	90		80	80	80
Adduction	130	80	90	110		130	130	135
Abduction	40	0	30	45		20	30	45
Elbow								
Extension	0	5	5	0		0	0	0
Flexion	145	95	95	140		145	145	145
Wrist								
Extension	80	90	80	90		70	80	90
Flexion	90	25	65	80		55	90	90
Ulnar deviation	30	45	20	30		30	25	30
Radial deviation	20	35	25	30		25	20	20

- **Muscle Test Readings**

Reading	1st Right	2nd Right	3rd Right		1st Left	2nd Left	3rd Left
Shoulder							
Trapezius (middle)	2	2	3		2	2	3
Flexion	0	2	3		1	3	3
Extension	2	3	3		1	3	4
Abduction	0	1.5	2.5		1	2	3
Adduction	1	3	3		3	3	4
External rotation	1	2	1		2	2	4
Internal rotation	0	1	2		2	3	4
Latissimus	3	3	3		3	3	4
Elbow							
Flexion	0	2	2		3	3	4
Extension	0	1	1		2	4	4
Wrist							
Flexion	1	1	1		4	3	4
Extension	3	3	3		4	3	4
Ulnar deviation	2	2	3		4	4	4
Radial deviation	3	3	3		4	4	4

- **Summary of Findings**
    - **The overall relationship between the elbow joint and forearm was confused from a muscle patterning point of view and needed to be addressed (E.g. *elbow flexion could not be done without forearm pronation*.)**
    - **Limited range of motion in shoulder, elbow and wrist joint actions were found upon muscle testing to have weak primary movers that need to be strengthened.**

Recommendations 1st

WHAT	Two minutes of free standing in front of her wheelchair
	SS was not able to stand at all prior to our first few meetings but now we are working with starting her off with two minutes of standing. This gets her heart rate moving and activates all of the muscles of the spine, which we really focus on bringing upright as much as possible. Additionally, the concentration needed for SS to stand offers her a great meditation to begin
WHY	her practice that does not involve the mind.
	JFS for wrists, elbows, shoulders, neck and spine. Six rounds of each (see
WHAT	appendix A for details)
	To give client a joint massage in the affected joint and in all surrounding joints. To develop muscle awareness in the affected elbow that is currently lacking. Prior to giving her strength training exercises we needed to wake up the proprioception and correct tracking not only in the affected elbow but in the surrounding areas as well so that when the time comes to add strength training the muscles that we need to fire in order to get correct alignment of
WHY	the joints are used to firing.
	I also gave her a mini JFS for the wrists of pronation and supination of the forearm- trying to get the back of the hand onto a table then the palm of the
WHAT	hand.
	For the same reasons as above. She is quiet able to pronate the affected elbow but not so much able to articulate the supination in the same elbow so
WHY	I want to wake up the muscles!
	Two min svasana or more to rest and send energy to where the body needs it. I asked that she visualize a flow of energy moving cleanly through the
WHAT	entire body.

Results of 1st Recommendations

ROM:	Overall increase in ROM on both sides. While elbow flexion did not see an increase in ROM on the right side affected area every other joint saw an increase possibly due to the limitations of the metal implantation location.
MUSCLE TEST:	Both sides saw an overall increase in muscle, and most notably, the ability to create resistance in actions she was not able to before. IE muscle re-patterning happening!
CONCLUSION:	The JFS did exactly what it was meant to do- create fluidity of movement and awaken movement patterns long dormant. SS is able to articulate and even hold and resist in areas not possible a month ago!!!

Recommendations 2nd

WHAT	All previous JFS one time through
WHY	To warm up the joints
WHAT	Standing in tadasana for three min (up from one min!)
WHY	To build strength, confidence and balance for whole body
WHAT	All JFS actions listed in appendix B marked with an "s" holding each side of the action (i.e. flexion and extension) for 3 full breath, 3 times
WHY	I have decided to focus the strength JFS specifically to the actions of the shoulder, elbow and upper spine because these represent both the joint in question and the surrounding joints most distal and proximal. I am doing both sides 3 times each (as opposed to beginning with the weaker side, doing it twice and the opposing side only once because all of her muscles

really do need the activity.

WHAT	All assigned JFS one time through to cool the joints
	I wanted to again end with the targeted JFS one time through as a means to continue building fluidity within the joint and deeper articulating muscles as
WHY	well as continue building confidence and grace for SS
	Svasana with meditation practice of listing 10 gratitude's and then repeating
WHAT	them
	Before resting in Svasana I have asked SS to make a list of 10 gratitudes and repeat them a few times so that she goes into her rest with a positive
WHY	mindset, something we are working on.

Recommendation Conclusion

- OVERALL- Muscle patterning issues seem to have been alleviated to a great degree which perhaps has played a part in the recovery of much range of motion. There is still muscle strength to be gained moving forward.
- ROM- All targeted Rom increased (*with the exception of shoulder adduction which showed a 10 degree dip.*) There was even a 45-degree elbow flexion! Radial and ular deviation, areas of mild excessive ROM saw a reduction in ROM. Reduction of ROM in the afore mentioned joints is a positive change because it means we are building muscle that will be able to further support the joint
- MT-Many joints showed an increase in the joint strength and a few stayed the same. Among those that increased were elbow flexion and extension on the right side.

Case Study Conclusion

When dealing with a late stage elbow joint replacement it is possible to re-pattern joint kinesiology, increase range of movement, strength and joint usability using targeted JFS. The hypothesis of initially applying JFS for the re-patterning of habituated incorrect muscle use in the effected elbow followed by JFS strength variations did prove effective.

Moving Forward

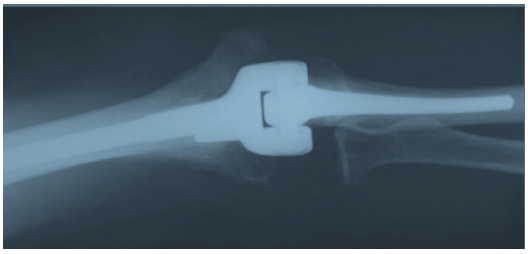
While I am very excited to report that the joint targeted has shown overall increase in muscle strength and a good deal of improvement in range I want to continue to build strength and begin to incorporate SYT asana! The case study was a success! But there is still more work to be done.

Explanation of Elbow Replacement Procedure

Elbow replacements such as SS had are routinely used to replace badly damaged elbow joints post trauma. Full elbow replacement is described by the University of Washington's Orthopedic Department:

> The goal of elbow joint replacement arthroplasty is to restore functional mechanics to the joint by removing scar tissue, balancing muscles, and inserting a prosthesis in the place of the destroyed elbow. One part of the artificial joint is fixed to the inside of the humerus (arm bone) and the other part to the inside of the ulna (one of the forearm bones). The two parts are then connected using a hinge pin. Total elbow joint replacement arthroplasty is a highly technical procedure and is best performed by a surgical team who performs this surgery regularly.
>
> Such a team can optimize the benefits and minimize the risks. The two-hour procedure is performed under general or nerve block anesthesia.

Images



General Assessments Related to Elbow Joint Replacements Long Past operation:

- **Yoga Contraindications-** Specific attention must be paid to engrained tracking patterns from shoulder down into wrist at all times. Hand/arm weights bearing asana as well as any half or full binding of the arms are to be done under strict supervision at first.
- **Therapy-** Yoga Nidra and restorative yoga. Deeply restful and healing practices that allow for deep integration at the joint level. Joint disorders being stress related the above also address those.
- **Stabilization**- It is first key to correct as much potentially muscle patterning as may have accumulated over time in the forearm and elbow joints. Guiding clients to clarify the actions of elbow extension and flexion versus forearm pronation and supination is key for then building muscle surrounding the joints that help to stabilize the joint.
- **Maintenance-** a weekly practice of elbow JFS will help to maintain a clear and free moving joint post therapy.

References

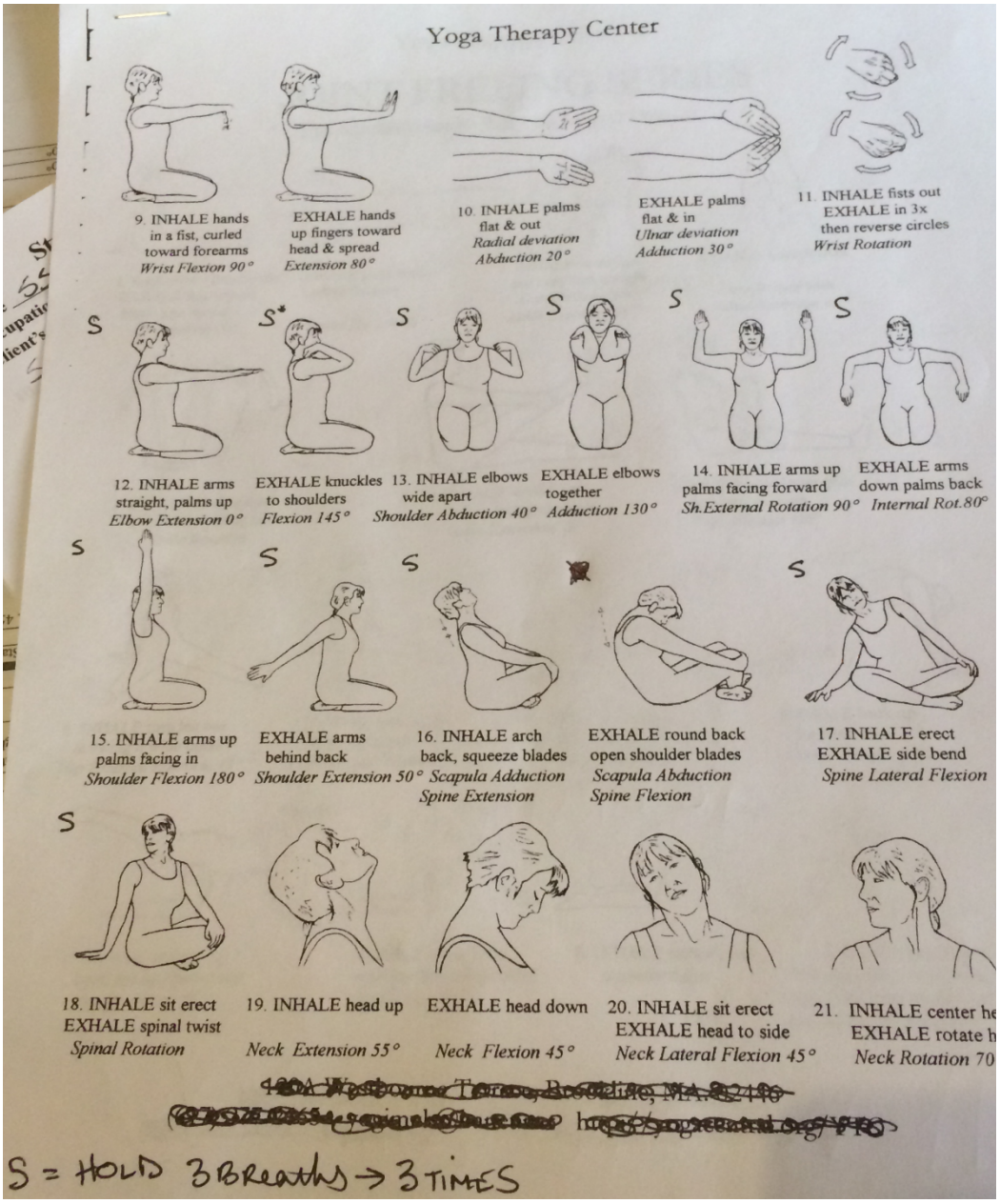
- **http://depts.washington.edu/shoulder/Handouts/ProcedureHandouts/Elbow_Replacement.pdf**
- **http://orthoinfo.aaos.org/topic.cfm?topic=A00592**
- **http://orthoinfo.aaos.org/topic.cfm?topic=A00592**
- **Structural Yoga Therapy, Mukunda Stiles**
- **The Anatomy of Movement, Calis-Germain**
- **Concise Book of Muscles, Jarmey**

Appendix A

1st Recommendations JFS assignments shown with asterisks

Appendix B

2nd Recommendation, Strength building JFS, assigned shown with "S"


Yoga Therapy Center
9. INHALE hands in a fist, curled toward forearms
Wrist Flexion 90°
EXHALE hands up fingers toward head & spread
Extension 80°
10. INHALE palms flat & out
Radial deviation
Abduction 20°
EXHALE palms flat & in
Ulnar deviation
Adduction 30°
11. INHALE fists out
EXHALE in 3x
then reverse circles
Wrist Rotation
12. INHALE arms straight, palms up
Elbow Extension 0°
EXHALE knuckles to shoulders
Flexion 145°
13. INHALE elbows wide apart
Shoulder Abduction 40°
EXHALE elbows together
Adduction 130°
14. INHALE arms up palms facing forward
Sh.External Rotation 90°
EXHALE arms down palms back
Internal Rot.80°
15. INHALE arms up palms facing in
Shoulder Flexion 180°
EXHALE arms behind back
Shoulder Extension 50°
16. INHALE arch back, squeeze blades
Scapula Adduction
Spine Extension
EXHALE round back open shoulder blades
Scapula Abduction
Spine Flexion
17. INHALE erect
EXHALE side bend
Spine Lateral Flexion
18. INHALE sit erect
EXHALE spinal twist
Spinal Rotation
19. INHALE head up
Neck Extension 55°
EXHALE head down
Neck Flexion 45°
20. INHALE sit erect
EXHALE head to side
Neck Lateral Flexion 45°
21. INHALE center he
EXHALE rotate h
Neck Rotation 70
S = HOLD 3 BREATHS → 3 TIMES