The Upper Quadrant and Low Tone Shoulder

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1

UE positioning can bring about UE impairment!

Stroke still is a condition of the aged:

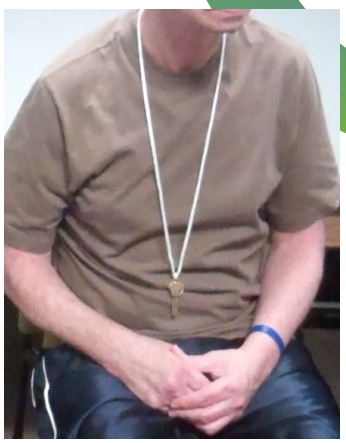
Poor, **chronic**, postural stability

Neglect/ Decreased Proprioception

Flaccid/weak muscles (90%) + gravity

Learned nonuse → HABIT

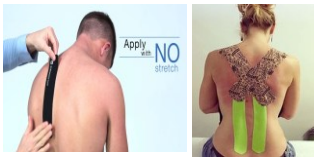
Pain**



**pain is not usually d/t subluxation see infographic

2

Posture *Before* Positioning or Rehab!



On Our YouTube Channel

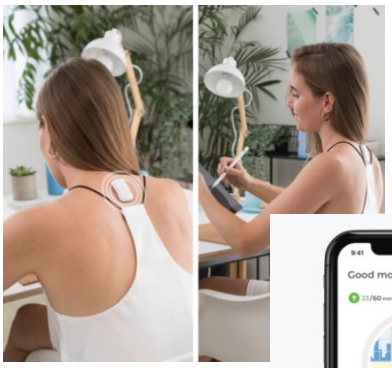
ComfyBrace $23.99

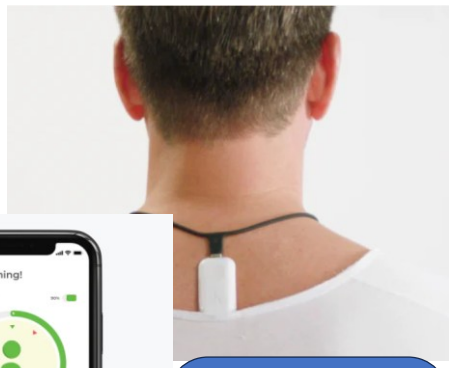
IP Speech Therapy often prefers upright positioning to maximize feeding

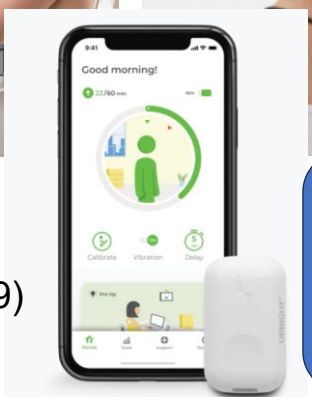
3

UprightGo2

www.uprightpose.com







$64.95
(necklace 14.99)

Visual & Tactile Biofeedback for:

Too much flexion

Too much lateral movement (pushers)

4

SLINGS AND OTHER AIDS
FOR SUPPORT AND POSITIONING:

Joint protection strategies - *used AT ANY STAGE of recovery* to prevent or minimize shoulder pain.

- Positioning and supporting the arm *during rest* [Evidence Level A].
- Protecting and supporting the arm *during functional mobility* [Evidence Level B].
- Protecting and supporting the arm *during wheelchair use or transfers* by using a hemi-tray or arm trough [Evidence Level B].

During the flaccid stage slings can be used **to prevent injury**; however, **beyond the flaccid stage the use of slings is controversial**.

Canadian Stroke Strategy

5

Pillows

PROS:
Abundant; Pliable; Many sizes; useful in side lying or sitting

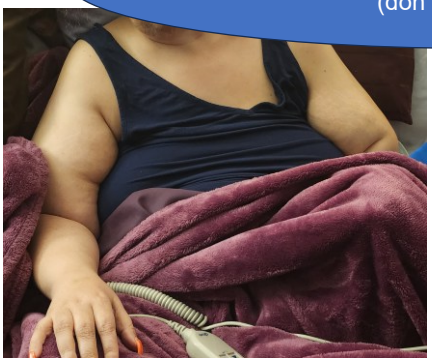
CONS:
May not maintain or approximate appropriate shoulder position; Not useful while standing.

Variations:
pool noodles; wedges; NERF football,

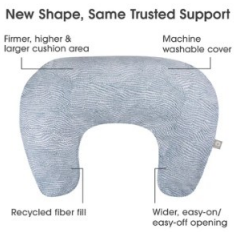
Set aside 4-6 pillows in addition to what is available in the room

6

Toddler Bed Bumper from My Home
(don't tell my wife)



Forias Bed Bumper for Toddlers
$21.59 on Amazon



Boppy Original Nursing Pillow , $44.99 on Amazon

7

Which sling…for support and transfers?
Hemi-Sling

WHAT:
Sling that supports UE across body and underneath elbow

PROS:
Abundant; Keeps UE across body during transfers; Good for patients w neglect; May assist w balance (1)

CONS:
Does not approximate position in humerus; May facilitate learned nonuse; deconditioning; poor arm swing

Alt: Fanny pack; Scarf

8

Humeral "Cuff" Slings

WHAT: Humeral cuff that is held in place by adjustable straps, either around body or proximal to cuff.

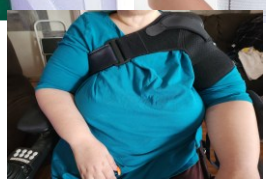
PROS: Approximates humerus position; some allow UE swing; worn under or over clothes; adjustable; some allow distal UE use; Can integrate modalities with some types

CONS: limits shoulder mobility (e.g., external/internal rotation); tricky to don – requires practice!

Neurexa shoulder orthosis (Walmart)

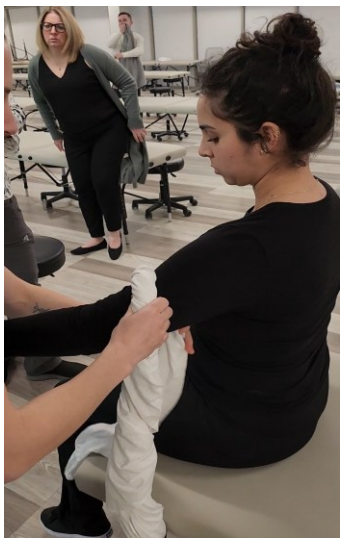
Ali-Med Hemi Shoulder sling

OmoTrain shoulder brace



9

"Home-Made" Humeral Cuff "Sling"



Available on YouTube channel

10

Distal Support Slings

WHAT: Supports UE distally; uses weight of the patient's forearm as a counterbalance to maintain positioning between the humerus and the shoulder joint (GH)

PROS: Approximates humerus in some pts; adjustable into EXTERNAL ROTATION; Can integrate modalities; unweights the UE; Distal activation?

CONS: May discourage arm swing post acutely → **may** throw off balance; Does not effectively approximate shoulder; Does restrict distal UE use

Givmohrsling.com: ≈ $72.00

AliMed shoulder sling: ≈ $86.00

11

How About *Slings to REDUCE Shoulder Subluxation?*

MOTOR FUNCTION			
LoE	Conclusion Statement	RCTs	References
1b	**Sustained positioning** may not have a difference in efficacy when compared to **conventional therapy** for improving motor function.	1	De Jong et al. 2006
1b	**Continuous passive range of motion exercises** may not have a difference in efficacy when compared to **self-directed range of motion exercise** for improving motor function.	1	Lynch et al. 2005

SPASTICITY			
LoE	Conclusion Statement	RCTs	References
1a	**Sustained or static positioning** may not have a difference in efficacy when compared to **conventional therapy** for improving spasticity.	3	De Jong et al. 2006; Ada et al. 2005; Turton & Britton 2005
1b	**Continuous passive range of motion exercise** may not have a difference in efficacy when compared to **self-directed range of motion exercise** for improving spasticity.	1	Lynch et al. 2005

RANGE OF MOTION			
LoE	Conclusion Statement	RCTs	References
1a	**Sustained or static positioning** may not have a difference in efficacy when compared to **conventional therapy** for improving range of motion.	5	De Jong et al. 2006; Gustafsson & McKenna 2006; Ada et al. 2005; Turton & Britton 2005; Dean et al 2000

12

SLINGS *FOR RESTORATION* (cont'd)

- Immobilization increases the risk of other pain syndromes including adhesive capsulitis and joint contracture and should be avoided (Dohle, 2013).
- May encourage flexor synergies, inhibit arm swing, contributing to contracture formation.
  - GIVE-MOHR: Good for maintaining arm swing; ADL participation???
- Slings are likely not beneficial for shoulder hemiplegia following stroke. (Ada et al., 2016; van Bladel et al., 2017)
- Ada et al, Cochrane Database Systematic Review: "There is insufficient evidence that to conclude whether slings and wheelchair attachments prevent subluxation, decrease pain, increase function or adversely increase contracture in the shoulder after stroke"
- Bladel et al., 2017, sling vs no sling, 6-week duration

"The control group (no sling) showed the least amount of shoulder subluxation. There were no significant differences between groups for pain, PROM, spasticity, or function between groups."

EBRSR: "Slings are likely not beneficial for shoulder hemiplegia following stroke"

13

Electrical stimulation is effective for pain and muscle activation…

but the causes of shoulder pain may vary

ACUTE PHASE: Pain d/t new, **excessive stretches and associated damages to the soft tissues** (capsule, ligaments, and muscles)

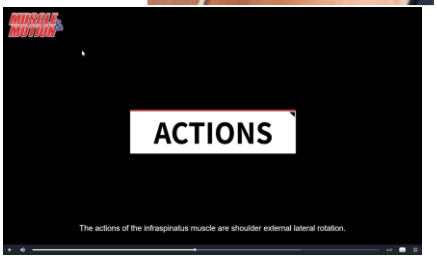
CHRONIC PHASE: Pain due to **sustained, abnormal positioning**; ***shortening*** **of capsule and ligaments** and **possible muscle *contractures***

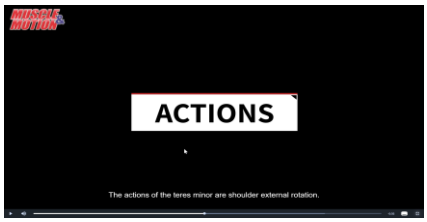
Vafadar, *Biomed Res Intl;* 2015; Ada, *Aus J Phyiso;* 2002; Wang et al, *Am J PMR;;* 2000

14

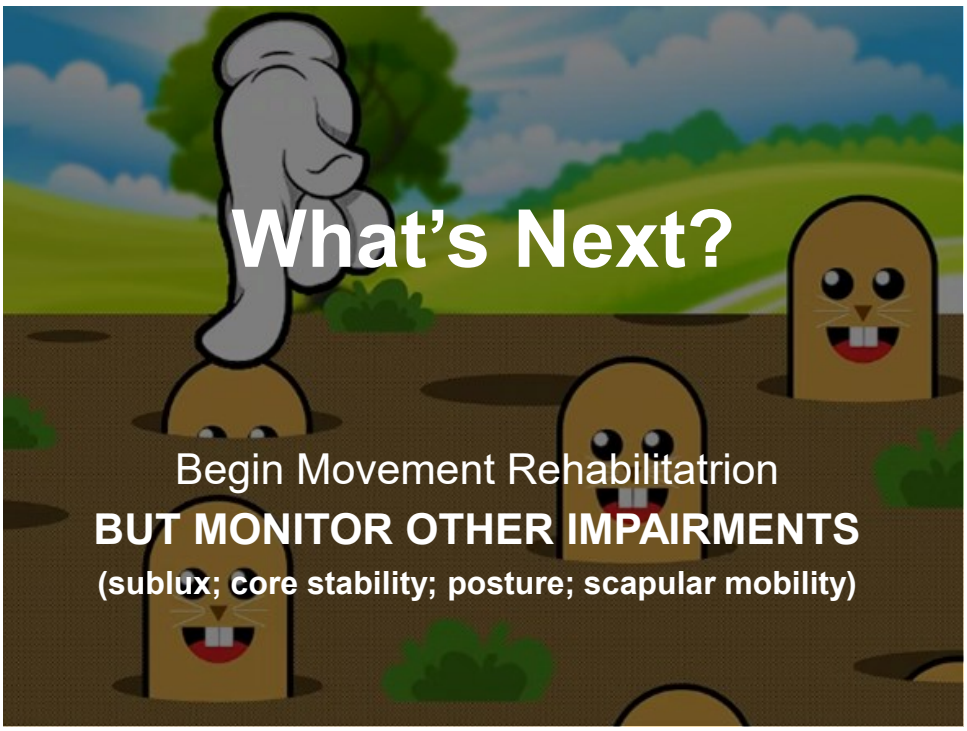
Where should I place the electrodes?

- Typically, posterior deltoid and supraspinatus
- **BUT** Cadaveric studies - the supraspinatus is not a powerful migrator **in some patients**
- Posterior deltoid and teres minor/infraspinatus **in some patients may be more effective**





15



16

Gravity Eliminated Progression
"Bonnie" (R hemiparesis)


Start with the less affected side
to assure:
- Understanding of the movement
- Understand of "good" body position


Switch to the more affected side
- Monitor the kinematic chain
- Isolate the shoulder


LQO Adult Elbow Fixation stabilizer


IMAK Pillo Splint

17

Sidelying Gravity Elimination w. proximal/distal support

Place a high/low table here & encourage rolling/target bed mobility!

Shoulder flexion,
Gravity eliminated
"PUSH UP/DOWN TOWARD YOUR HEAD/DOWNTOWARD YOUR FEET!"
(Shoulder flexion/extension)

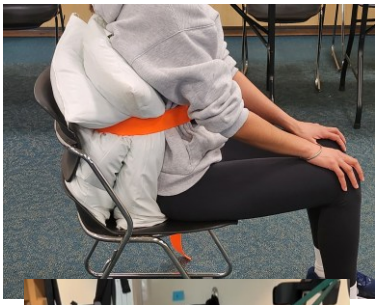
Gravity Elimination
w. proximal/distal support

Elbow flexion,
Gravity eliminated
"PULL IN!"
(Elbow flexion/extension)

18

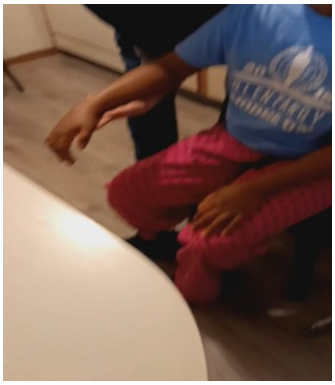
Activate Multiple Parts of the Kinematic Chain

- Small weighted backpack
- Wedge to the edge; high perch
- Cup of water at back of chair
- Degrade B.O.S. (under rear and/or under LE's)
- Theraband – pull back OR **pull forward** to elicit activation
- Sit to stand on each attempt



19

Closed to Closed-ish Chain for Activation



"Football"

Towel w compelled wb

POSSIBLE CHALLENGES WITH "TOWEL" & TOTAL GYM

STAND/SIT?/TANDEM STAND?	ANGLE OF INCLINE?
UE SUPPORT/NOT SUPPORTED?	SURFACE (slick?)
BEAT?/METRONOME?	BASE OF SUPPORT?
EYES OPEN/CLOSED?	

20

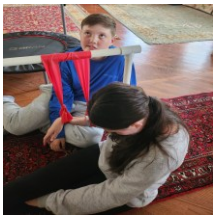
Mobile Arm Support Suggestions ("Gravity Compensation")

"Gravity compensation facilitated active arm movement excursions without impairing motor control…"
- Prange et al *Neurorehabil Neural;* 2009

Saebo MAS ($7k)

microphone stand with one Theraband at a recent course

Thanks to:
Allora Bellanger, PT, DPT, CSRS
TIRR Memorial, Houston



PVC Platform w theraband & rambunctious children

Have them PUSH FORWARD, PULL INTO SYNERGY!

Tie a theraband to a doorknob, drape it over the top of the door, tie to patient wrist

Items with the word "boom" (mic stand)

Krabben et al, *J Neuroeng Rehabil*; 2012;
van der Kooj et al, *Ann Int Conf Eng Med Biol Soc* 2009

21

QUESTIONS?

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22