Practice Makes Permanent: Implementing Ergonomic Training During Fellowship to Prevent Future Endoscopic Burn Out

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Sustained awkward postures during endoscopy persisted after one-on-one feedback by PT; however, musculoskeletal pain appeared to improve.

INTRODUCTION:

- MSK injuries from performing endoscopy are common amongst GI fellows.
- The ASGE recommends that training programs incorporate formal ergonomics training into their curricula.
- In this study, we assessed whether one-on-one evaluation and feedback by PT would improve ergonomics during endoscopy amongst GI fellows.

METHODS:

- 8 fellows participated in the study.
- During phase 1, each fellow was observed by PT during one colonoscopy and ergonomic feedback and stretching exercises were provided afterwards.
- At the end of phase 1, a group session was organized to further educate fellows about common sites of MSK pain and stretches to avoid them.
- Phase 2 was 10 weeks later, and fellows were again observed for one colonoscopy by PT and one-on-one feedback was provided.
- A post-intervention survey was conducted 3 weeks later.

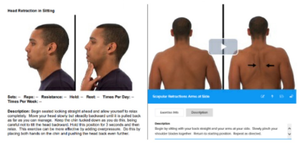
RESULTS:

- 7 fellows had previous training on ergonomics, but only 3 fellows properly adjusted the bed height and monitor position prior to the procedure during phase 1.
- Sustained awkward postures were observed in 7 fellows, most common being forward head/cervical extension, elbow flexion, wrist extension, forearm pronation and lumbar flexion.
- 3 fellows reported MSK pain from performing endoscopy prior to phase 1.
- 2 fellows reported improvement in pain after phase 1; however, sustained awkward postures were persistent and only 1 additional fellow properly adjusted bed height and monitor position after phase 1.
- 2 additional fellows reported musculoskeletal pain after phase 1 and incorporated helpful changes in phase 2.
- While none of the fellows did any stretching prior to the study, 6 fellows reported doing some form of stretching on days they performed endoscopy after training by PT.
- The fellows reported that stretching instructions were the most helpful intervention.

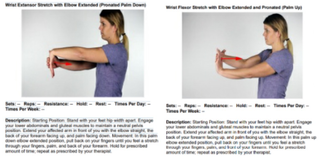
Age (in years)		
		32.75 (+/- 2.68)
Gender		
	Female	2 (25%)
	Male	6 (75%)
Year in Fellowship		
	1st year	3 (37.5%)
	2nd year	2 (25%)
	3rd year	3 (37.5%)
Colonoscopies Performed		
	1st year	92 (+/- 42.4)
	2nd year	266 (+/- 162)
	3rd year	747 (+/- 222.9)
Prior Ergonomics Training		
	1st year	2 (66%)
	2nd year	2 (100%)
	3rd year	3 (100%)
Musculoskeletal Pain Related to Endoscopy		
	1st year	2 (66%)
	2nd year	1 (50%)
	3rd year	0 (0%)

^^ TABLE A. Baseline characteristics of fellows. Values are listed as mean (standard deviation) or number (percentage).

RUSH G.I. Ergo Reset-during procedure-5-10reps each



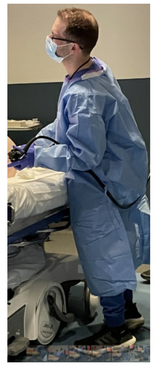
Ergo Breaks-between procedures-3x each side hold 20-30sec

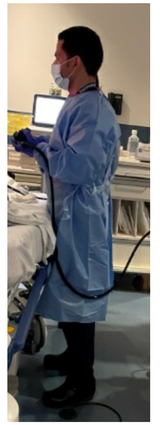


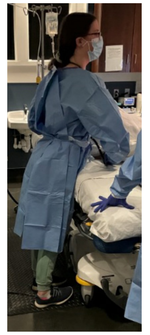
<< PHOTO 1. Sample stretches with instructions provided to fellows by physical therapy.

>> TABLE B. Sample evaluation form to assess fellows' ergonomics by physical therapy.

Body Area	Discomfort Rating: 1-10	Awkward / Sustained Posture Observed	Posture Observed	Cause	Recommendations for improvement:
Neck	0	Yes	R sidebent and rotated, forward head	Equipment not adjusted/positioned properly	Adjust the monitor position in order to elimitate cervical rotation and sidebending.
L shoulder	0	Yes	Neutral w IR and ER	Equipment does not adjust	Physician has to hold tool throughout procedure in this position not much adjustment possible.
R shoulder	0	Yes	ABD and IR	Equipment does not adjust	Physician has to hold tool throughout procedure in this position not much adjustment possible.
L elbow	0	Yes	Flexion and IR alternating ER	Equipment does not adjust	Physician has to hold tool throughout procedure in this position not much adjustment possible.
R elbow	0	Yes	Flexion and IR and alternating ER	Equipment does not adjust	Physician has to hold tool throughout procedure in this position not much adjustment possible.
L wrist	0	Yes	extended	Size/Height of individual	In order to manipulate the tool she required excessive flexion or extension due to a smaller hand so maybe get an extension or smaller tool.
R wrist	4	Yes	Neutral w alternating pronation/supination	Equipment does not adjust	In order to navigate colon pronation/supination is needed to manipulate the tool not much adjustment can be done.
L hand	0	Yes	extended	Size/Height of individual	In order to properly grip the tool extension is needed due to smaller hand size.
R hand	3	Yes	extended	Other (explain)	In order to navigate colon a good grasp on the tool is needed throughout.
Upper Back	0	Yes	rounded	Individual choice/behavior	Avoid rounding of the shoulders by a slight increase in table height or slight knee flexion bilaterally
Lower Back	0	Yes	extended	Individual choice/behavior	Avoid forward trunk flexion being more mindful
Hips	0	Yes	extended	Individual choice/behavior	weight shift throughout procedure to avoid more WB on L hip
Knees	0	Yes	extended	Individual choice/behavior	weight shift throughout procedure or add padded mat under feet w slight knee flexion bilaterally
Feet	0	Yes	R ankle sustained inversion, L neutral	Individual choice/behavior	Try to avoid R ankle inversion throughout and move pedal in Sagittal plane movements (PF/DF)
Comments or Considerations:					
Clinician Instructions					
Photo Requirements:					
Room set up during procedure					
Awkward postures of note (insert in photo column above)					
Key questions:					
Can equipment be moved to improve posture?					Yes
Is equipment adjustable?					Yes
Does task have to be done a certain way?					Yes
Was the bed height adjusted appropriately prior to starting procedure ?					Yes, could be slightly higher
Was the monitor position adjusted appropriately prior to starting procedure ?					No
Key awkward postures:					
Neck: flexion, side bending, twisting					Alternating sidebending and forward head
Trunk: flexion, side bending, twisting					Flexion
Shoulder: flexion, abduction, EI/ER					Abduction and IR on R, L is slightly abducted and ER
Wrist: pronation/supination, flexion/extension, radial/ulnar deviation					alternating pronation and supination on R, L wrist extension







PHOTOS 2-5. Fellows performing endoscopy during phase 1 of the study.

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