

Primitive Reflex Integration for Concussion — A New Use for an Old Technique

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Learning Objectives

- Demonstrate intermediate-level knowledge of primitive reflexes and their role in the concussed population
- Demonstrate a functional understanding of vertical integration and the impact disruption can cause
- Provide accurate and effective patient education for rehab purpose and home exercise program instruction
- Effectively perform and interpret results from the Primitive Reflex Screening Tool
- Effectively implement the Primitive Reflex Integration treatment protocol



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FIGURE 1. Primitive Reflex Screening Tool – mTBI (PRST-m) Guidelines

Reflex	Procedure
Moro*	Pt to assume hooklying position with feet together and hands in the "prayer position" palms together at midline. Pt to maintain inward pressure at the hands and lift the hips off the floor to create a straight line from the knees through the hips to the shoulders. ** Compare to same movement with arms crossed over the chest**
TLR*	Pt to in prone with arms by side, palms facing the ceiling, Pt lifts arms and legs off the table while keeping the head on the table.
STNR*	Pt to assume quadruped position. Therapist to passively flex neck and hold for 5 seconds before extending the neck.
STNR-2	To confirm in mild cases: Pt to assume quadruped position. Pt will actively extend opposite arm and leg then return to starting position and repeat on opposite side.
ATNR*	Pt to assume quadruped position. Therapist to passively rotate the patient's head to the side hold for 5 seconds before rotating to the opposite sides.
ATNR-2	To confirm in mild cases: complete in standing, arms flexed to 90 degrees, fingers pointed to the floor. With the pt's eyes closed passively rotate the head to each side, hold for 5 seconds.
Spinal Galant	Pt to assume quadruped position. Therapist will stroke the skin on the pt's back lateral to the spinous process from lower thoracic region to lumbar region. Repeat on the opposite side of the spine.



PRST-m Score Sheet

Reflex	Level 1 Presentations	L2 Presentations
Moro*	<input type="checkbox"/> Inability to maintain inward pressure <input type="checkbox"/> Inability to keep pelvis level <input type="checkbox"/> Dorsiflexion of the ankles <input type="checkbox"/> Abduction of the hips	<input type="checkbox"/> Increased symptoms <input type="checkbox"/> Increased difficulty c hands in prayer vs crossed over shoulders
TLR*	<input type="checkbox"/> Inability to keep head down <input type="checkbox"/> Inability to lift either arms or legs <input type="checkbox"/> Knee flexion	<input type="checkbox"/> Complaint of significant difficulty completing exercise
STNR*	<input type="checkbox"/> Flexing of the elbows <input type="checkbox"/> Arching the back <input type="checkbox"/> Plantarflexion of the ankles	
STNR-2		<input type="checkbox"/> Significant pelvic tilt <input type="checkbox"/> Significant balance deficits <input type="checkbox"/> Discrimination of quality of posterior sling
ATNR	<input type="checkbox"/> Bending of the opposite elbow to the head rotation <input type="checkbox"/> Weight shifting backward or lateral	
ATNR-2		<input type="checkbox"/> Drop of the arms below 90 degrees <input type="checkbox"/> Rotation of the arms
Spinal Galant	<input type="checkbox"/> Arching of the back <input type="checkbox"/> Weight shift away from the side that is being stroked.	<input type="checkbox"/> Potential screen includes question about fidgeting with clothing, waistband not sitting just right or shirt material being off.

Total Score: ____/10

Implications: _____

Signature: _____

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Research Needs for PRST

- Studies to determine sensitivity, specificity of PRST-m
- Determine inter-rater reliability
- What predictive value do the scoring subsets provide?
 - Will certain scores tell us the amount of time or the likelihood of emotional overflow?



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Primitive Reflex Screen: Moro



- Bridge:
 - Patient in hooklying, press palms together in “prayer” position: complete glute bridge exercise maintain inward pressure on hands. Repeat with arms crossed lightly over chest to compare.
 - **Positive test**= unable to maintain inward pressure with palms, hips deviate laterally , lift toes. *Mild – pt describes increased difficulty in prayer vs control position of arms crossed over chest.*

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Primitive Reflex Screen: Moro



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- Superman
 - Prone, arms at side with palms facing up; raise arms and legs simultaneously (superman position), repeat with cue to keep head down.
 - **Positive test** = unable to keep legs or arms straight, inability to raise both extremities at the same time

Primitive Reflex Screen: TLR

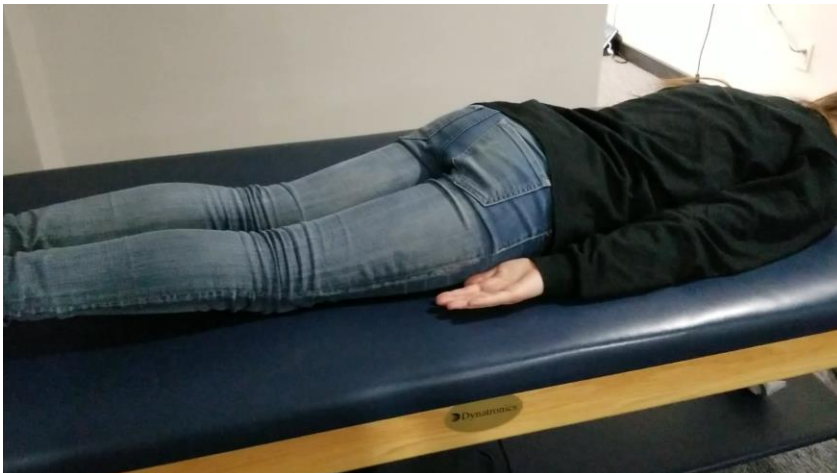


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Primitive Reflex Screen: TLR



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Primitive Reflex Screen: STNR

- Quadruped
 - Passively flex neck holding for 5 seconds, then passively extend neck and hold for 5 seconds-repeat x 3
 - **Positive test** = WS posteriorly, arching back, bending arms, PF of feet



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Primitive Reflex Screen: STNR



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Advanced Position



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Primitive Reflex Screen: ATNR

- **Quadruped**
 - Passively rotate head to one side holding for 5 seconds, repeat contralat.
 - **Positive test** = bending elbows of arm opposite rotation or WS posteriorly
- **Standing (Schilder Test)**
 - Feet together, arms straight in front with wrists relaxed- passively rotate head with eyes closed
 - **Positive Test** = arms rotating ipsilat or 1 arm dropping in elevation.



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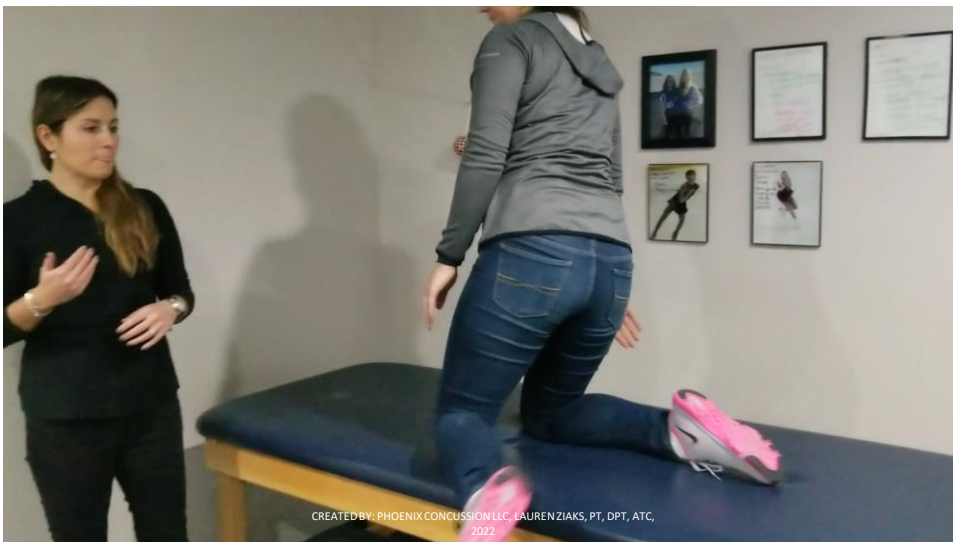
Primitive Reflex Screen: ATNR



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Advanced Test Position



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- Quadruped:
 - Stroke one side of the lumbar spine towards sacrum- this should be completed on the skin for most accurate results
 - **Positive test** = arching the back or move/ WS away from side that is stroked

Primitive Reflex Screen: Spinal Galant



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Primitive Reflex Screen: Spinal Galant



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How to Test/An Example?



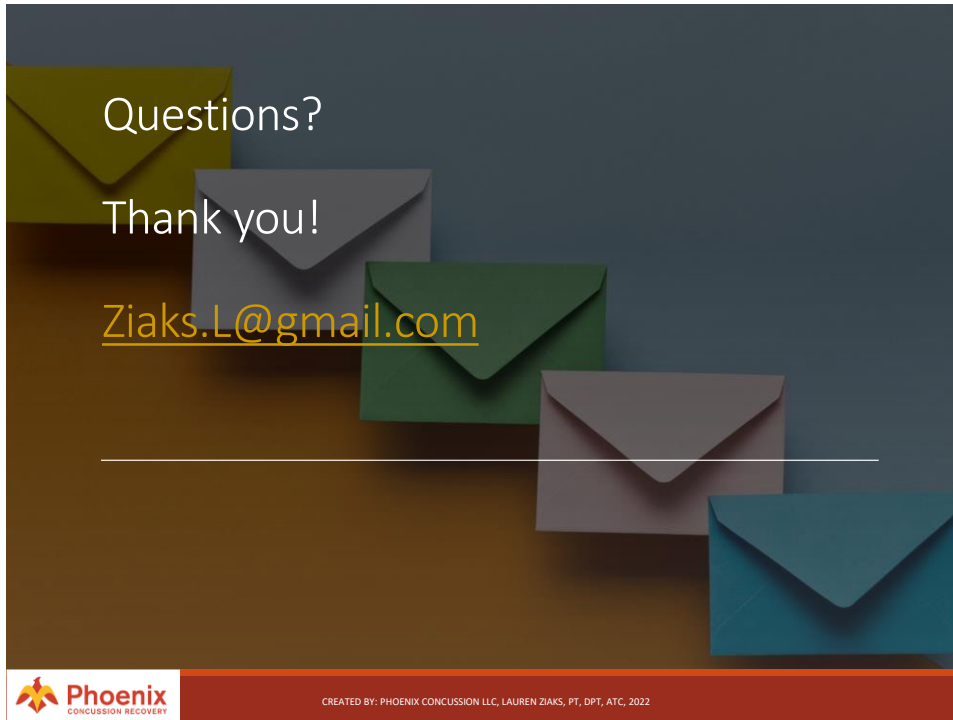
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The Full Screen



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