

Administration, Scoring and Interpretation of SOSI-M and COP-R

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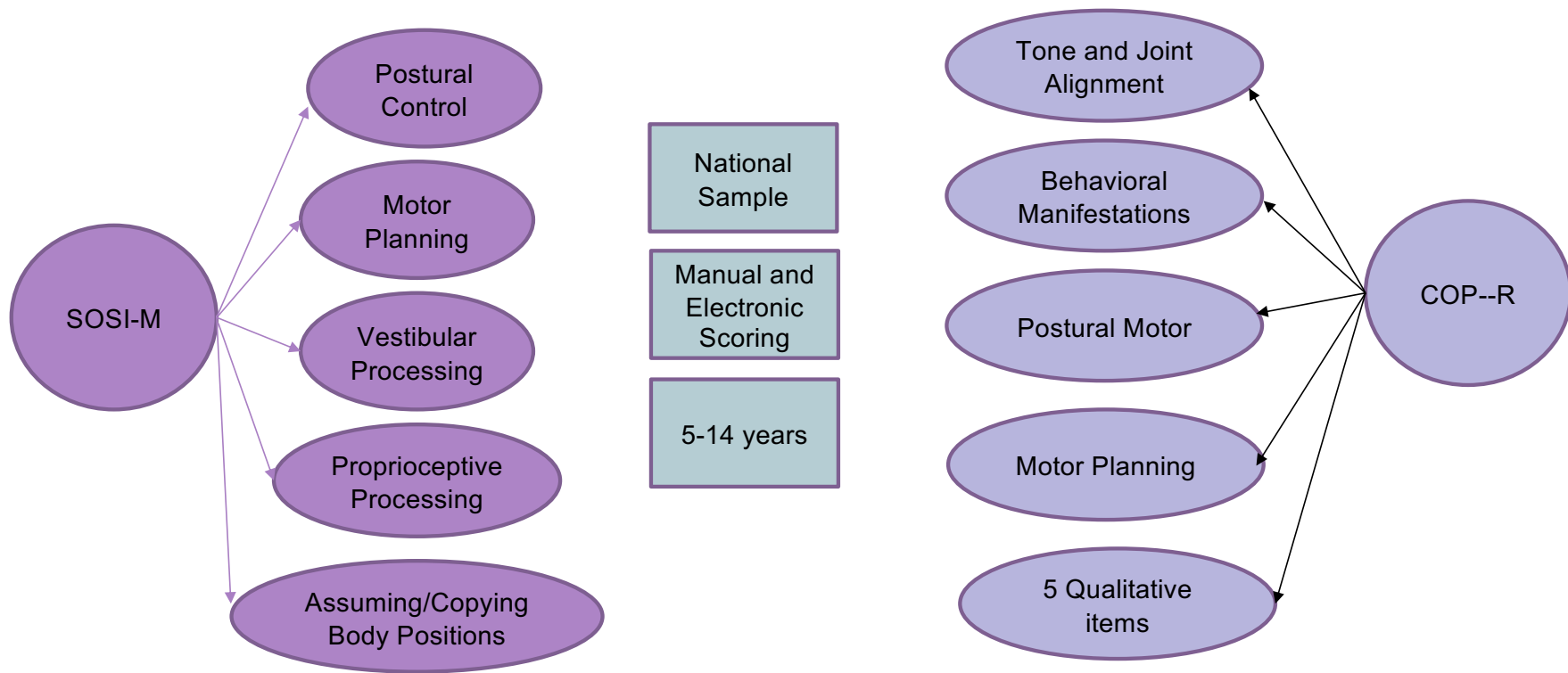
Learning Objectives

1. Describe the rationale for and administer all items of the SOSI-M.
2. Score and interpret the results of the SOSI-M and COP-R.
3. Plan sensory integration intervention related to the results and findings of the SOSI-M and COP-R Clinical Observations of Proprioception (COP-R).


Background of SOSI-M and COP-R

- Ayres (1984) proposed that clinical observations be part of every assessment
 - Structured or unstructured
 - Several studies have provided data on typical children and children with difficulties
 - Significant discrepancy administration and interpretation
 - Difficulties on how to integrate them into their assessment and intervention practices
 - The Structured Observations of Sensory Integration-Motor (SOSI-M) & the Comprehensive Observations of Proprioception (COP-R) (Blanche, Reinoso, & Kiefer, 2020)
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What does SOSI and COP give us




Details of the SOSI

1. Romberg
 2. Heel to toe
 3. Standing on 1 foot
 4. Modified Postural Schilder's Arm Extension Test
 5. Skipping
 6. Series of Jumps
 7. High Kneeling
 8. Antigravity extension
 9. Antigravity Flexion
 10. Ocular movements
 11. Slow ramp movements
 12. Sequential Finger Touching
 13. Diadochokinesis
 14. Projected Actions in Time and Space
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Details of the COP-R

1. Tone and Joint Alignment
2. Behavioral Manifestations
3. Postural Motor Domain
4. Motor Planning

Qualitative Items


1. Toe walking
 2. Leaning
 3. Passive
 4. Grading of Force
 5. Midrange Control
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Case: Lucas

6 year 3 months old boy

Reason for Referral: Parent concerns related to difficulties with **self-regulation**, participating in **seated tasks**, and need to be in **frequent movement**.

Behavior During Assessment:

- transitioned easily
 - required repetition of verbal and visual directions
 - tended to be in constant motion, at times affecting his ability to attend to, receive, and process directions
 - difficulty staying in one position while waiting between tasks and receiving directions
 - difficulty sustaining an upright sitting position; observed to frequently lean
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Assessments Chosen & Rationale

- **Functional Impact**
 - Portions of the Pediatric Evaluation of Disability Inventory (PEDI) – Self-Care (Functional Skills) and (Caregiver Assistance) subtests
- **Sensory Processing**
 - Structured Observations of Sensory Integration – Motor (SOSI-M)
 - Comprehensive Observations of Proprioception – Revised (COP-R)
 - PRN
- **Parent Interview**
- **Unstructured and structured clinical observations**

SOSI-M Administration



Postural Measures

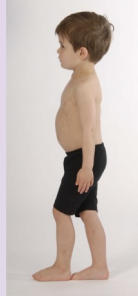
ROMBERG Items #1-4

- Item 1: Romberg - firm, open
- Item 2: Romberg - firm, closed
- Item 3: Romberg - soft, open
- Item 4: Romberg - soft, closed



HEEL TO TOE Items #5-9

- Item 5: Heel to Toe - firm, open
- Item 6: Heel to Toe - firm, closed
- Item 7: Heel to Toe - soft, open
- Item 8: Heel to Toe - soft, closed



STANDING ON ONE FOOT Items #10-12

- Item 9: One foot - right, open
- Item 10: One foot - left, open
- Item 11: One foot - right, closed
- Item 12: One foot - left, closed



Schilder's Arm Extension Test

**Item #13
To the Right**



**Item #14
To the Left**



Skipping

Item #15



Series of Jumps

**JUMPING
JACKS**
Item #16



**SYMMETRICAL STRIDE
JUMPS**
Item #17



**RECIPROCAL STRIDE
JUMPS**
Item #18



High Kneeling

Item #19



Antigravity Extension

Item #20



Antigravity Flexion

Item #21



Ocular Movements

VERTICAL
Item #22



HORIZONTAL
Item #23



TRACKING
Item #24



Slow Ramp Movements

Item #25



Sequential Finger Touching

RIGHT HAND
Item #26



LEFT HAND
Item #27



Diadochokinesis

RIGHT HAND
Item #28



LEFT HAND
Item #29



BILATERAL
Item #30



Projected Actions in Time and Space

BALL IN AIR
Item #31



BALL AGAINST WALL
Item #32



Scores from SOSI-M

Item Set	SOSI-M Item	Item Data	Item Score	≤15th percentile	16th-24th percentile	≥25th percentile
Romberg	1. Romberg – firm, open					
	2. Romberg – firm, closed					
	3. Romberg – soft, open					
	4. Romberg – soft, closed					
Romberg Total						
Heel to Toe	5. Heel to Toe – firm, open					
	6. Heel to Toe – firm, closed					
	7. Heel to Toe – soft, open					
	8. Heel to Toe – soft, closed					
Heel to Toe Total						
Standing on One Foot	9. One Foot – right, open					
	10. One Foot – left, open					
	11. One Foot – right, closed					
	12. One Foot – left, closed					
Standing on One Foot Total						
Modified Postural Schilder's Arm Extension Test	13. Schilder's – right (converted score)					
	14. Schilder's – left (converted score)					
Schilder's Total						
Skipping	15. Skipping					
Skipping Total						
Series of Jumps	16. Jumping Jacks					
	17. Symmetrical Stride Jumps (ages 7.0+)					
	18. Reciprocal Stride Jumps (ages 7.0+)					
Series of Jumps Total						
High Kneeling	19. High Kneeling (ages 7.0+)					
High Kneeling Total						
Overall Score (Subtotal)						

- ≤ 15 percentile

- $16^{\text{th}} - 24^{\text{th}}$ percentile

- $\geq 25^{\text{th}}$ percentile

SCORES AT ALL LEVELS

1. Overall Score
2. Item set (e.g. Standing on one foot)
3. Categories (e.g. Postural Control)
4. Item (e.g. one foot, right open)

Lucas' Scores from SOSI-M

Score Summary

Overall Total Score: 31 Standard Score: 85 Percentile Rank: 16

Standard Score Confidence Interval (circle one): 90% **95%** 73.24 to 96.76

Areas of Concern	No Concern	Mild	Moderate
Postural Control			X
Motor Planning		X	
Vestibular		X	
Proprioceptive			X
Fluidity	X		
Assumes Position / Copying Body Position	X		

Summary of performance on SOSI-M

- PRN: 1 second in both directions and trials

→ hypo responsiveness to Vestibular

- Items below 15% for is age (red)

- Slow ramp
- Sequential finger touching

→ Hypo responsive to proprioceptive input

- Items between 16-24% (yellow)

- Heel to toe on soft surface - eyes closed
- Stand on 1 foot
- Sustaining extension and flexion against gravity
- Ocular movements (horizontal stabilization and visual tracking)



Lucas' Scores from COP-R (Subscales)

	Raw Score	Scaled Score	Overall Standard Score	Confidence Interval 90% 95%	Percentile Rank
Tone and Joint Alignment Domain	11	6		4.3 — 7.7	9
Behavioral Manifestation Domain	14	+ 5		2.92 — 7.08	5
Postural Motor Domain	11	+ 5		2.38 — 7.62	5
Motor Planning Domain	9	+ 4		2.25 — 5.75	2
Sum of Scaled Scores		= 20	75	65.57 — 84.43	5

Lucas' Scores from COP-R (Qualitative Items)

Qualitative Items	Raw Score	Area of Concern	
Toe Walking	5		
Leaning	1	X	97.60% scored >1
Passive	5		
Grading of Force	3	X	88.40% scored >3
Midrange Control	3	X	91.00% scored >3

Other assessments and observations

- PEDI scores:

	Self-Care (Functional Skills)	Self-Care (Caregiver Assistance)
Raw Score	70	39
Standard Score*	34.4	54.9

*Mean = 50, SD = 10

- Areas of deficit:
 - staying seated with proper alignment during mealtimes → frequent movement/changing position
 - Requires assistance for dressing
- Areas of strength:
 - Accepts all food textures
 - Brushes teeth/hair
 - washes hands
 - Able to manage fasteners

Interpretation of all assessments


Reason for Referral: Parent concerns related to difficulties with **self-regulation**, participating in **seated tasks**, **frequent movement**.

Functional Impact		CONCLUSION
Portions of the Pediatric Evaluation of Disability Inventory (PEDI)	Difficulty staying seated with proper alignment during mealtimes → frequent movement/changing position Requires assistance for dressing	Difficulties in vestibular and proprioceptive processing impacting: <ul style="list-style-type: none"> • Postural control • Ability to maintain upright posture, positions against gravity • Ocular motor control • Postural alignment • Stability/need for leaning or movement • Ability to follow directions • Self-regulation
Sensory Processing		
Structured Observations of Sensory Integration – Motor (SOSI-M)	Hypo-responsiveness to vestibular input Hypo-responsiveness to proprioceptive input	
Comprehensive Observations of Proprioception – Revised (COP-R)	Hypo-responsiveness to proprioceptive input	
PRN	Hypo-responsiveness to vestibular input	
Parent Interview	Hypo-responsiveness to vestibular input	
Unstructured and structured clinical observations	No signs of hyperresponsiveness to tactile input Hypo-responsiveness to vestibular input Hypo-responsiveness to proprioceptive input	

Recommendation

**Occupational Therapy recommended one time per week
using SI approach and parent education**

Treatment Plan of Care

1. In 6 months, Lucas will be able to remain seated and sustain participation in mealtime for at least 15 minutes, with moderate cues and sensory strategies as needed, in 3 out of 5 opportunities.
 2. In 6 months, Lucas will dress upper and lower body, with minimal cues, in 5 out of 7 days.
 3. In 6 months, Lucas will be able to don and doff pants in standing, with moderate assistance, in 3 out of 5 opportunities.
 4. Lucas' parents will be able to implement at least 2-3 sensory/adaptive strategies to support Lucas with increasing participation in age-appropriate daily activities.
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SI Intervention

SI = sensory experience + Adaptive Response

Proprioception
Vestibular

- cocontraction (core muscles and UE/LE)
- sustain midrange positions (static and dynamic)
- grading the force
- postural control
- sustaining positions against gravity
- stable visual field

Functional outcome: Postural alignment, ability to remain seated to participate in ADL, decrease activity level or fidgety during seated tasks

Progress Report - Changes on the SOSI-M

Score Summary

Overall Total Score: 31 Standard Score: 85 Percentile Rank: 16

Standard Score Confidence Interval (circle one): 90% 95% 73.24 to 96.76

Areas of Concern	No Concern	Mild	Moderate
Postural Control			X
Motor Planning		X	
Vestibular		X	
Proprioceptive			X
Fluidity	X		
Assumes Position / Copying Body Position	X		

Score Summary

Overall Total Score: 43 Standard Score: 89 Percentile Rank: 23

Standard Score Confidence Interval (circle one): 90% 95% 77.24 to 100.76

Areas of Concern	No Concern	Mild	Moderate
Postural Control	X		
Motor Planning		X	
Vestibular	X		
Proprioceptive		X	
Fluidity	X		
Assumes Position / Copying Body Position	X		

Changes of performance on the SOSI-M

EVALUATION

- Items below 15% for is age (red)
 - Slow ramp
 - Sequential finger touching
- Items between 16-24% (yellow)
 - Heel to toe on soft surface - eyes closed
 - Stand on 1 foot
 - Sustaining extension and flexion against gravity
 - Ocular movements (horizontal & tracking)

PROGRESS REPORT

- Items below 15% for is age (red)
 - Sequential finger touching
 - Items between 16-24% (yellow)
 - Flexion against gravity (4 sec.)
- Hypo responsive to proprioceptive input
- may indicate poor tactile processing


Contributes to MP



Functional progress

- Achieved all goals
- SOSI-M progress
- PEDI score within average range (42.3)
- Parents report significant changes in functional performance and participation

SOSI-M and COP-R: Additional Information

1. Manual and electronic scoring
 2. 5-14 years of age
 3. SOSI-M -> Performance assessment
 4. COP-R -> Observational assessment
 5. Training available
 6. Affordable full kit and HIPPA compliant electronic scoring
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THANK YOU!

