

Sensory Interventions used in the Treatment of Gravitational Insecurity

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Background

- Gravitational insecurity (GI) is a pattern of sensory integrative dysfunction; typically, an over responsive vestibular reactivity issue (Mailloux et al., 2018)
- Impacts participation in variety of tasks including play, self-care, and social participation (Ismael et al., 2018)
- Majority of research on GI focuses on clinical presentation and assessment (May-Benson, 2018)
- Children with GI are difficult for therapists to understand (May-Benson & Kumar, 2007)
- Traditional intervention consists of graded exposure to changes in head positions and movement (Potegal, 2015)
- Beyond generalities, there is little research on the specifics of interventions used in the treatment of GI

Purpose of Research

The purpose of this study was to examine the routine practice of occupational therapy to define interventions used in the treatment of GI. Research questions included:

- 1) What are the most common interventions occupational therapists use when addressing GI?

2) How do occupational therapists document GI interventions?

Methods

Phase one: Occupational therapists with advanced training in sensory integration completed a brief survey to identify common terms used in the documentation of treatment of GI. Narrative analysis revealed 28 key terms.

Phase two:

Participants: 25 therapy records of children ages 2-17 with identified GI difficulties as documented in the occupational therapy evaluation (identified in narrative analysis)

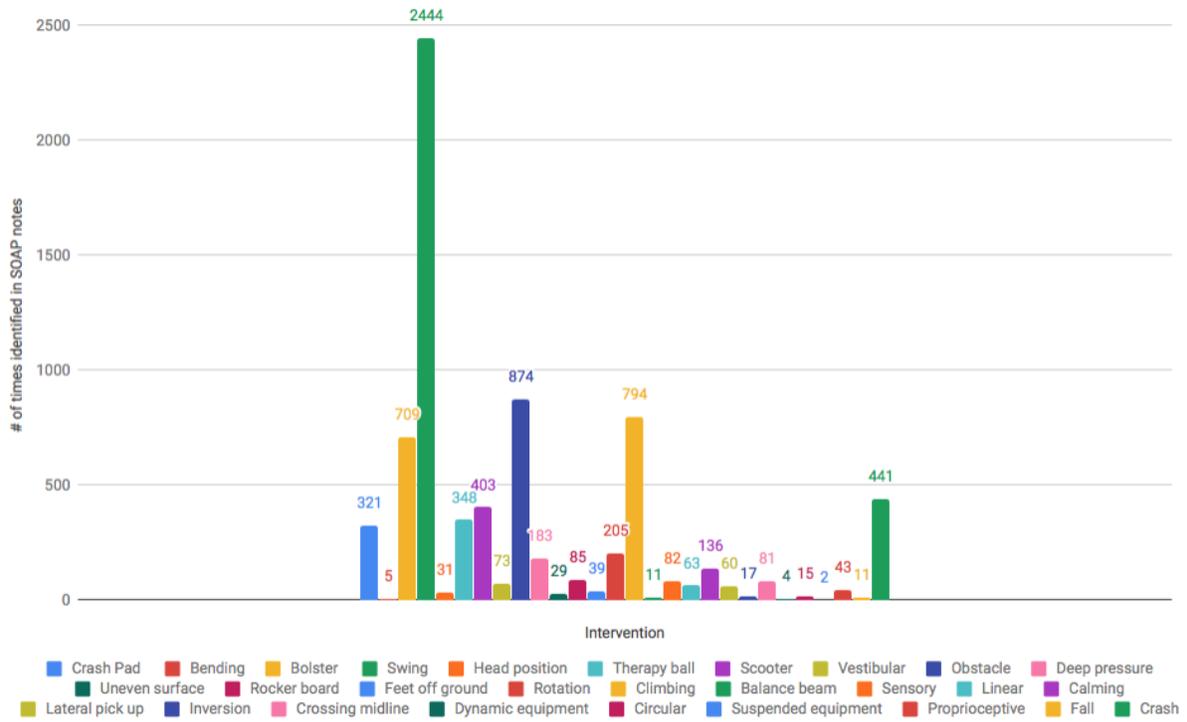
Analysis: Text mining of objective portion of daily therapy notes using Nvivo software identified the most commonly used words/phrases; these were matched to the 28 key words identified by the therapists in phase one; 2240 daily therapy notes were examined

Results

Sample Verbiage Used for Documenting Interventions to Address GI

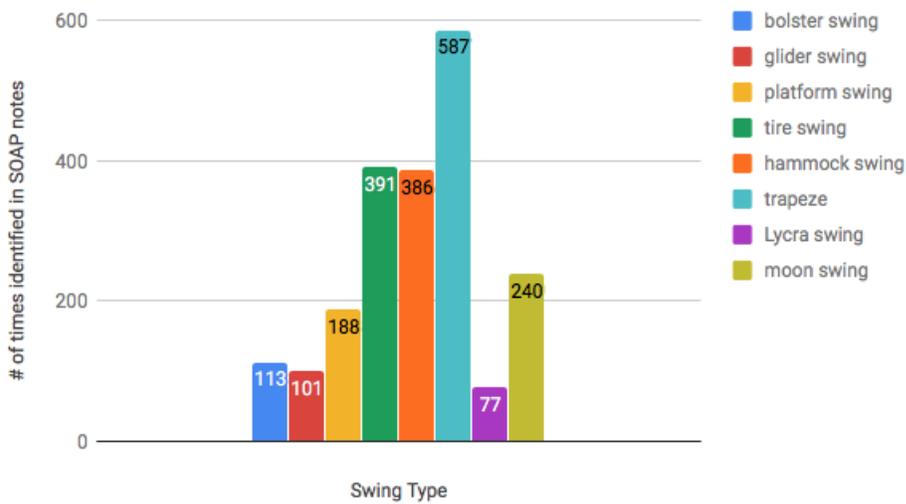
Vestibular	Positions	Tactile	Proprioception	Other
Swing	Bending	Deep pressure	Climbing	Obstacle
Therapy ball	Head	Crash pad		Sensory
Scooter	positions			
Rocker board	Feet off			
Balance beam	ground			
Suspended equipment	Inversion			

Frequency of Interventions Utilized



The term swing was used for 2400 times in the notes. A second query was run using the same methodology to determine the most commonly used types of swings.

Frequency of Swings Utilized in Treatment



Additional Interventions: Twelve participants had Therapeutic Listening Program as documented as part of the intervention process (found a total of 71 times in documentation).

Documented Interventions

Sensory Integration Interventions from Bundy & Szklut (2020)	Corresponding Words/Phrases Identified in Documentation
Walking across a mattress or up and down ramp	Uneven surfaces, dynamic equipment
Movement through backwards space	Inversion, bending
Practice falling	Fall, crash
Swing side-to-side	Lateral pick ups
Prone on swings	Swing, suspended equipment
Small linear movements, swing back and forth with swing on two points	Linear
Feet off ground	Therapy ball, feet off ground
Movement of head out of vertical	Lateral pick ups
Prone on scooter	Scooter
Provide reassuring proprioceptive and tactile input	Proprioceptive, deep pressure

Conclusion

- Four intervention types were identified: vestibular, positions, tactile, and proprioceptive
- Twelve different types of vestibular input and eight swings were identified

- One theme, changes in body position, included changes in head positions, rotation, feet off the ground, etc.
- Deep pressure tactile and proprioceptive input were also common interventions mentioned
- This study provides initial identification of specific interventions used in the treatment of GI

References

- Mailloux, Z., Parham, L. D., Roley, S. S., Ruzzano, L., & Schaaf, R. C. (2018). Introduction to the Evaluation in Ayres SensoryIntegration® (EASI). *American Journal of Occupational Therapy, 72*, 7201195030. <https://doi.org/10.5014/ajot.2018.028241>
- Ismael, N., Lawson, L. M., & Hartwell, J. (2018). Relationship between sensory processing and participation in daily occupations for children with autism spectrum disorder: A systematic review of studies that used Dunn’s sensory processing framework. *American Journal of Occupational Therapy, 72*, 7203205030. <https://doi.org/10.5014/ajot.2018.024075>
- May-Benson, T. (2018). State of Understanding of Gravitational Insecurity: A Scoping Review. *American Journal of Occupational Therapy, 72*(4_Supplement_1):7211500011p1. doi: 10.5014/ajot.2018.72S1-PO2004.
- Potegal, M. (2015). Is gravitational insecurity a unicorn? *Physical Medicine and Rehabilitation International, 2*(10), 1071.

May-Benson, T. A., & Koomar, J. A. (2007). Identifying gravitational insecurity in children: A pilot study. *American Journal of Occupational Therapy*, *61*, 142–147.

<https://doi.org/10.5014/ajot.61.2.142>