

“Developing the Hierarchical Domains of Sympathetic Activation of the Autonomic Nervous System

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Introduction

Clinicians at the Ottawa Hospital Rehabilitation Centre and Canadian Armed Forces Physiotherapists have been using a Computer Assisted Rehabilitation Environment (CAREN) for the treatment of many conditions which have elements of sympathetic activation of the autonomic nervous system (SAANS). During treatment, excessive SAANS reactions can be detrimental to therapeutic progress and cause rehabilitation set backs. As part of a bigger data analytics project, these SAANS reactions and their escalations needed to be identified.

Methods

- A clinical reflection exercise of all diagnostic groups treated in the CAREN environment was conducted to identify all with SAANS reactions
- Particular attention was paid to patients with duo or tr diagnostic states as their SAANS reactions tend to be more intense
- 6 experienced clinicians identified SAANS signs and symptoms they monitored in the CAREN environment during treatment
- These signs and symptoms were verified against the literature into key domains by consensus.
- 9 domains were then reduced to 6 by discussion.
- Ascending hierarchal stratification by severity was agreed upon in a consensus exercise

Results



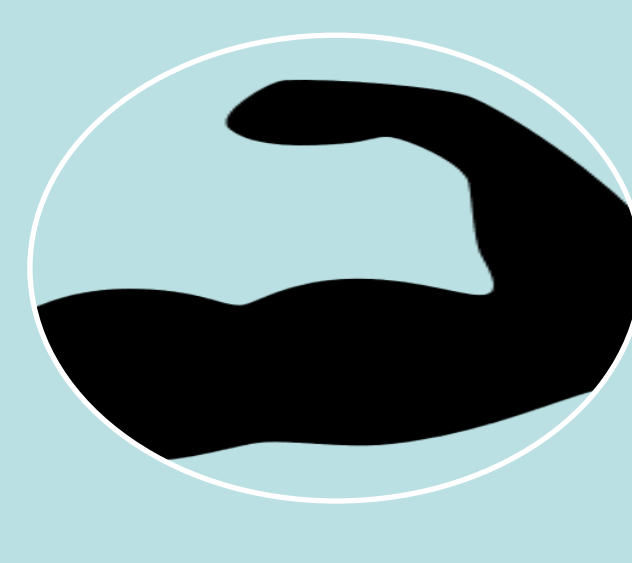
Vestibular Domain:

- Stomach awareness
- Nausea
- Sensation of ground moving
- Spinning R/L (YAW)
- Somersaulting back/forward (PITCH)
- Cartwheeling R/L (ROLL)
- Severe spatial disorientation
- Nystagmus
- Vomiting



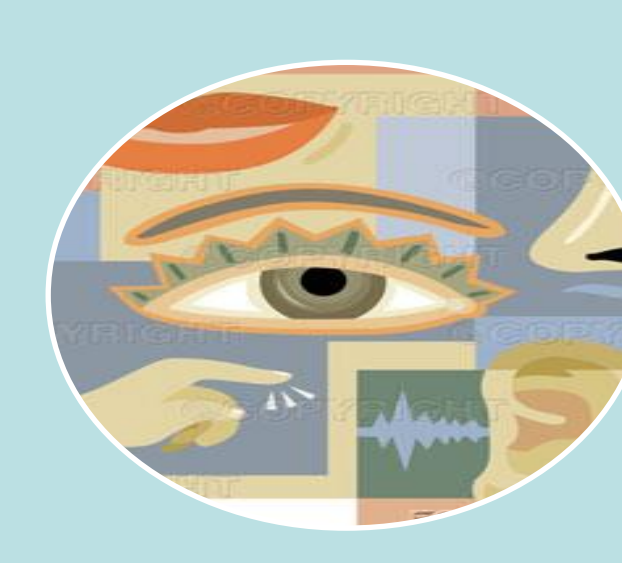
Hyperarousal Domain:

- Increased photophobia or hyperacusis
- Tunnel Vision / Visual or auditory fixation to maintain stability
- Rapid eye scanning / frequent head turning to noise or visual / fullness of head
- Tinnitus / migraine
- Flashback / Catatonia / Dissociation



Motor Systems Domain:

- Decreased eccentric control of muscles / poor coordination
- Increased tone / disinhibition of the spinal reflexes/guarding posture
- Intermittent motor inhibition
- Complete motor inhibition



Sensory Domain

- Tingling / burning
- Numbness
- Unable to situate part or whole of body in space



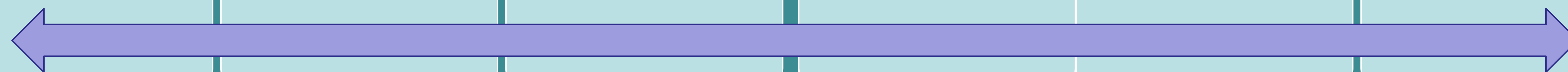
Cognitive Domain:

- Difficulty Dual Tasking
- Difficulty responding to single task
- Brain fog
- Confused
- Catatonia)



Pain Domain:

- NPRS 0-10



Conclusions

Using clinical pattern recognition skills, signs and symptoms of SAANS states have been identified as part of the normal treatment monitoring of a physiotherapist. Six physiotherapists were able to stratify increasing levels of severity of SAANS states. Stratification of the 6 domains of SAANS were then transformed into quantifiable physiological measures for use with a mobile application.



This project was funded as part of a larger project through CIMVHR's Advanced Analytics Initiative