Sensory Overload in a Workout Environment

Managing Sensory Overload After a Traumatic Brain Injury

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Supportive Living, Inc. — Brain Injury Programs — Residential · Wellness · Research — Est. 1991

Introduction

Supportive Living Inc.(SLI) is a non-profit organization founded in 1991. Supportive Living's mission is to help raise the quality of life of brain injury survivors by developing residential programs which provide an affordable and adaptable living environment. Supportive Living Inc also has a Neuro-wellness program which includes a workout plan that meets each participants unique needs. The Neuro-wellness program has helped individuals in the areas of strength, balance, memory, socialization, self esteem, and sense of purpose. (Supportive Living Inc, n.d)

Related Literature

The difference between a Traumatic Brain Injury and an Acquired Brain Injury

A traumatic brain injury (TBI) is a disruption in the normal function of the brain that is caused by a blow, bump or jolt to the head. It can be caused when the head is suddenly and violently hitting an object or if an object pierces through the brain tissue.

(Agarwal, 2020, para. 1)

An acquired brain injury is brain damage caused by events after birth, rather than as part of a genetic or congenital disorder. These include strokes, brain illness and other brain injuries. They differ from degenerative brain conditions, such as Alzheimer's or Parkinson's disease.

(Texas Health and Human Services, n.d., para. 1)

Hypersensitivity after a TBI

"Hypersensitivity to stimulation occurs after a Traumatic Brain Injury because your brain is scrambling to recognize and stabilize itself. As a result, even just a little bit of stimulation may overwhelm the brain. Many factors can contribute to sensory overload after brain injury. For some, the brain injury occurs in the part of the brain responsible for sensory processing. Because these neural pathways become disrupted, hypersensitivity to stimulation may occur.

Following a TBI, the brain devotes most of its energy towards healing and stabilization. Therefore, even the slightest stimulation may overstimulate the brain. Common symptoms of sensory overload include:

- Difficulty focusing
- Restlessness
- Aggressiveness
- Irritability/agitation
- Dissociating/shutting down
- Crying"

(Maher, 2021, para. 1)

"Sensory overload can be caused even when a sensory experience is something enjoyable. Be on the lookout for and try to avoid triggers

1. Loud sounds (people shouting, loud music, sounds of traffic or sirens)
2. Sight (busy; multi-colored displays, visiting new places or unfamiliar surroundings)
3. Movements (being bumped or shoved in crowds of people, unfamiliar movements)

some of the best strategies for reducing sensory overload in social settings

1. Get plenty of rest before hand
2. Communicate (let your family/friends know what makes you overstimulated so they can help you out
3. Avoid crowds (if there is a big crowd try to sit in the back or move to a less crowded area
4. Block out the excess noise with ear plugs
5. Remove yourself from the situation(go to a quieter place, take deep breaths, visualize a warm, secure and relaxing place or think of a happy memory)"

(Constant Therapy, 2022, para. 3)

Objective

To observe and document the cause of overstimulation in a participant of the Neuro-Wellness program, and to learn how to manage potential triggers in exercise environments.

Observations and Methods

Observation:

- Two days a week I assisted and closely monitored a participant of the Neuro-Wellness program with completing their exercise program.
- During every session each workout was documented, including the exercises, weights and repetitions completed, as well as the participant's sensitivity to their surroundings,
- If the participant became overwhelmed / overstimulated, their reaction as well as what was going on in the environment around them was documented, attempting to identify the trigger

Participant Behavioral log

Date	Notes on Behavior
6/6/2022	Meet participant for first time. I was told he does not like loud abrupt noises or too many people around him. Particiant was brought to quite section of gym and he did good. I was also told to keep in mind there are big changes within the program right now with a new manager and a whole new group of interns. A big change like this can be very overwhelming to the participant resulting in overstimulation.
6/8/2022	No overstimulation noted. Kept in quite area with little distractions.
6/13/2022	Participant was very overstimulated today. kept yelling out "Yeah" "hello" after any noise that was made. Got overstimulated when doing ball kicks and punches. I was able to calm him down by moving him away from the other people in the gym as possible. I put music on that participant liked and that seemed to help. During his sit to stands he was yelling out after everyone. at the railing he was at he could see and hear everyone leaving and entering the building which was too much activity and movement for him.
6/15	Particiant was overstimulated again today. I realized I was overinstructing the participant and he did not like that. I stopped over instruction the participant during the session and he was good for the rest of the session.
6/20/2022	No overstimulation noted. Kept in quite area with little distractions.
6/22/2022	While working in a quite area some members of the YMCA dropped a water bottle near the participant and they dropped a spray bottle and caused the participant to make a loud outburst
6/27/2022	Participant was out today due to a seizure
6/29/2022	Participant showed up in an agitated mood. He wanted to just get through his workout. with each movement he would stop his workout and look up at the person. If there was any movement or noise he would look up at them. This took a little longer to complete his workout. When I brought him down stairs the aide who brings in the participant expressed that they have been having a bad week.
7/11/2022	Participant was in a good mood today no overstimulated noted
7/13/2022	Participant was out due to an appointment
7/18/2022	No overstimulation noted. Kept in quite area with little distractions.
7/20/2022	Particiant was in good mood. It was a little loud over where we were today. When the yoga ball fell and made a loud slam sound the participant got agitated and made a loud outburst
7/25/2022	Participant was out due to seizure.
7/27/2022	Particiant was back in after having a sezuire earlier this week. He seemed tense and agitated. While gathering necessary workout supplies and dropping a yoga ball participant yelled out at sudden noise and stopped workout for a minute. Someones phone went and they were talking on the phone and it caused the participant to yell and blurt out the whole time she was on the phone. After the call the area we were in was quite and participant was good. At the end of the session we went over to the railing for sit to stands and lateral walking. There was a lot of noise from the lobby and the gym the participant was counting to ten in a screaming tone. I told him we should move over to do sit to stands because it was too loud. He did his sit to stands and stated that we will be doing the last set of lateral steps. As we were leaving in the elevator there was 3 other people in there with us. One of the other participants was coughing and it caused the participant to get over stimulated and he kept blurting words out in a yelling tone. Since lobby was busy we waited outside for his aide to pick him up where it was quite for him.
8/1/2022	Participant was out due to a seizure.
8/3/2022	Particiant was back in after having a seizure at the beginning of the week. I noticed participant had seemed to be agitated apon arrival. While working out he would get distracted at any slight noise or movement around him that was not the participant. I often avoid any loud noises or movements around him because of his sensitivity. I also prefer to check in with staff at least twice a week for any updates on the behavior. Usually Participant is quite and it is hard to make out what he is saying. This time He answered loudly and clearly. As we were moving over to do sit to stands the lobby and the gym were quite loud. He did his sit to stands as usual then we moved on to lateral steps which is a fairly new exercise. As we were moving on to the last set of lateral steps I told him we can start when he is ready. He stated "I don't know" I told him that we will be doing the last set of steps. I then I proceed to him that it was the last set of lateral steps and showed him how to do them and he understood. After the last set was over I helped up wrap up everything and we brought him downstairs. The enviroment was not any louder that it had been in the past. I believe he may have been agitated and overstimulated from outside factors at home prior to arrival.

Methods:

- All workouts were completed in a quite portion of the gym
- Reduce the number of distractions around the participant
- Length and number of instructions to the participant was limited
- Corrective feedback was provided only when the exercise was being completed incorrectly
- Workout regimen was consistent, with changes kept to a minimum..
- Participants' mood was recorded over a 10-week period, documenting what overstimulated the participant and how they react. (See log above)

Exercise	Notes	06/06/2022	06/08/2022	06/13/2022	06/15/2022	6/20/2022
Hip Marches	3 Sets 12 reps	☑	☑	☑	☑	☑
Shoulder Flexion	3 Sets 12 reps 3lb weights	☑	☑	☑	☑	☑
Ankle Circles	3 sets 12 reps no weights	☑	☑	☑	☑	☑
Isometric Squeezes	3 Sets 10 second hold	☑	☑	☑	☑	☑
Shoulder lateral raises	3 sets of 10 reps 3lb weight	☑	☑	☑	☑	☑
Ball Kicks/Punches	3 sets of 12 reps (yoga ball)	☑	☑	☑	☑	☑
Rows	3 sets 10 reps Blue resistance band	☑	☑	☑	☑	☑
Palloff press	3 sets 10 reps Green resistance bands	☑	☑	☑	☑	☑
Med ball rotation	3 sets 10 reps 4lb med ball	☑	☑	☑	☑	☑
Banded hip adduction	3 sets of 10 reps Blue resistance band	☑	☑	☑	☑	☑
Bicep Curls	3 sets 10 reps 10lb weight	☑	☑	☑	☑	☑
Tricep Extension	3 sets 10 reps Yellow resistance band	☑	☑	☑	☑	☑
Sit to Stands	3 sets 10 reps no weight	☑	☑	☑	☑	☑
Wrist flexion	3 sets 10 reps 2lb weight	☑	☑	☑	☑	☑
Med ball toss	3 sets 10 reps 4lb med ball	☑	☑	☑	☑	☑

Exercise	Notes	07/06/2022	07/11/2022	07/13/2022	07/20/2022	7/27/2022
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Shoulder Flexion	3 Sets 12 reps 3lb weights	☑	☑	☑	☑	☑
Ankle Circles	3 sets 12 reps no weights	☑	☑	☑	☑	☑
Shoulder lateral raises	3 sets of 12 reps 3lb weight	☑	☑	☑	☑	☑
Ball Kicks/Punches	3 sets of 12 reps (yoga ball)	☑	☑	☑	☑	☑
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Tricep Extension	3 sets 12 reps Yellow resistance band	☑	☑	☑	☑	☑
Sit to Stands	3 sets 12 reps no weight	☑	☑	☑	☑	☑
Lateral steps	3 sets 10 steps no weight	☑	☑	☑	☑	☑
Med ball toss	3 sets 10 reps 4lb med ball	☑	☑	☑	☑	☑

Results

- After 10 weeks of working closely with this participant, I was able to identify the participants triggers and help him avoid them when possible. Great improvement was made in learning to create an environment that makes the participant feel comfortable to complete their workouts.
- The participants main triggers consisted of loud sudden noises, large groups of people, and being over cued/ over instructed.
- As the sessions went on the participants outbursts and overstimulation were kept to a minimum. The only aspect that was not able to be managed was the actions of other individuals in the gym who unintentionally did certain things that triggered the participant.
- While the actions of other individuals in the gym were outside of our control, once triggers were identified we were able to decrease triggers and overstimulation so they could participate better during their workout

Conclusion

- In the beginning, with limited history from prior assessments, it was challenging to know what triggered the participant.
- Working one on one with the participant in a quite setting allowed me over time to learn what triggered the participant to be overstimulated. Understanding the triggers made it easier to create an atmosphere where the participant could workout and be comfortable with minimal triggers and overstimulation.

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References

- Agarwal, N. (2020, February 3). Traumatic brain injury. Retrieved August 4, 2022, from https://www.aans.org/Patients/Neurosurgical-Conditions-and-Treatments/Traumatic-Brain-Injury
- Constant Therapy. (2022, January 20). For survivors of stroke or TBI: Strategies for reducing sensory overload in social settings. Retrieved August 4, 2022, from https://constanttherapyhealth.com/brainwire/18-tips-for-survivors-strategies-for-reducing-sensory-overload-in-social-settings/
- Maher, C. (2021, October 28). Overstimulation after brain injury: Managing sensory overload. Flint Rehab. Retrieved August 3, 2022, from https://www.flintrehab.com/brain-injury-sensory-overload/
- Supportive Living Inc. (n.d.). Neuro-Wellness – Supportive Living Inc. Retrieved August 4, 2022, from https://www.supportivelivinginc.org/live-well1/
- Texas Health and Human Services. (n.d.). Acquired brain injury. Retrieved August 4, 2022, from https://www.hhs.texas.gov/services/disability/office-acquired-brain-injury

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