



The **HANDLE**® Approach
The Listening Program®
IRLEN Syndrome Screenings
DIRFloortime®

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Pilot Project in a Rural School in Nova Scotia, Canada

Carried out from November 2012 until end of May 2012

This project aims to monitor the effectiveness of HANDLE activities for individuals profoundly affected by autism (or a similar disorder) in a school system.

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General Information

-The project was carried out within the grade levels ESP 13-20 in a rural school in Nova Scotia.

- Five students participated. They were identified by their school board as autistic or as having a similar disorder that profoundly affects their daily lives.

-It was planned to carry out this project over a time period of 7 months. Due to several factors, there was a delay in startup time for 4 of the 5 students. The length of time in which the program was implemented also varies from student to student. See more information in individual write-ups.

-Prior to activity implementation, the HANDLE Practitioner visited the school several times to observe and interact with the students and collect information from the school team.

-A HANDLE activity package was designed for each student to support individual needs in the best possible way. See more information in individual write-ups.

-Some teachers working in this Learning Centre had some knowledge of HANDLE.
The Autism Consultant for this school and the Enhanced support Teacher who is in charge of the daily programming for these 5 students, had both taken the HANDLE Level 1 Introductory & Level 2 Basics courses (see www.handle.org for descriptions).
The Educational Assistant of student 3 had taken a HANDLE Level 1 Course.

-The HANDLE activities were usually done in the Yoga Room.

-As HANDLE is a neurodevelopmental approach and neurodevelopmental changes take time and need consistent support, it was advised to do the activities 5 times a week (on every school day). However on certain days of the week the students had “out of school” activities (swimming, outings) and therefore the HANDLE activities were done at an average of 3 times a week.

General Outcome as per the 4 criteria listed in the DSM 5 (=Diagnostic Criteria for Autism)

Communication Skills and Social Interaction:

Although these 5 students are unique individuals they also have some characteristics in common. They are difficult to motivate to do tasks, it can be challenging to interact with them and they all, at times, can present with aggressive behavior.

Right from the beginning of activity implementation all 5 students showed that they enjoyed the activities. All 5 students presented with smoother interaction with staff during their HANDLE activity time. There have been no behavioral issues during their HANDLE activity sessions.

The two students who were on the program longest presented with a significant decrease of aggressive behaviors towards themselves and others during school hours in general (not just during their HANDLE session).

The other three students’ aggressive behavior initially decreased, but later increased again. It is the experience of the school team that for these three kids their behavior issues are usually triggered by non-school related factors (ex: Difficulties at home, preferred teacher was absent for a month, illness). Note that these three students started later with their HANDLE programs and that their neurodevelopmental systems have had less time to regulate body/brain functions.

All 5 students became “active” participants. They showed interest and motivation.

Four out of five students initiated communication by asking for repetitions of certain activities. The activities that those students asked for were mostly related to supporting body awareness and stimulation in the facial area.

The one student who did not ask for repetitions of body awareness activities was more focused on higher interhemispheric functioning. The student was eager to stay concentrated and finish clapping patterns of activities which is unusual for him.

Two out of five students started to use their voices on a regular basis. There is a clear improvement in speed of word finding, the ease with which words are said and clarity. One of these two students has started to use his words in social settings to communicate with others. Both students show with their facial expressions how proud they are when they talk.

Repetitive Behaviors:

The two students who were on the program the longest showed a decrease in repetitive behaviors (ex: less rocking, finger flapping, hand wringing).

Sensory Irregularities:

Three out of five students improved in areas of visual functioning (establishing longer eye contact, less light sensitivity).

One student who was extremely sound sensitive has improved the sound dampening/filtering mechanism and can spend more time without having to wear sound blocking headphones.

One student has a lesser need to sit under his weighted blanket.

Conclusion

The staff members who were taught how to do the HANDLE activities with these students were enthusiastic and engaged with the HANDLE program. They were monitored for proper implementation and were careful to perform the activities as instructed. They embraced and practiced the HANDLE philosophy of Gentle Enhancement, non-judgment, acceptance and flexibility. They reported improvements in the students and attributed them to the HANDLE program.

Although the level of improvement is different for each student and clearly dependent on the length of program implementation, progress was made in all 4 criteria listed in the DSM 5 (Diagnostic Criteria for Autism). Communication skills and Social Interaction skills were clearly improved during HANDLE sessions and some Repetitive Behaviors and Sensory Irregularities were reduced.

All five students showed through facial/body expressions that they enjoyed their HANDLE time. They were self-motivated and presented with initiative to do the activities and interact with their Educational Assistants. All 5 students presented with smoother

communication and interaction with their helpers and none of them had moments of aggressive behavior during their HANDLE sessions. Some students have started to use their voices on a daily basis, some can make better eye contact, some have reduced their repetitive behaviors and some reduced light sensitivity. Some can make longer eye contact and one student can now write his name. These data reflect improved functioning of neurodevelopmental systems such as vision, binocularity, vestibular, proprioception and interhemispheric integration and are contributing to the growing positive stimulus-response behaviors that have been observed in the students.

More specific progress for each individual student can be found in the case study write-ups at the end of this document.

In addition some of the students generalized their improvements throughout their school day. As the students were calm/relaxed and pleasantly interactive with staff during their HANDLE session, staff reported HANDLE time as an enjoyable moment of the day, a moment where the students were open to “connect” with their helpers.

Due to the relaxed enjoyable mode which the students presented with during their HANDLE sessions, they became more “available” for learning. From a HANDLE point of view, when individuals are profoundly affected by autism they attend to their own needs first which is for many of them “body-irregularities” (ex. not feeling their body, pain, confusion, anxiety...) HANDLE activity programs always start with addressing these primary needs first which is likely why all 5 students were, from the very first session, so open-minded and enthusiastic for this approach. The more primary neurodevelopmental systems become more organized and the students show readiness, the HANDLE program can be adapted towards higher levels of learning. If the HANDLE program were to be continued, school related educational elements could be built into the HANDLE sessions.

As HANDLE is a neurodevelopmental program and working with neural connections takes time, it reflects in the fact that the two students who were on the program the longest presented with the most progress.(See more on progress in the individual write-ups at the end of this document)

The enjoyment and relaxed state of the students when doing HANDLE activities, the improvements that can be seen, the smooth/gentle interaction between students and staff, and the ease with which HANDLE activities can be implemented within a school routine, all lead to the conclusion that HANDLE activities can be effective for individuals profoundly affected by autism within a school system.

As the HANDLE Practitioner and developer of this program I was pleased with the outcomes and surprised by how the students embraced and looked forward to their HANDLE sessions. The staff was enthusiastic and their cooperation was appreciated. It was a pleasure to work with the students and to observe their progress first hand.

Student 1

Student 1 is a male who has been diagnosed with Autism and is currently 19 years old. The student is also a private client of the HANDLE Practitioner who is leading this trial project. Therefore the student has had a full HANDLE Assessment and had started his HANDLE activity program at home in September 2012 which is 4 months earlier than the other 4 participating students.

Not all assessment data are revealed in this write-up.

Health:

The student has an ear infection at least once a year, is overweight and has occasional issues with constipation. He used to take Pegg3350 to help with constipation but this resulted in side effects such as tics to the neck, eyes, mouth and gagging. When medication was stopped, these side effects remained, especially during times when the student was stressed. He takes vit B12, digestive enzymes, calcium & magnesium, fish oil and melatonin. He is allergic to eggs, gluten and casein.

The student expressed that he had lots of pain in his belly and it was reported by his caretaker that this is a common trigger for behavior issues. It usually coincides with headaches.

Some gathered assessment data (such as repeated intake of antibiotics, pain in the belly, redness of skin on forearms, itchy bottom, scratching in the groin) pointed to the possibility of a yeast infection. Therefore the HANDLE Practitioner advised testing for yeast. This resulted in confirmation of Leaky Gut and the student is now treated for this issue by a naturopathic doctor.

Towards the end of the school year student had a bacterial infection affecting his tonsils. He was hospitalized with intense breathing issues. A breathing tube had to be inserted and his tonsils were removed at a later date.

Developmental functioning at starting date of pilot project:

The student is considered as non-verbal but can make a few sounds and words when prompted to do so. Articulation seems very difficult and the sounds he makes are hard to understand. He expressed during the assessment that he would like to become better at talking. The student can make a hand sign for "yes" and uses an iPad for communicating. He can become aggressive when he smells food and cannot access it

right away. This causes behavior issues when eating out in a restaurant, school cafeteria and at home when meals are prepared.

He presents with a range of perplexing behaviors such as making high pitched loud sounds, rocking back and forth, the need to check out all light switches when he goes to a new place and powerful finger flapping on his forehead which makes wounds.

The student also presents with sensory irregularities. He is extremely sound sensitive and therefore wears headphones that block environmental sounds. He is extremely sensitive to light and this causes quite a problem at school where he regularly needs to walk through a hallway which is painted bright yellow, the floors are shiny polished and where lights are on at all times. When the student needs to walk through this space he presents with anxiety and resistance, needs to hold on to the educational assistant, sometimes freezes while walking and holds onto the wall. On a tactile level, he has difficulties with wearing hats and sunglasses, does not feel food on his face and the daily task of shaving is very hard. His primary focus goes out to his own needs therefore social awareness and interaction is very limited (ex. When going into an elevator he will steam forwards, no matter how many people first need to come out).

He makes short eye contact and concentration time for doing school-related learning tasks is limited. When student feels uncomfortable, not in control or becomes agitated, he can present with aggressive behavior. This can be “charging towards someone, pounding the table or wall, hitting, biting” and this usually comes with loud vocalizations. Therefore at school he has a separate room and is supervised/guided by two educational assistants at all times.

HANDLE activity program

Note that the student is also a private client of the HANDLE Practitioner. Therefore his activity program is more involved. Some activities are done at home and some are done at school.

Crazy Straw: To enhance visual functions, some auditory functions, interhemispheric functions, and muscle tone in the facial area.

This can help this particular student with chewing food, making eye contact, regulating unexpected sounds, bladder control at night, facial expressions and speech.

Blowing: Is given to balance the sucking activity. As the Crazy Straw practices convergence of the eyes, blowing practices divergence. Sucking and blowing also practice breath control.

Buzz Snap: To enhance muscle tone and proprioception in fingers. This activity can help this particular student with enhancing his fine motor skills. The tactile information provided to the sensory-motor cortex by doing this activity can support certain areas in the brain for speech.

Ball Back Roll and Side-to-side Tips: For these activities variations were offered. The tipping back and forth was only done with the head (not with the full body). These activities support vestibular functioning which is foundational for many other systems to function at optimal potential.

Hug and Tug: To enhance proprioception and muscle tone in the fingers. The rhythmic organized movement and tactile and auditory information provided to the sensory-motor cortex by doing this activity can also stimulate certain areas in the brain for speech.

Suspended Ball (with back and forth and side-to-side movements of the ball): The back and forth movement of the ball is particularly supportive for changing the visual focus from far to near and focus forwards instead of using peripheral vision.

Tapping the ball as it moves side-to-side encourages midline crossing and establishing rhythm which is supportive for interhemispheric integration.

Additionally this activity supports the development of eye-hand coordination.

Jiggle Bridge: The fast vibrations and deep touch component of this activity can compensate for the student's strong need to finger flip on his forehead. It can also support visual functions and increase awareness in the facial area including the inside of his mouth (for speech). This activity can also help to release tics in the facial area and neck.

Joint Tapping: To enhance proprioception (body awareness) and develop balanced muscle tone.

Back Thumping: To create awareness in the upper body to assist the body's knowledge of the vibration of sound which is needed for speech.

Face Tapping: To awaken, integrate and relax the trigeminal nerve which is one of the cranial nerves.

This can help this particular student to alleviate headaches, help with tactile irregularities, speech, finger flapping on forehead and relief of facial tics.

Flashlight Tag: To enhance the ability to sustain a visual focal point and to support ocular motility.

Eat Your Words (variation): To develop kinesthetic memory for specific sounds and practice the change of position of mouth and tongue when producing two different sounds/syllables after one another (which is foundational for speaking with ease).

Additionally some non-HANDLE activities were given which have some components in them that enhance neurodevelopmental systems.

Speed Ball: To enhance synchronized functioning of left and right hemisphere for interhemispheric integration. This activity also practices ocular-vestibular connections and anticipation due the ball traveling with some speed towards the activity participants. The rhythmic movement of the arms can also support breathing patterns, thus supporting self-regulation and speech.

Tongue movements while looking in mirror: To enhance awareness of what goes on inside his mouth when sounds are produced.

Staff is encouraged to provide the student with mental rehearsal opportunities wherever possible as part of learning comes from observation.

The HANDLE Practitioner noticed that the student was not just light sensitive but also seemed to behave differently depending on the colours present in his environment. Yellow seemed to be a very difficult colour that at times triggered stressed behaviour. When doing tasks on paper his work was clearly at a higher level when he worked on blue paper. After some more observations it was clear that the color blue had a positive

effect on the student's functioning. Therefore it was recommended to do school tasks on blue paper and to try out sunglasses with blue colored lenses.

HANDLE activity program outcome

Right from the start when the HANDLE program was introduced the student enjoyed the HANDLE activities. This could be seen in happy facial expressions, hand signing, body language and the request for repeating some of the activities.

The first implementation of activities was done in a private clinic setting. During the full 2 ½ hours the student was attentive, followed all conversations and loved the interaction, which is quite unusual for him.

During several moments within the presentation of his neurodevelopmental profile he confirmed several of the findings. The confirmation was done by the student using hand signs, smiling and making eye contact in combination with nodding. He showed that he understood why the activities were given.

From quite early after activity implementation, the student's need to "finger flip" on his forehead decreased. The flipping became less intense, thus producing fewer deep scabs. Also his rocking became less intense.

At home "shaving" has become a do-able task and the student can now also tolerate sunglasses. These data point to improved functioning of the tactile system. As the student can now wear sunglasses (with blue lenses), his perplexing behaviors and anxiety levels related to light intake have decreased.

His ability to stay on task and concentrate has improved as well as the duration of making eye contact. He enjoys and can now trace letters with great accuracy, write his name without tracing over letters and is proud of his work. When writing his name he will self-correct his work when needed by the use of an eraser. This points to progress in eye functioning, finger awareness, spatial awareness and eye-hand coordination. Do note that recommendations were followed and that the student's work was presented on blue paper.

The learning center teacher reported that the student's fine motor abilities have improved. The following activities at school are done with more ease: handling coins on outings when purchasing items, using scissors and cutting with more precision, painting/art activities, manipulating materials during work time, participating in cooking activities - cutting food.

Staff reported that during an end of the year outing to the zoo the student presented with interest in the animals for a long period of time and bought some food and fed the animals. During earlier zoo outings the student never presented with this level of interest, interaction and caring attitude.

The student showed a particular interest and motivation in HANDLE activities that were supportive for speech. He can now, in a "natural looking way", use some words in a

social setting such as “hi” and “bye” and he can do this in combination with making eye contact. His words are clearer and easier to understand. The number of words that he can say has increased. New words are: toast, hello, buzz, movie, I want more. When he talks, his facial expressions show how proud he is of his ability to speak.

The student has increased his spatial awareness and feeling of safety, security and comfort which can be seen in his more relaxed way when he moves around (ex in the yellow corridor which previously was problematic).

His focus is not just on his own needs any longer. He is aware of other people in his space and adjusts his actions towards them. When walking around the school hallways he stops to allow “people traffic” to flow and he can now wait to enter the elevator to allow people to come out first. He can also anticipate where other people are in his space will move and takes pride in taking initiative to open doors for others.

At home he has taken initiative to help his caretaker with doing the dishes which had never happened before. This is another indicator that, at times, he is becoming less focused on himself and that he is making progress in integrated functioning of multiple neurodevelopmental systems.

In the past the student would be distressed and become vocal when an unknown visitor would enter his work room at school. Recently when there were visitors, the student stayed calm and politely expressed his need for those people to leave by pointing to the door.

When going to a restaurant the student can now wait for his food without becoming agitated or aggressive. If the desired food is unavailable he is ok and stays calm.

The small tics to the face and neck that the student presented with when he was distressed are not appearing anymore.

Despite the discomfort from his tonsils (see more info under Health section) he still tried his best to do the HANDLE activities. The student’s educational assistant and caretaker at home report that he requests the activities and has an understanding of how some of the activities help him with his body awareness.

Behavior tracking done by the school team shows a consistent decrease of aggressive behavior directed to others and himself. Behavioral tracking data (during the last month of the pilot project) shows “zero” incidents.

Conclusion

Student 1 has become a much calmer person, he can control his impulsivities better and his aggressive behavior toward himself and others has decreased. He feels more comfortable in his environment and during interactions with people. He has improved eye contact, tactile functioning, speech, communication, attention, fine motor skills and

reasoning. Small tics to face and neck when stressed are not appearing anymore and some repetitive behaviors have decreased. He has learnt to write his name. He is a happier student and is often pleased with his new accomplishments.

Student 2

Student 2 is a female who has been diagnosed with RETT Syndrome and is currently 19 years old. The student has been doing a HANDLE activity program for 4 1/2 months.

Health:

This student takes iron supplements, contraceptives and Melatonin for sleep. She needs a laxative for problems with constipation.

As this project did not include a full assessment it needs to be noted that internal environmental factors are not considered.

Developmental functioning at starting date of pilot project:

The student needs to wring and squeeze hands constantly (which are typical for RETT Syndrome). Sometimes the wringing changes into rubbing and tapping motions. She tends to be stiff in the shoulders and neck and turns her full body when only neck movements are necessary. She walks with feet wide spread and the coordination between upper body and lower body is immature. In general she avoids movement and frequently bumps into objects and people. She frequently rubs her eyes. When eating she overfills her mouth and hardly chews her food.

The student is non-verbal but can make a few sounds and words when prompted to do so. She grinds teeth at night. She wears pull-ups (day and night). The student does not make eye contact. She presents with sensory irregularities such as the need to take clothes off when she is upset, not feeling food/drool on face, issues with brushing teeth and can be startled by unexpected sounds. Interaction with peers and staff is limited.

HANDLE activity program

Crazy Straw: To enhance visual functions, some auditory functions, interhemispheric functions and muscle tone in the facial area.

This can help this particular student with chewing food, making eye contact, regulating unexpected sounds, bowel and bladder control, facial expressions, chewing and speech.

Blowing: Is given to balance the sucking activity. As the Crazy Straw practices convergence of the eyes, blowing practices divergence. Sucking and blowing also practice breath control.

Buzz Snap: To enhance muscle tone and proprioception in fingers and to provide relief from constant tension (which goes all the way to the neck and shoulder area) caused by the intense need to wring fingers/hands.

This activity can help this particular student with fine motor movement in the hands thus opening up new opportunities related to skills development and overall learning.

Ball Back Roll and Side-to-Side Tips: For these activities variations were offered. The tipping back and forth were only done with the head (not with the full body). These activities support vestibular functioning which is foundational for many other systems to function at optimal potential.

Hug and Tug: To enhance proprioception and muscle tone in the fingers. Can also be used for stress relief in the fingers and can enhance fine motor movements. The rhythmic organized movement and tactile and auditory information provided to the sensory-motor cortex by doing this activity can also stimulate certain areas in the brain for speech.

Accentuation Stomp: To enhance the functioning of the left hemisphere for speech (word finding).

Suspended Ball ("Suspended Bear"): To enhance interhemispheric integration and the visual functions of tracking, changing from near to far vision and focus forwards instead of using peripheral vision. Additionally this activity supports the development of eye-hand coordination.

Two nursery rhymes were given that have several components that stimulate some neurodevelopmental systems as well as the integration of some hand-related reflexes.

Wind the Bobbin Up: For interhemispheric integration by bringing hands to midline and doing synchronized movements. The "opening of the arms movement" can help with stiffness of the student's shoulder area.

Open Shut Them: To support voluntary opening of the hands.

HANDLE activity program outcome

Right from the start of the HANDLE activities it was observed that the student enjoyed this program. This could be seen in "happy facial expressions and the student using body language to ask for repetition of activities.

There has been a clear improvement in the way the student uses her hands/fingers. Her strong need to clench hands and wring fingers has decreased. After doing Buzz Snap the student could, for the first time, pick up coins and put them in her wallet. It is observed that since implementing the HANDLE activities the student's hands are frequently held in a relaxed way. When walking she often held her hands in front of her body at midline to clench her fingers. Now she has hands more frequently open and next to her body, without tension, which frees her arms to move in a cross-patterned natural way. In the past when the student was prompted to wipe her mouth she would wipe her entire face. The fact that she can now accurately wipe her mouth suggests improvement in body awareness (Her more relaxed use of fingers is also supportive of this action).

When having a meal the student can now take time in between bites, overfills her mouth less and takes time to chew food.

Reports that student 2 has increased eye contact and is bumping into people and objects less suggest that there are positive changes in binocular functions and increased spatial awareness.

Since being on the HANDLE program student 2 has verbalized on a frequent basis. During the HANDLE activities that support speech, the student takes her own initiative and articulates with ease the end words of sentences and rhymes. The speed with which she can find her words has improved. Her facial expressions show that she is proud when she says those words.

Through the daily activity routine and clapping patterns of some activities, the student has gained understanding of “order” and “organization”. She learned to predict activity routines and act upon them. By her own motivation, she intentionally finishes movements and clapping patterns. She has also developed a feeling for rhythm.

The student was showing an increased level of interhemispheric functioning during an end of the year “cookbook” activity. The Learning Centre teacher observed a significant difference in how she did this activity compared to earlier in the year. The cookbook activity was done with improved ease, independent intentional actions, less prompting, better hand functions and coordination and with understanding of the several steps to complete this activity.

When looking at all daily routines and learning activities it has been noted that the student presents with smoother interaction with staff during the HANDLE activity time. In addition to improved functioning in some areas of sensory-motor systems, there has been a positive change in the stimulus-response mechanism: The student presents with self-motivation during HANDLE activity time and initiates the activities herself, hence developing the first building blocks for enjoyable voluntary communication.

Conclusion

Student 2 has experienced improvements in attention, processing, communication, relaxed social interactions, feeling for rhythm, self-starting, making eye contact, predicting routines and acting upon them, chewing food and wiping her mouth. She decreased her repetitive behavior of finger/hand wringing which lead to improvements in hand functions. She progressed using her voice on a regular basis with clear articulation and improved speed of word finding. Overall student 2 improved her understanding of what she is doing and acts with more ease. These data reflect improved functioning of neurodevelopmental systems such as vision, proprioception, tactility, oral-motor and interhemispheric integration and are contributing to the growing positive stimulus-response behavior that has been observed in the student.

Student 3

Student 3 is a male who has been diagnosed with CHARGE Syndrome and is currently 15 years and 5 months old. The student has been doing a HANDLE activity program for 3 1/2 months.

Health

This student takes vitamin D supplements and sleeping pills.

He is visually impaired and wears transition glasses. He wears a hearing aid and has only 10 % hearing in the left ear, no hearing in the right ear. He eats pureed food and at home is often (but not always) fed by a feeding tube. He has difficulties with bowel movements and kidney functioning.

As this project did not include a full assessment it needs to be noted that internal environmental factors are not considered.

Developmental functioning at starting date of pilot project

The student is non-verbal but he frequently uses his voice by making loud vocalizations. He has poor balance and has some structural irregularities which result in walking with a limp. He has a strong need to flap his hands in front of him at eye level. He presents with irregularities in sensory functioning such as sensitivity to loud and unexpected sounds, high pain tolerance, insensitivity to smells, not feeling food on face, not making eye contact and more. He can alternate movements with left and right body parts but on a higher interhemispheric level has difficulties to use left and right body parts in a synchronized way (i.e. bringing both hands synchronized to the front of the body at midline).

In general it is hard to motivate the student to do educational and daily life-related tasks during his school day. He has difficulty to interact with others and often this results in pulling hair or grabbing people. He expresses resistance with loud vocalizations. Interaction with peers and staff is limited.

HANDLE activity program

Crazy Straw: To enhance visual functions, some auditory functions, interhemispheric functions, and muscle tone in the facial area.

This can help this particular student with making eye contact, regulating unexpected sounds, bowel control, facial expressions, speech and swallowing food.

Blowing: Is given to balance the sucking activity. As the Crazy Straw practices convergence of the eyes, blowing practices divergence. Sucking and blowing also practice breath control.

Ball Back Roll and Side-to-Side tips: For these activities variations were offered. The tipping back and forth were only done with the head (not with the full body). These activities support vestibular functioning, including balance, which is foundational for many other systems to function at optimal potential.

Accentuation Stomp: To enhance interhemispheric integration, support the development of “organization” and getting used to “change of routines” through the use of a rhythmic tapping pattern. This activity also supports left hemisphere functioning for speech.

Face Tapping: Is given for integration of tactile sensations, to support speech, vision, and hearing and to increase facial muscle tone.

Suspended Ball (“Suspended Bear”): To enhance interhemispheric integration and the visual functions of tracking, changing from near to far vision and focus forwards instead of using peripheral vision. Additionally this activity supports the development of eye-hand coordination and bringing the hands to the midline, helping with centering.

Peacemaker Massage: To relax, enhance body awareness and to provide a feeling of “centering”. This activity was tried out and well perceived but not yet implemented.

HANDLE activity program outcome

The student enjoys his HANDLE activity time in the yoga room and during this time behavioral issues are not present. There is a smooth interaction with staff during implementation of activities.

The student’s behavioral incidents towards others had decreased during the first month of implementation of the HANDLE activities. It has been noticed by the school team (through behavioral tracking) that the student’s incidents of aggressive behavior towards others coincides with non-school environment related factors. When non-school related problems developed, incidents increased again. However during his HANDLE sessions he always presented with enjoyable interaction and communication with the Educational Assistant. No behavioral incidents occurred during HANDLE activity time.

The most significant change in functioning is that the student is an “active participant” during his HANDLE activity time. He shows interest and is self-motivated to do the activities. This can be seen in his hard work to finish the tapping /movement patterns of activities independently and without getting frustrated.

The student has learnt how to blow which can further help him to enhance body regulation (calming down) and airflow for speech.

The student gained skills development on an interhemispheric level. He can now synchronize movements of both arms. He has learnt to catch and throw a ball in a fluent natural way.

The skills development of catching and throwing a ball and the fact that the student can focus “forwards” instead of using peripheral vision all the time, suggests improved binocularity and interhemispheric integration for motor actions, thus providing a stepping stone for developing eye-hand coordination.

Conclusion

Although student 3 was only on a HANDLE program for 3 ½ months, the biggest progress is that he is “willing to participate”. He was motivated and took initiative to start the HANDLE activities. He interacted with staff without any behavioral issues arising. His enjoyable attitude, motivation, self-starting during his HANDLE sessions point to a positive stimulus-response mechanism.

He showed a particular interest in activities which included processing of rhythmic patterns and was motivated and concentrated when executing these rhythmic movement patterns on his own. He is now able to focus forwards instead of peripherally and has learned to throw and catch a ball. These data reflect improved functioning of the visual system, ocular-vestibular connections, proprioception and interhemispheric integration.

Student 4

Student 4 is a male who has been diagnosed with Crying Cat Syndrome and is currently 18 years old. Due to medical and behavioral circumstances the student started late in the school year with the HANDLE activity program. At the time of this write up, the student has been on a HANDLE activity program for 2 1/2 months. During this time he has been absent for an extended period (3 to 4 weeks) due to illness.

Health

This student has a history of intense seizure activity and is medicated for this. Seizures vary in type, length and intensity. He has also been sick during the pilot project implementation time.

As this project did not include a full assessment it needs to be noted that internal environmental factors and nutrition are not considered.

Developmental functioning at starting date of pilot project

The student is non-verbal but can make some sounds and hand signs to express himself. He also uses facial expressions to communicate. He presents with low muscle tone, balance problems, tactile irregularities, sensitivities to sound and uses his sense of smell in a hyper-alert way. He regularly bumps into objects in his path. When grasping an object he uses an immature four-finger grasp.

He has a curious personality but his mood can change from one second to another when things are not going his way. At times he obsessively shouts out words with loud voice and presents with intense behavioral issues. These behaviors can be head banging, head butting, hitting, pulling, pushing, kicking and are at times quite aggressive. The student's behavior is closely tracked by staff and data are filed for monitoring. During the month prior to the HANDLE activity program implementation, 35 aggressive incidents were noted.

HANDLE activity program

Crazy Straw: To enhance visual functions, sound sensitivity, interhemispheric functions, and muscle tone in the facial area.

This can help this particular student with chewing food, regulating unexpected sounds, bowel and bladder control and speech.

Note: This activity was only sporadically done.

Blowing: Is given to balance the sucking activity. As the Crazy Straw practices convergence of the eyes, blowing practices divergence. Sucking and blowing also practice breath control.

Ball Back Roll and Side-to-Side Tips: These activities support vestibular functioning which is foundational for many other systems to function at optimal potential. Due to the student's low muscle tone variations were offered. Instead of full body tipping it was advised to only do these movements with the head.

Note: Just as the program was about to start the student presented with a new type of seizure called "head drop" seizures. He had as many as 50 per day. Therefore it was decided to not implement the vestibular activities as they would involve neck movements.

Kneading Hands: This activity supports the lymph flow thus helps the body with detoxification. This may be beneficial for this particular student as his body needs to deal with constant intake of seizure medication.

Face Tapping: Is given for integration of tactile sensations, to support speech, vision and hearing and to increase facial muscle tone.

Note: During first implementation days the student expressed that he wanted this activity done in a fast way.

Suspended Ball ("Suspended Bear" and "Swinging Dog"): These activities support binocular functions. The rhythmic synchronized movements and rhythmic alternating movements of the arms support interhemispheric integration, including eye-hand coordination.

Hug and Tug: To enhance proprioception and muscle tone in the fingers. The rhythmic organized movement and tactile and auditory information provided to the sensory-motor cortex by doing this activity can also stimulate certain areas in the brain for speech.

Rope Turning (Hand Squeezes variation): This activity offers rhythmic organized input to the sensory motor cortex which can help the brain to organize itself during seizure activity. The counting part of the activity is done in a "four" count.

HANDLE activity program outcome

From the beginning of implementation of the HANDLE activities it was observed that the student enjoyed this program. This could be seen in his active participation and facial expressions. As soon as he was familiar with the activities he asked for them by using hand signs. After activities are done, he asks for "more". This is particularly the case for the activities named Rope Turning (Hand Squeezes variation) and Kneading Hands.

Staff reported that when they were doing "Hand Squeezes" in the first half of the program, for the first time in school, the student "counted". The counting was done by vocalizing a different tone of voice for each number.

The student is intrigued by the HANDLE activities. It is noted that, compared to other daily tasks, he presents during his HANDLE time with self-motivation and takes initiative. He is calm and relaxed and open to connect and interact with staff with full enjoyment, thus developing first building blocks for voluntary communication.

There have been no incidents of aggression in the yoga room, which is where HANDLE activities are done. Data in the graph of behavioral tracking show that aggressive incidents went down from 35 per month to 20 or lower during April and the May. Then the student became ill and was absent for an extensive period of time. When he came back to school the aggressive incidents increased.

Staff has reported that the student's HANDLE activity time is the only time during the day that he makes requests in an appropriate manner.

The student has a lot of seizure activity. Staff reported that sometimes the seizures were reduced in duration when doing hand squeezes, though this was not consistent. A longer trial period would have been needed to see if the Hand Squeezes would have a consistent effect on the student's seizure activity. The rhythmic organized brain stimulation of this activity is known by HANDLE Practitioners to help the brain to organize itself during its unorganized functioning of seizures. Interestingly this is one of the activities for which the student requests repetitions.

Conclusion

During the 2 ½ months (including some weeks of absence) that the student was doing the HANDLE activity program he developed a consistent positive stimulus-response pattern during his HANDLE sessions. He was self-motivated (which is unusual) and self-started interactions with staff. He always made requests in a gentle appropriate manner during his HANDLE time.

Student 5

Student 5 is a male who has been diagnosed with autism and is currently 16-years-old. Due to a delay in obtaining parental consent the student started his HANDLE program only at the end of March. At the time of write up, the student had been doing a very limited HANDLE activity program for 2 ½ months.

Health

The student is allergic to cats. He takes a multivitamin. The student has no right kidney.

As this project did not include a full assessment it needs to be noted that internal environmental factors are not considered.

Developmental functioning at starting date of pilot project

Student 5 is extremely sensitive to "any" type of change. He needs his environment, his teachers and his routines in place as he knows them. Changes or new things can be very upsetting to him and result in aggressive behavior. He resists anything that is new. Interaction with peers and staff is limited. The student is non-verbal, presents with flat facial expressions, wears pull-ups and presents with irregularities in sensory-motor systems such as difficulties with loud and unexpected sounds, not feeling food on face,

rocking and more. He sometimes holds his hands in an unnatural way. He has a strong need to sit under a weighted blanket. He regularly squints his eyes and often (but not all the time) looks like his eyes are closed. He leaves them just open enough to be able to peek out of the bottom. He wears a cap with a visor to go outside, uses his peripheral vision and he does not make eye contact.

HANDLE activity program

Note that due to the student's extreme difficulties with new things, activities had to be introduced very slowly. Therefore his HANDLE activity package is quite limited. Providing him with a more intense HANDLE program would require longer trial time which we did not have.

Ball Back Roll and Side-to-Side Tips: For these activities variations were offered. The tipping back and forth was only done with the head (not with the full body). These activities support vestibular functioning which is foundational for many other systems to function at optimal potential.

Hug and Tug: To enhance proprioception and muscle tone in the fingers. The rhythmic organized movement and tactile and auditory information provided to the sensory-motor cortex, (no comma here) by doing this activity can stimulate certain areas in the brain and support these within their functioning.

Buzz Snap: To enhance muscle tone and proprioception in fingers. The name of this activity is *Buzz Snap only*

It can help this particular student with holding his hands in a more natural way. It can also help with grounding.

Jiggle Bridge: The fast vibrations and deep touch component in the areas of the trigeminal nerve can support visual functions and increase awareness in the facial area. Increased awareness in the face can help the student to become less flat with his facial expressions.

More activities were given to the student but not yet implemented.

HANDLE activity program outcome

Note that the student had a very limited activity program and the program was only carried out for 2 ½ months.

In general, typical for the student is to resist anything "new". The activities were first introduced by the HANDLE Practitioner by use of mental rehearsal and when they were then done with the student, he presented as open-minded to the program. He immediately requested repetitions. Not only was it quite unusual for the student to participate so easily in something "new" but he also allowed an unfamiliar person (HANDLE Practitioner) to touch and interact with him.

In the beginning of the program the student at times had his eyes barely open and looked/peeked mostly out of the bottom of his eyes. At the end of the program the student spent more of his day with his eyes open.

Behavioral tracking by the school team showed that the student's aggressive behavior initially decreased in the first month of program implementation. During the second month the student's highly preferred school/staff member was absent and this coincided with increased aggressive behavior. The student did not present with aggressive behavior during his HANDLE sessions.

The student's need to sit under his weighted blanket decreased. This points to an increased safety/ security/ comfort level. A weighted blanket can provide people on the spectrum a feeling of grounding and can also provide them with better body awareness. As the vestibular system senses the pull of gravity, a lesser need to use the blanket for grounding indicates improved vestibular functioning. A lesser need to use the blanket for supporting body awareness indicates improvement in proprioception. The activities "Ball Back Roll and Side-to-Side Tips" support vestibular functions. "Buzz Snap" is an activity that helps grounding.

When looking at all daily routines and learning activities it has been noted that the student presents with smoother interaction with staff during the HANDLE activity time.

The student initiates interaction with staff by asking for repetitions of activities. This can be a crucial building block to further develop a positive stimulus-response behavior.

Conclusion

Although student 5 has only been on a very limited HANDLE program for 2 1/2 months, he has improved proprioceptive functions and his eyes are more frequently open. Within daily routines the HANDLE activity time was the time when the student interacted more smoothly with staff and without aggression. The student progressed to self-starting communication and interaction with staff by asking for repetitions of activities.