PROPRIOCEPÇÃO E CINESTESIA MOTORA: GANHOS REAIS COM O INTENSIVO DE FONOAUDIOLOGIA NO THERASUIT

PROPRIOCEPTION AND MOTOR KINESTHESIA: REAL GAINS WITH THE INTENSIVE SPEECH THERAPY AT THERASUIT

PROPIOCEPCIÓN Y CINESTESIA MOTORA: BENEFICIOS REALES CON EL CURSO INTENSIVO DE TERAPIA DEL LOGOPEDIA EN THERASUIT

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RESUMO

O presente artigo trata de questões específicas de propriocepção e cinestesia motora, habilidades importantes no tratamento fonoaudiológico de crianças com problemas na comunicação em decorrência de significativos distúrbios globais neuropsicomotor do desenvolvimento a partir do programa Intensivo de Fonoaudiologia no Therasuit (IFT). O objetivo da pesquisa é buscar indícios de que o IFT apresenta resultados expressivos quanto aos índices de ganho na propriocepção e cinestesia motora em crianças submetidas ao tratamento fonoaudiológico especializado. Em continuidade ao artigo publicado na revista científica intitulado “Fonoaudiologia no método therasuit: Inovações e contribuições na reabilitação infantil”, mostraremos no presente artigo resultados quanto aos aspectos proprioceptivos e sinestésicos da fala num grupo de pacientes em atendimento fonoaudiológico. A metodologia realizada foi estudo de caso do tipo longitudinal de um grupo de 12 crianças acompanhadas há mais de 3 anos, onde durante 2 anos com utilização do protocolo IFT. Após análise dos resultados concluímos que os ganhos do método IFT na fonoaudiologia é relevante quando comparado ao mesmo período em um grupo controle e sugerimos indicar terapia para casos diversos de distúrbio de fala e linguagem, em razão da melhora clínica global do paciente.

Palavras-chave: Fonoaudiologia. Therasuit. Propriocepção. Sinergia motora.

ABSTRACT

This article deals with important issues in the speech therapy treatment of children with communication problems due to significant global neuropsychomotor developmental disorders using the Intensive Speech Therapy at Therasuit (ISTT) program. The aim of the research is to find evidence that ISTT shows significant results in terms of gains in proprioception and kinesthesia in children undergoing specialized speech therapy. In

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continuity with the ISTT program carried out and published in a scientific journal "SLP in the therasuit method: Innovations and contributions to children's rehabilitation", we will show results in terms of the proprioceptive and synesthetic aspects of speech in a group of patients undergoing speech therapy. The scientific methodology is a longitudinal case study of a group of twelve children who have been followed up for over three years, one and a half of which using the ISTT protocol. After analyzing the results, we concluded that the gains of the IFT method in speech therapy are relevant when compared to the same period in a control group and we suggest indicating therapy for various cases of speech and language disorders due to the overall clinical improvement.

Keywords: SLP. Therasuit. Proprioception. Kinesthesia.

RESUMEN

Este artículo aborda temas específicos de propiocepción y cinestesia motora, habilidades importantes en el tratamiento logopédico de niños con problemas de comunicación debido a trastornos neuropsicomotores globales significativos, basado en el Programa Intensivo de Logopedia de Therasuit (IFT). El objetivo de la investigación es buscar evidencia de que el IFT presenta resultados significativos en cuanto a las tasas de ganancia en propiocepción y cinestesia motora en niños sometidos a tratamiento logopédico especializado. Como continuación del artículo publicado en la revista científica titulado “Terapia del Habla en el Método Therasuit: Innovaciones y Contribuciones en la Rehabilitación Infantil”, se presentan en este artículo los resultados sobre los aspectos propioceptivos y cinestésicos del habla en un grupo de pacientes sometidos a tratamiento logopédico. La metodología empleada fue un estudio de caso longitudinal de un grupo de 12 niños con seguimiento durante más de 3 años, donde durante 2 años utilizaron el protocolo IFT. Tras analizar los resultados, concluimos que los beneficios del método IFT en logopedia son relevantes en comparación con el mismo período en un grupo control, y sugerimos indicar la terapia para diversos casos de trastornos del habla y del lenguaje, debido a la mejoría clínica general del paciente.

Palabras clave: Logopedia. Therasuit. Propiocepción. Sinergia motora.

INTRODUCTION

This article aims to highlight issues related to the promotion of proprioception and motor kinesthesia from the use of the LFS program in patients with language and speech delay complaints in the speech therapy clinic. To achieve the proposed objective, we resorted to a case study research methodology with a group of twelve children attending the Cecília Cavalcanti Institute in the city of João Pessoa – PB for a period of two years.

To begin the research, it is important to conceptualize some important terms that follow throughout the text. TheraSuit is an individual intensive care program used with children and adults with changes in motor, cognitive, and language skills. It consists of muscle strength training, proprioceptive and cerebellar stimulation with repetition that allows the CNS (Central Nervous System) to integrate and develop new motor and cognitive skills.

Although this therapeutic method was initially developed by physiotherapist professionals, the speech therapy intensive at TheraSuit was patented and has been implemented on the language clinic floor since 2021, with the pioneering speech therapist to develop the method in the phonotherapeutic mold, Cecília Cavalcanti.

The need to use the IFT arose from the routine care of children diagnosed with motor speech disorder in Therasuit and the use of the massive practice of training phonemes or words. It was observed that the use of the suit promotes sensory input, increasing the level of alertness, attention, concentration, postural and sensory organization. Thus, speech training became more effective with the use of Therasuit.

The use of Therasuit in Speech-Language Pathology and Audiology from the Therasuit method was created to provide care to the individual as a whole. With the speech therapist focused on a look and clinical reasoning in the prerequisites of the skills that are worked within the science that is speech therapy. Enabling a direct intervention in front of the patient, without the need for the patient to adjust to the therapist's body or resources, but for the patient to organize himself from his own body, creating neurological connections, acquisition of motor and cognitive skills, language and adequate speech.

Although research in the area of speech therapy is still scarce, we have expressive results published in a scientific article by Guedes (2022), which presents real gains for the benefit of use by professionals in the area. However, in this article we intend to concentrate our studies on proprioception and motor kinesthesia and their results with the use of the IFT program.

NEUROMOTOR-COGNITIVE DEVELOPMENT

The human being from the dawn of life develops from the interaction between biological, psychological and behavioral factors. In the first years of life, the baby experiences a succession of events important for sensory accommodation. Babies are born with a series of automatic reflexes, such as the sucking reflex, the seeking reflex, and the grasping reflex. These reflexes are essential in the first months of life to ensure survival, for their interaction with the environment and coexistence with their peers.

According to Melillo & Dharamaraj (2021), primitive reflexes are responsible for projecting the development of the human being. Some of them originate when we are still in the mother's womb and another after birth. For the authors, primitive reflexes are like bicycle training wheels for the training of the brain, where we lean on each other and then be removed and move on.

The brain matures from the emergence of functional systems and their interactions with sets of early neuronal cells to the complex integration of multisensory information (FONSECA, 2008). This maturity is experienced by the child and integrates new learning, including spoken and written language. At first, motor development is carried out by exploratory movements, such as crawling and grasping objects, which are fundamental for cognitive development.

According to Moura-Ribeiro & Gonçalves (2010), the infant phase is the one with the greatest development and the fastest deceleration. Around 2 to 4 months of age, babies begin to develop greater head control, being able to support it when in the prone position. Between 6 and 9 months of age, they begin to crawl, while others may choose to roll over or crawl, as well as sit without support. From 9º to 15º months of life, they develop the ability to stand, supporting themselves and rehearsing their first steps.

The childhood phase from 2 to 10 years old is considered stable and with slow deceleration. There is a considerable improvement in motor coordination, which occurs as training of gross and fine motor skills. Fine motor skills improve for activities such as drawing and writing. As children develop more advanced motor skills, such as writing, drawing, and playing sports, these motor activities contribute to cognitive development, including improved attention, concentration, and visuomotor coordination.

It is important to highlight that motor activities, such as games and play, play a fundamental role in cognitive development, stimulating creativity, problem solving and social interaction (MOURA-RIBEIRO & GONÇALVES, P. 116, OP. CIT.). In adulthood and aging, growth stops completely with the ossification of the epiphyses, with a slight decrease due to the gain of adipose tissue, so the practice of physical exercises is associated with cognitive benefits. Engaging in cognitively stimulating activities, combined with maintaining mobility

and physical activity, is crucial for promoting cognitive health. Strategies that integrate motor and cognitive stimuli can be beneficial to optimize global development and promote a healthy life (WALLON, 2007).

PRIMITIVE REFLEXES: INTEGRATION AND FAILURES

Primitive reflexes, also known as archaic or neonatal reflexes, are automatic central nervous system responses that occur in newborns and are considered a normal part of neuromotor development. These reflexes are innate and usually disappear as the central nervous system matures and more voluntary and controlled reflexes develop.

One of the first reflexes is the ***moro*** reflex (opening of the fingers and upper limbs). which is triggered by a sudden or sudden stimulus, such as a loud noise or a falling sensation. The *sucking and swallowing reflexes* **are** essential for feeding during the first months of life. They can be triggered by stimulation of the anterior portion of the tongue and lead to bilateral eye opening concomitantly with 6-12 suctions for 10 seconds (MOURA-RIBEIRO & GONÇALVES, 2010). Primitive reflexes are important milestones in a baby's neuromotor development and help lay the groundwork for more complex voluntary movements as the child grows. The proper disappearance of these reflexes is a sign of normal neurological maturation. If these reflexes persist beyond the expected age, it may be indicative of atypical development and may require evaluation by health professionals, such as pediatricians or therapists, to better understand the clinical picture.

Failure of primitive reflexes beyond the normal period of development can have speech-language pathology implications, affecting aspects such as speech, language, feeding, and oral coordination. Primitive reflexes are important parts of neuromotor development, and their failure to disappear may indicate challenges in the maturation of the central nervous system. It is a neurological process that organizes our sensations; being the basis for all forms of learning so that we can live in the world and it makes sense; it is the foundation for learning skills; Social; performance of ADLs; ability to empathize with the other.

Here are some possible interrelationships between failures in primitive reflexes and kinesthetic problems: motor incoordination; asymmetry in movements; impairment in body awareness; difficulties in performing everyday motor tasks; **changes in** movements.

THE IMPORTANCE OF STIMULATION OF PROPRIOCEPTION IN THE SPEECH THERAPY CLINIC

The experiences that the individual has with the environment that surrounds him is fundamental for the creation of synapses and new neurological routes. It is the experiences in various environments and at various stages in child development that promote a greater repertoire of learning that prepares the human being for numerous skills. Therefore, from the interaction of the individual in his environment and things that surround him, they allow him to build bridges for the development of various skills.

According to Piaget (1949), one learns not only by observing, but by experimenting, or by engaging in activities already previously structured, groping, being an actor in one's action, having freedom and having all the time to do so. With proprioception it is no different, it is the very awareness of balance, space and body weight, which are surely developed in play.

In general, the body receives stimuli from the environment and acts and feels the world by its ability to receive tactile sensations, temperature, pressure, pain, etc. Somesthesia is the ability we have to receive information about different parts of the body, being a sensory modality that consists of 4 main submodalities: touch, proprioception, thermosensitivity and pain. Proprioception is defined by the continuous movement of sensory information perceived by the receptors (nerve endings sensitive to the stimulus that characterize the pathway that leads to the supra-segmental nerve centers, the impulses originating in the peripheral receptors) located in the muscles, tendons, joints and inner ear, regarding the position of the body and movement (BARBANTI, 2005).

It is essential for the control and regulation of body movements, making them more efficient and precise. The information is passed on to the CNS about the positioning of the body and limbs, allowing for prior programming of motor commands. According to Kignel (2005), proprioception, therefore, allows the human being to establish a relationship with the environment by feeding the CNS with information on sensations and muscle and limb positions, which is important to maintain the positions of the body segments relative to each other. They send information to the CNS that arranges body parts in the best possible position, whether stationary or moving.

There are two types of proprioception, the *conscious* one that happens from proprioceptors – they allow the person to be able, for example, to walk a tightrope without falling – and the unconscious proprioception that happens from involuntary activities that are guided and executed by our autonomic nervous system – it is responsible for regulating

functions such as the heartbeat and other phenomena that we do not control such as a belly ache with a consequent trip to the bathroom.

Proprioception is essential for the coordination of muscle movements in the oral cavity, tongue, lips and jaw via the reflex arc of proprioception and exteroception, the contraction of the compromised musculature. The stimulus is perceived by the somatic afferent fibers of the trigeminal nerve, which connect to the sensory nucleus and the motor nucleus of the facial nerve, resulting in the contraction of the muscles of the face (TESSITORE, 1995).

Stimulating kinesthesia contributes to improving oral motor coordination, which is critical for the accurate production of speech sounds, aids in muscle control, allowing individuals to adjust the strength and direction of movements required for speech and other oral functions. This is particularly relevant in cases of oral motor disorders in the treatment of swallowing disorders, helping patients to develop more effective swallowing.

In addition to these benefits, proprioceptive and coenesthetic stimulation is important in speech development in children. It helps in the acquisition of appropriate oral movement patterns, positively influencing speech clarity and articulation. These aspects are relevant in the speech-language pathology clinic. In cases of neuromotor disorders such as apraxia of speech, kinesthetic and proprioceptive stimulation is an essential part of treatment to improve the programming and execution of joint movements, playing a vital role in therapy, helping to optimize motor coordination, muscle control, and oral sensation to improve oral communication, swallowing, and other related functions.

The performance of the functions of breathing, sucking, swallowing, chewing, phonation and articulation is possible with oral motor control. The hyoid bone is the only human bone that does not articulate with another bone in the body, it is supported by muscles and ligaments to the cervical spine. Therefore, cervical posture influences tongue posture and stomatognathic functions. The synergies of the occipital and oral muscles are interconnected, influencing oral positioning and functions. Trunk posture is critical for neck and head stability.

Finally, combining the benefits of the IFT program with the objectives of proprioceptive and coenesthetic stimulation in children with speech and language motor disorders associated or not with the various neurocognitive pathologies, we will describe below the speech-language pathology treatment based on the Therasuit methodology so as not to enter into the proprioceptive issue.

THERASUIT IN SPEECH THERAPY

The TheraSuit is the name given to the therapeutic garment used in a treatment program known as Intensive and Extensive Therapy Suit (TheraSuit Therapy). This therapy is designed for children and adults who face neuromotor challenges such as cerebral palsy, delays in motor development, and other conditions that affect motor function.

TheraSuit Therapy was developed by Izabela and Richard Koscielny, Polish occupational therapists, who founded the company TheraSuit LLC. They adapted and improved the original idea of the suit, which was inspired by space and aerospace training techniques. It is believed that TheraSuit and associated therapy were initially developed to provide an intensive and holistic approach to improving the motor skills of children with cerebral palsy and other neuromotor disorders.

It is important to mention that the development of therapies and therapeutic techniques often involves the contribution of several professionals over time. TheraSuit and TheraSuit Therapy are used in many countries as part of rehabilitation programs, and their use is supervised by qualified healthcare professionals. The TheraSuit is made up of a series of pieces that cover the body, including a vest, pants, knee pads, and sneakers. These pieces are connected by adjustable elastic bands, creating gentle pressure on the wearer's body. The design of the TheraSuit is intended to provide postural support, controlled resistance, and proprioceptive feedback during therapeutic activities.

TheraSuit Therapy involves intensive exercise sessions, often conducted by occupational therapists, physical therapists, or speech therapists, who have specific training in using this approach. During the sessions, the patient performs a series of exercises and therapeutic activities while wearing the TheraSuit. The goal is to promote motor development, improve balance, muscle strength, motor coordination, and overall function.

In addition to the use of the suit, therapy often includes specific exercises, functional activities, and sensory stimulation techniques to maximize benefits. The approach aims to create an intensive and challenging therapeutic environment to optimize developmental potential and improve patient quality of life. Speech-Language Pathology plays a significant role in therapeutic programs like TheraSuit, especially when applied to children and adults with neuromotor challenges that affect oral communication, swallowing, and oral motor skills.

When the child has difficulty or absence of cervical control, oral feeding becomes a risk, with an indication of an alternative feeding route. The worse the overall motor component, the worse the oral motor aspect. A single exception: oral motor apraxia in milder global motor conditions, generally do not present motor difficulties in oral functions (FISH, 2019).

Speech-language pathology intervention in programs such as TheraSuit may includeoral communication assessment; orofacial muscle function stimulation; swallowing disorder intervention; alternative and augmentative communication skills (AAC) training; body awareness assessment and oral posture.

Changes in *orofacial motricity* are benefited in the treatment with the use of Therasuit, so that by verticalizing the trunk, stretching the cervical and aligning the hyoid. Specific maneuvers and exercises are performed concomitantly with the use of Therasuit, promoting a more effective intervention.

For intervention in *swallowing disorders*, training and therapeutic tests during the use of the Therasuit approach create connections that enable proper swallowing with less risk of bronchos, aspirations. Promoting hyoid alignment and activation of the hyoid muscles, lip grip, better positioned tongue, more adequate breathing, weight bearing and global motor organization that reflects on the specific motor.

As for *breathing*, it is important for us in Therasuit to provide a posture closer to the proper one, greater proprioception and stimulation of the costodiaphragmatic muscles in order to expand the rib cage, acting directly on effective breathing and closer to normal.

Finally, the use of the suit and specific lashings are appropriate to organize the posture of the trunk, shoulder girdle, cervical and alignment of the hyoid and jaw. During the stimulation, techniques such as: prompt, multigestures, specific MO maneuvers, Gustatory Thermal Tactile Stimulation (ETTG), laser therapy, CSA (PECs, PODD...), DTTC among others are used. The use of resources such as games, structured activities, and symbolic play are essential to maintain the patient's bond and engagement (GUEDES, 2023).

PHASES OF THE IFT SESSION

The IFT program is divided into 5 phases to achieve therapeutic objectives. In *phase 1,* the preparation of the material and the patient for the beginning of stimulation is initiated through manipulation with deep touch of the target part of the therapy. And still in this phase there is the conscious activation and control of the muscles that make up the "core", which represents the central area of the body, including the muscles around the abdomen, pelvis and lower back.

It is important to note that this muscle group is essential for stability and support during everyday movements, including those that participate in oral communication. Core activation can be performed through various exercises and techniques, such as: isometric contraction, core stabilization exercises with functional training; diaphragmatic breathing exercises, etc.

In *phase 2*, it is the responsibility of the speech therapist qualified in IFT to put on the suit and tie it up, respecting all indicators for correct stimulation of the patient. Then, *phase 3* carries out activities that aim at greater attention and concentration of the patient for greater proprioceptive gain in terms of their position in relation to the base and other structures around them. It is also at this time that greater engagement in cognitive activities, language and speech is guaranteed with age-appropriate games appropriate to what is intended to be stimulated.

In *phase 4*, we pay attention to myofunctional exercises, therapy directed to dysphagia and/or speech motor training; use of kinesthetic and visual methods, focusing on practical situations, experiments, assembling and disassembling objects, that is, expanding their perception of the world, relating their sensations to the stimuli received. And in the last phase 5, we activated the vestibular system associated with prosody, intonation and rhythm with songs, rhymes and other playful resources.

SCIENTIFIC METHODOLOGY

Scientific knowledge is demonstrated in Fachin (2003) as a result of the investigation that follows from a methodology, supported by the reality of facts and phenomena capable of analyzing, discovering, concluding, creating and solving new and old problems. Therefore, we must consider that the methodology should be analyzed as a theoretical construction that dialogues directly with the practice of the research to be developed (MINAYO, 1995).

The article is conducted through an analytical-qualitative research that is intended to quantify and measure human and cultural phenomena through numerical data, and is also qualitative seeking to explore and understand the complexities, meanings, and contexts underlying the phenomena studied. To achieve our goal, we conducted a group case study of 12 children and focused our in-depth investigation on the results of the application of the Intensive Speech-Language Pathology and Audiology program in Therasuit (IFT), detailing each specific case.

The first phase of the case study was carried out through the careful choice of the cases studied, which took place from the election of relevance to the research and the ability to provide valuable information to enable the conduction of the application of the IFT. We held a meeting with the parents of the patients treated by the Cecília Cavalcanti Institute and informed them of the objectives of the research, as well as the research methodology, and we obtained acceptance in the ICF Free and Informed Consent Forms.

The selection of the research subjects was carried out among children aged between 3 and 12 years old, with a diagnostic hypothesis of language and speech disorders associated or not with neurocognitive impairments. The subjects presented verbal enunciation, and were included in the city's school system.

Because we understand that the IFT applies to all cases of children who have speech and language disorders, through the investigation of the case. We used the technique of data collection from the recordings of the FTI therapies to obtain comprehensive information on proprioception and kinesthesia in all cases applied. Quantitative data were incorporated into qualitative data for triangulation of information and validation along with theoretical findings.

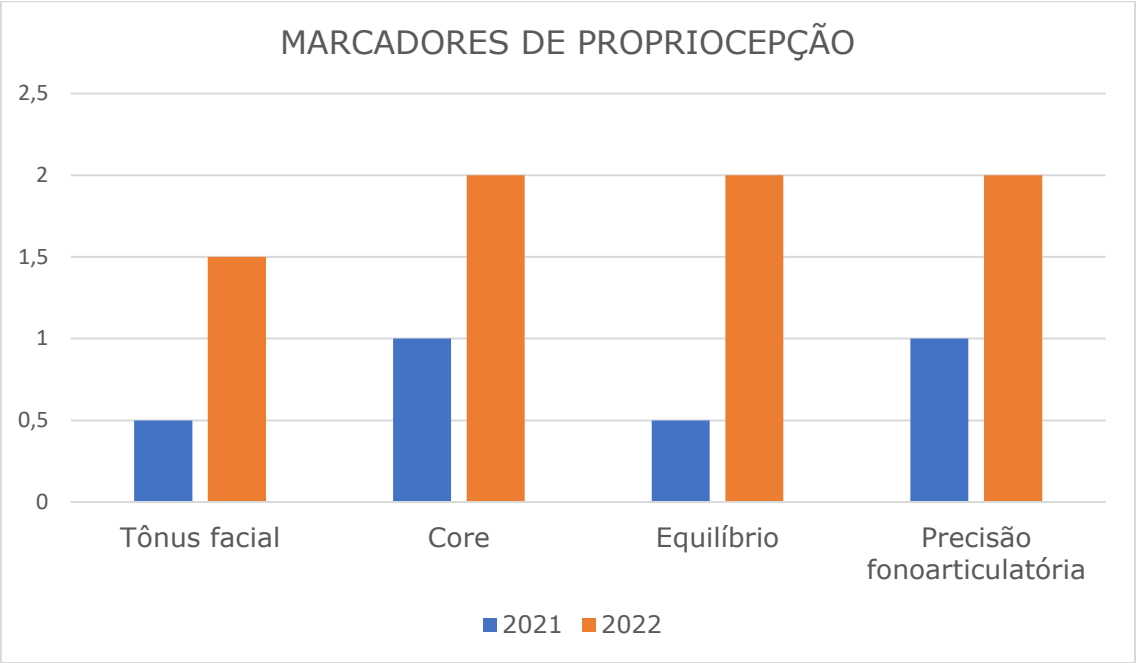
With the completion of data collection, we perform content analysis based on precise and objective techniques to ensure the purpose of the work. The starting point that drove the concern with the research issue is in the order of the singularity of the cases treated with the IFT program in terms of proprioception and kinesthesia. Therefore, the graphs demonstrate the ascendancy of the gains in relation to the therapeutic planning targets, which allows us to conclude the effectiveness of the IFT program.

ANALYSIS OF THE RESULTS

We construct here the point of view of the displacement phenomenon, questioning above all what we are interested in unveiling about the stimulation of proprioception and kinesthesia in the LFS program for the cases studied in this research. What we proposed was to put into question the scope of scientific investigation of having a look at the position of the object and having methodological mechanisms to describe it satisfactorily.

Below we will be showing the results of the gains within the chronology of the realization of the IFT program in 2 years of research, bringing numbers and discussing its expressiveness as to what is aimed at speech therapy.

As for deep touch - preparation, we evaluated the muscle tone of the head and neck through inspection, palpation, passive mobilization through rapid movements to verify the existence of spasticity, joint stiffness and/or oppositional contractions (increasing resistance). While there is palpation stimulation, we name the parts of the body, naming the sensations through storytelling, music and colorful toys for manipulation in your line of sight.



We observed that the group of children presented varying degrees of *tone* of the head and neck muscles, between 1 and 3 initially, where 1 represents decreased tone (when the difficulties are significant, and there may be tremors and compensations with head movement); 2 represents normal tone (when the muscles are able to resist the evaluator's movement and impart sufficient force); and 3 increased tone (when the muscles are able to resist the movement of the evaluator and print excessive force).

The initial stimulation showed a greater gain in muscle strength in the group under focus, which from being marked by hypotonia in 2021, showed significant evolution in 2022, reaching the normal tonicity intended in therapy. We know that muscle strength must be stimulated for the need to sit without support, search for objects, move the muscles of the face for speech and other important functions of child development.

As for the *activation of the Core* , we noticed greater strengthening and activation of the central muscles that make up the abdominal, lumbar and pelvic regions, providing a series of benefits for the health and physical performance of children. It was observed greater support time and stability of the spine in an upright position, more controlled movements, optimization of respiratory function with greater pneumophonic coordination

According to the *balance* index through the stimulation of sensory integration, vestibular and spatial orientation in the LFS program, greater muscle engagement was perceived, resulting in better coordination of body movements, improving sensory processing. Although these movements can be adapted according to age and individual needs, we saw that this is one of the indices that we noticed the greatest gain in the survey.

Use of *kinesthetic and visual methods* begin from the first phase of the IFT program with preparation and lacing, as the TheraSuit garment is designed to provide compression to the body, which helps to increase proprioceptive and kinesthetic awareness of your own body in space. With the program we realized that the child experiences more functional movement patterns, as well as promotes movements such as crawling, standing, walking and performing other motor activities with greater body awareness. The union of kinesthetic and visual stimuli during the exercises was crucial to promote visual-motor coordination and improve the children's sensory integration.

Attention should be paid to the patient's global sensory and motor needs. Therapy at Therasuit needs to be playful and focused on functional play with particular goals. Speech training improves *phonoarticulatory accuracy*, based on motor and sensory organization, with multisensory cues and the use of specific speech-language pathology approaches (*HAMMER & EBERT, 2021).* The work of prosody, intonation and rhythm, as well as all other extralinguistic elements is the background of all the phases that make up the IFT program, as we understand that linguistic *input* is linked to all the functions and abilities of the human being.

CONCLUSION

From the analysis of the data and the report of the cases described, we conclude that the stimulation of proprioception and kinesthesia by the IFT program is of great importance for speech therapy because it is directly related to motor coordination, muscle control, balance and body awareness. In speech-language pathology, where therapeutic planning is most often in the rehabilitation and improvement of functions related to oral communication, speech, stomatognathic functions, and oral motor skills, proprioception and kinesthesia play a significant role.

Over the 2 years of study and application of the IFT program in the clinic, we concluded that the more the human being integrates the sensory and motor system, the better performance of the most complex skills. With our audience being in the alterations of motor functions, access to sensory organization, as far as we can act, allows us to more effectively motor organization and execution of the skills we intervene.

Proprioception influences the quality of articulatory movements necessary for the production of speech sounds. Stimulating proprioception can be beneficial for children in the development phase of speech and language, helping in the acquisition of adequate articulatory patterns.

In cases of joint disorders or apraxia of speech, where there are challenges in programming and executing the muscle movements necessary for speech, stimulation of proprioception can be incorporated as part of the treatment to improve coordination and precision of movements. Proprioception is important for the coordination of the muscles involved in swallowing. Stimulating proprioception can be useful in the treatment of swallowing disorders, promoting more efficient and safer swallowing. Proprioception contributes to body awareness, which is vital for the development of nonverbal communication and emotional expression. Improved body awareness can positively influence global communication.

By incorporating techniques and activities that aim to stimulate proprioception, speech-language pathology professionals can offer more comprehensive and effective interventions for individuals with a variety of challenges related to oral communication and oral motor skills.

With the speech therapist focused on a look and clinical reasoning in the prerequisites of the skills that are worked within the science that is speech therapy. Enabling a direct intervention in front of the patient, without the need for the patient to adjust to the therapist's body or resources, but for the patient to organize himself from his own body, creating neurological connections, acquisition of motor and cognitive skills, language and adequate speech.

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