İSTANBUL Brain Hospital











NPİSTANBUL HOSPITAL

CHILD AND ADOLESCENT PSYCHIATRY
PAEDIATRIC NEUROLOGY

ÜSKÜDAR UNIVERSITY *Science Partner*

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WHY CHOOSE NPİSTANBUL HOSPITAL?

1. NPISTANBUL Hospital is a private neuropsychiatric hospital established to provide effective treatment for conditions affecting mental and brain health, using the treatment options available in modern medicine.
2. NPISTANBUL Hospital holds accreditation from JCI (Joint Commission International), one of the world's most prestigious healthcare accreditation organisations.
3. Alongside its brain-related services, it provides multidisciplinary care in psychiatry, neurosurgery, genetics, general surgery, neurology, paediatric neurology, ear, nose and throat, internal medicine, gastroenterology, cardiology, infectious diseases, physical medicine and rehabilitation.
4. It is a private psychiatric hospital that meets all its patients' needs through a dedicated ambulance service and 24/7 psychiatric outpatient and inpatient care.
5. It has Class A operating theatres and intensive care units. Its advanced technological infrastructure supports surgical procedures with 1A Ultra Clean operating theatre equipment approved by an independent accredited organisation.
6. It pioneered new approaches in Türkiye, such as "treatment through measuring brain function" and "Thought-Focused Medicine".
7. It bases diagnosis and treatment on a pharmacogenetic approach, supporting personalised treatment planning through therapeutic drug monitoring (TDM), phenotyping and genotyping.
8. It is a scientific partner of Üsküdar University and collaborates with the university in technology, academia and science.
9. It offers neuromodulation treatments. This unit aims to treat patients by measuring brain function through brain stimulation.
10. It provides telepsychiatry (online therapy) for patients living outside the city or abroad.
11. It is a hospital focused on excellence in healthcare, combining a scientific approach with "treatment comfort" that positively affects treatment.
12. Through the Addiction Clinic (NPAMATEM), Advanced Toxicology Verification Laboratory services are provided in collaboration with Üsküdar University.
13. Evidence-Based Treatment is one of our core principles.
    n. Conducting pre- and post-treatment tests
    o. Using biomarkers such as brain mapping
    p. Reporting the outcome





PAEDIATRIC NEUROLOGY

Paediatric neurology deals with neurological diseases affecting the brain, muscles and nervous system in children aged 0–18. Through a multidisciplinary approach, it investigates factors that adversely affect brain development up to adulthood, diagnoses and treats them where possible, and helps children with neurological problems live better lives.

Areas covered by paediatric neurology:

1. Neurological follow-up of at-risk babies (all premature babies and babies who experience problems at birth or during the neonatal period that may affect the brain),

2. Delays in developmental milestones (fine and gross motor, language, and personal-social development),

3. Floppy infant (hypotonia),

4. Headaches (migraine, tension-type, mixed types, etc.) and migraine variants,

5. Seizures with fever (febrile convulsions),

6. Breath-holding spells,

7. Seizures without fever (afebrile convulsions),



8. Conditions that mimic seizures,

9. Epilepsy,

10. Cerebral palsy,

11. Intellectual disabilities and associated conditions,

12. Specific developmental disorders of speech and language,

13. Muscle and neuromuscular diseases,

14. Neurometabolic diseases,

15. Movement disorders and tics,

16. Syncope (fainting),

17. Dizziness,

18. Congenital or acquired paralysis,

19. Sleep disorders and sleep terrors,

20. Learning difficulties,

21. Neurodegenerative diseases,

22. Autism–pervasive developmental disorder spectrum,

23. Neurogenetic diseases.

When should a specialist be consulted?

Children should be assessed by paediatric neurology when there is a history of certain maternal infections during pregnancy, premature birth, nervous system infections (meningitis, encephalitis), difficult delivery, neonatal intensive care, previous central nervous system infections, or failure to reach developmental milestones



within the expected period (mental, motor, language, social and emotional).

The main aim of monitoring at-risk babies is to identify neurological problems as early as possible, take preventive measures and support normal neurological development.

Epilepsy: This can also develop in children for various reasons and present in different clinical forms.

Diagnostic Methods: Electroencephalography (EEG) and magnetic resonance imaging (MRI) are used to investigate epilepsy and other neurological diseases.

EEG (Electroencephalography)

This test assesses the brain's electrical activity. EEG helps evaluate epilepsy and distinguish it from other conditions.

Our hospital's EEG department records EEG during sleep and wakefulness under ideal conditions. The Paediatric Neurology EEG Unit uses a 22-channel digital electroencephalography device to record awake and sleep EEGs and provide short-term monitoring over a period of hours.

3 TESLA MRI

3 Tesla technology is designed to produce high-resolution, sharp images. It offers a special approach to help paediatric patients feel more comfortable and calm during magnetic resonance (MRI) scans. The experience aims to make scanning easier for children with claustrophobia or anxiety. This special design uses features such as ambient effects inside and outside the scanner, selected images and music to distract, calm and relax children. For example, coloured lights or pleasant scenic images can draw the child's attention away from the scan. Gentle music during scanning can also help children stay calm.

For individuals with special needs, scans can be performed safely under sedation anaesthesia.



CHİLD AND ADOLESCENT PSYCHİATRY UNİT

Child and adolescent psychiatry is a medical specialty concerned with developmental, emotional, cognitive, academic and social difficulties in children and adolescents aged 0–18. Its broad remit covers healthy development from birth to the end of adolescence, and the diagnosis and treatment of existing disorders.

From birth, babies enter a series of developmental stages. Physical, mental and social development follow a particular sequence and timetable. Alongside brain development, children go through many physical, behavioural and mental stages. Developmental difficulties are among the most common problems seen in child and adolescent psychiatry during the preschool years. Speech delays are particularly common at this age. Families most often notice a later start to speech than in peers, and delays in fluency and content. In a child brought in with a speech delay, this may reflect a mild developmental delay or be the first sign of a significant neurodevelopmental disorder such as autism. Alongside delayed speech, the most important signs that raise suspicion of autism include not making eye contact, not responding promptly when called by name, seeming to live in their own world, showing little interest in peers or other people, and repetitive movements such as hand clapping or flapping. When there is such a concern, it is extremely important for the child to see a doctor without delay, undergo the necessary assessments and, if diagnosed, begin treatment early.



Parents who know how to manage the situation can navigate this stage more comfortably and enjoy watching their child's development.

Families sometimes seek help because their children become very stubborn, do not listen or have tantrums when they cannot get their way, particularly after the age of 1.5–2. As the brain develops after age 1.5–2, children begin to develop individuality, separate from their mother, and learn about and control their bodies. They can therefore become more stubborn and difficult to manage. It is extremely important to inform parents and caregivers about child development and guide them on what to do during difficult episodes. Parents who know how to manage the situation can navigate this stage more comfortably and enjoy watching their child's development.

During nursery and primary school, children are expected to follow certain social rules, gradually develop a sense of responsibility and begin to perform tasks such as homework. Common difficulties at this stage include being unable to pay attention in class, stay seated or persist with homework without quickly becoming bored. Behavioural difficulties, such as being unable to maintain friendships or hurting other children, may also occur. Children may need assessment for difficulties involving inattention, hyperactivity and impulsivity.

One difficulty families and children often face when starting school is separation from parents. It is considered normal for a typically developing child to struggle for about a month after starting school, want



One difficulty families and children often face when starting school is separation from parents.

their mother nearby, become anxious on entering the classroom or even cry. Over time, however, the child is expected to adjust, continue attending school and form friendships. A child who struggles to develop these abilities must be assessed by a doctor.

Some children naturally have a more anxious temperament than others. Some are more cautious and pause to think before acting; this can be a temperamental trait. However, constant anxiety, feeling that harm may come from the surroundings at any moment, worrying about the future, seeming restless or uneasy, and difficulty falling or staying asleep at night are not normal. Assessment for anxiety disorders is essential. Some children also develop compulsive behaviours, such as washing their hands 5 times, checking their bag repeatedly, passing through a doorway again or frequently checking what they have done. If compulsions disrupt a child's time, energy or functioning, they must be regarded as a disorder and a doctor must be consulted.

Tics also become more common from the age of 6–7 onwards. Mild, occasional tics may not cause problems for the child, but treatment should not be delayed if they are severe enough to interfere with adjustment or functioning.

Adolescence is a period when children gradually leave childhood characteristics behind, undergo rapid brain



restructuring and take a crucial step towards adulthood. They change mentally and behaviourally as well as physically. They begin to experience emotions more intensely and find them harder to control. They enter a stage in which they are separate individuals and need to develop an identity. Parents may also find it difficult to adjust to this new adolescent. They may notice that their once young, manageable and obedient child has become rebellious, wants to be alone and is distancing themselves. In fact, brain restructuring brings many changes, and families need to be prepared. Parents may wish to attend an assessment and information session with their child to learn what to do during this stage.

Some conditions in childhood and adolescence require more serious attention. These illnesses involve major changes in behaviour, speech and appearance. In younger children, gradual loss of acquired knowledge and skills, reduced speech content, seeming not to understand what is said, uncontrolled behaviour or leaving home without awareness suggest serious neurological or psychiatric illness. These children require inpatient treatment. In adolescents, complete withdrawal, neglecting hygiene, appearing constantly suspicious, inability to sleep at night or refusing food also raise concern about serious psychiatric illness.

As these examples show, child and adolescent psychiatry covers a very broad range of problems, and consultation may be necessary in many situations beyond those listed above. Because of their developmental characteristics, children and adolescents must be assessed differently from adults by doctors specialising in this field. Psychiatric assessment involves information from the child, family and teachers, a psychiatric examination, and any necessary tests and investigations. Following a full assessment, a plan is drawn up and explained to the child and family.



Depending on the child's condition and needs, treatment may include medication, psychotherapy, cognitive rehabilitation programmes, occupational therapy and, when necessary, newer techniques such as transcranial magnetic stimulation (TMS). Children and adolescents enrolled in treatment are followed up through appointments at set intervals.

If a difficulty is identified through detailed assessment, interventions and treatment programmes can help the child continue their life without difficulties or impairment in academic achievement, behavioural control and social adjustment, or damage to confidence and self-esteem.



TESTS AND SCALES FOR CHILDREN AND ADOLESCENTS

INTELLIGENCE TESTS AND DEVELOPMENTAL INVENTORIES

Stanford–Binet Intelligence Test: This measures 4 areas: verbal reasoning, abstract/visual reasoning, quantitative reasoning and short-term memory. It can be administered from age 2 to adulthood.

Theory of Mind Tests: These measure social cognition and social skills, the ability to recognise facial expressions such as happiness or sadness and more complex emotions such as thoughtfulness or boredom, understanding of body language and reading of social cues. Assessing theory of mind and social skills, which play an important role in adapting behaviour to different social situations, these tests can be administered from age 3 to children, adolescents and adults who have difficulty with these skills.

Wechsler Intelligence Scale for Children (WISC-R): This test has verbal and performance subscales and is administered to children aged 6–16. The verbal subscales reveal strengths and weaknesses in verbal abstraction, categorical thinking, understanding social expectations, taking initiative in social problems, taking appropriate action, vocabulary, verbal perception and expression, short-term auditory memory, active working memory and mathematical skills, acquired knowledge and school learning, short-term auditory memory and sequential recall. The performance subscales reveal strengths and weaknesses in visual awareness,



visual recognition and long-term visual memory, following a visual pattern and anticipation, visuospatial organisation and perception, analysing parts within a whole, nonverbal conceptualisation, establishing visual cause-and-effect relationships, sequencing, time perception, temporal sequencing, following instructions, psychomotor speed, short-term visual memory, using sensorimotor feedback, anticipating relationships between parts and showing flexibility.

Ankara Developmental Screening Inventory (AGTE): This assesses development in gross and fine motor skills, language, social skills and self-care. It is administered to children aged 0–6.

Gesell Developmental Figures Test: This provides information on visual perception, visual motor coordination, fine motor skills and general intellectual development in children aged 3–7.

Kent–Porteus Maze Test: This comprises 12 mazes and assesses cognitive skills in children aged 9–14.

DENVER–II Developmental Screening Test: Administered to children aged 0–6, this assesses development in gross and fine motor skills, language, social skills and self-care.

Peabody Picture Vocabulary Test: This aims to measure a child's language development.

Metropolitan Readiness Test: This assesses whether children aged 4–6 are ready to start school. It has 100 items across 6 subscales: word meaning, sentences, general information, matching, numbers and copying.

Goodenough–Harris Draw-a-Person Test: Children are asked to draw a person on a blank sheet of paper. The test is used to assess cognitive development, as well as emotional and social aspects.

PROJECTIVE TESTS



Projective tests gather clues about a child's inner world. They provide information on how the child interprets themselves, their family and the outside world, and assist in analysing unconscious processes.

CAT (Children's Apperception Test): This is administered to children aged 3–10. It has 10 picture cards, and children are asked to tell stories about them.

D-10 Drawing Test: This is used to reflect the personality, emotional state and inner world of children and adolescents aged 8 and over. It offers information and clues about self-perception, emotions, and views of their surroundings and family.

TAT (Thematic Apperception Test): This can be administered to children aged 10 and over and to adults. Participants are asked to tell stories about the picture cards.

Rorschach Test: This consists of 10 inkblot cards. Responses are analysed to assess personality characteristics and emotional functioning.

Louisa Düss Psychoanalytic Stories Test: Children are asked to complete unfinished stories.

Beier Sentence Completion Test: This provides information on attitudes, beliefs and motivations. There are two separate forms: one for ages 8–16 and another for adults aged 16 and over.

RATING SCALES

Rating scales are widely used to broaden the information available when assessing psychopathology in children and adolescents, planning interventions and evaluating treatment effectiveness. Some of the most commonly used are:

Child Behaviour Assessment Scale (ÇDDÖ): This identifies externalising behaviour problems in children and adolescents and indicates their severity. Completed by parents, it is used to assess ages 4–18.

Conners Rating Scales (CDÖ): These support the diagnosis of Attention Deficit Hyperactivity Disorder and assess associated behavioural, anxiety and somatic problems. Different forms are available for parents and teachers. They are used to assess children over age 6.

Children's Depression Scale (ÇDÖ): This explores depressive symptoms in children and adolescents and indicates their severity. Children complete it themselves; a score above 19 clinically indicates depression.

Social Anxiety Scale for Children: This screens for symptoms and their severity in children with social anxiety who are reluctant to speak in public or meet new people.

Family Assessment Scale (ADÖ): This screens the family's problem-solving and communication skills, distribution of roles and levels of emotional responsiveness. It is completed by parents and the child.

Parent Attitude Research Instrument (PARI): This examines parenting attitudes in areas such as providing enough love and attention, setting boundaries, behaving democratically and maintaining discipline. It is completed by parents or caregivers.

Modified Checklist for Autism in Toddlers (M-CHAT): This screens for autism symptoms in toddlers. It covers social interest, speech and relationship-building skills, and repetitive or restricted interests. It is completed by parents or caregivers.

Autism Behaviour Checklist (ABC): This screens for behaviour problems observed in autistic children. It is completed by parents.

TDM (THERAPEUTIC DRUG MONITORING): Blood samples are taken at intervals to determine the blood levels of prescribed medicines. These levels show whether the medicine is at an effective, below-effective or toxic dose and allow dose adjustments.



ADVANCED DIAGNOSTIC TOOLS

QEEG

This technique analyses electrical brain activity recorded from the scalp and maps the distribution of waves at different frequencies, providing indirect information about brain function. Repeating QEEG after treatment can show positive changes. As the example profiles before and after treatment illustrate, bioelectrical recordings can show that treatment has corrected irregularities in brain chemistry.

CAS (Cognitive Assessment System)

CAS is an intelligence and aptitude battery assessing cognitive processing in children aged 5–17. It has 4 scales and 12 subtests and evaluates planning, attention, simultaneous and successive cognitive processing. Separate forms are available for ages 5–7 and 8–17. Administration takes one to two hours.

Uses of CAS



- Assessing children with attention deficit hyperactivity disorder,
- Assessing individuals with learning difficulties
- Predicting achievement,
- Assessing individuals with intellectual disabilities,
- Assessing individuals with traumatic brain injury,
- Assessing intellectually gifted children,
- Identifying individuals with planning difficulties,

MOXO CONTINUOUS PERFORMANCE TEST:

The MOXO Continuous Performance Test is a computer-based "online" attention test developed for children aged 6–12 and adults to assist in diagnosing ADHD (Attention Deficit Hyperactivity Disorder). It measures attention, timing, hyperactivity and impulsivity. The child version takes 15 minutes, and the adolescent/adult version takes 18.5 minutes.

WHO MAY BENEFIT FROM THE MOXO CONTINUOUS PERFORMANCE TEST?

Children who:

- Struggle academically despite wanting to succeed and making an effort,
- Have always been very active and are frequently injured or get lost,
- Have timing difficulties in exams and everyday life (leaving home late or not completing questions within the exam time),
- Always leave homework to the last minute, cannot follow a study schedule or organise tasks,
- React suddenly and excessively to events or people,
- Have difficulty sustaining attention despite being regarded as quiet or hypoactive by teachers or parents.

Adults who:

- Change homes, jobs or partners more often than usual,
- Are forgetful or have difficulty sustaining attention in



meetings or lessons,

• Frequently have traffic accidents,

• Do not meet expected performance at work,

• Work in roles requiring intense concentration. The MOXO Continuous Performance Test is particularly useful for these individuals.

T.O.V.A. (Test of Variables of Attention Continuous Performance Test)

This is a computerised continuous performance test measuring attention and impulsivity. It is independent of language. It has two sections of 10.3 minutes and takes 21.6 minutes in total. Normative data are available for ages 4–80. It can be administered to patients of any age with attention deficit or impulse control disorders.

ATTENTION DEFICIT AND LEARNING BATTERY

Attention Deficit Hyperactivity Disorder (ADHD) can cause major academic, social and psychiatric problems, with adverse effects that may last throughout life. Medication plays an important role in treatment.

TREATMENT TOOLS FOR ATTENTION DEFICIT HYPERACTIVITY DISORDER (ADHD):

NEUROBIOFEEDBACK

Neurobiofeedback combines neurofeedback and biofeedback. Alongside brain waves, it displays muscle tension, body temperature, heart rate and breathing rhythm. The person wears a cap, with gel applied to the appropriate scalp area identified by QEEG. Sensors clipped to the ears do not deliver any electrical current; they allow the person to watch their brain waves on a screen. Depending on the QEEG results, the aim is to relax, activate or neutralise brain activity. As no current is delivered, a psychologist teaches the person how to change their brain waves and maintain self-control.

When working with Attention Deficit Hyperactivity Disorder (ADHD), which is particularly common in children and adolescents, an initial assessment is followed by an appropriate number of sessions. QEEG is repeated after the sessions to assess progress.

USES OF NEUROFEEDBACK

In clinical practice, neurofeedback is widely used to control anxiety, improve mental performance and, particularly, treat attention deficit hyperactivity disorder, with effective results. Applications for autism are also undertaken with a specialist.

In children, neurobiofeedback is used particularly in Attention Deficit Hyperactivity Disorder (ADHD) to develop the ability to focus and sustain attention. It helps children recognise and control hurried, impatient and inattentive behaviours. It is also useful for stuttering and certain speech disorders. In adolescents, it is used for the same purposes as in adults and has shown high success rates, particularly among those seeking clinical help for exam and performance anxiety.

This technique, a technological intervention in thought, develops internal discipline. It has highly positive effects on setting goals, developing learning strategies and maintaining consistency and discipline while applying them.

Attention Training

PLAY ATTENTİON

Edufeedback (Play Attention) is used in children. This feedback-based treatment helps children learn impulse control and extend their attention span in psychiatric conditions such as hyperactivity, attention deficit, learning difficulties, impulse control disorders, depression, mood disorders and conduct disorder.

COGNIPLUS

This technique is used within therapy for the non-drug treatment of cognitive disorders. It consists of different modules.

These modules are used to treat the following conditions:

Attention and Concentration Difficulties: This module has 24 sections. It is administered to children and adults after their level is assessed. Completing it improves visual attention and visual acuity.

Memory Difficulties: This module has 30 sections. It is used following level assessment in people with learning or speech difficulties or stuttering. It promotes flexibility and fluency in memory and speech.

Logical Reasoning and Planning Difficulties: This has 24 sections. It teaches increasingly complex thinking involving multiple possibilities and improves logical intelligence.

Response Ability Difficulties: This module has 15 sections and supports treatment of impulse control disorder.

The programme also has modules addressing auditory and spatial perception.

CogniPlus not only aims to reduce loss of cognitive performance after serious head injury; it also helps anyone seeking to improve mental performance. During training, people develop new learning strategies and increase their ability to use their brain. As with all rehabilitation, CogniPlus aims to restore the person as closely as possible to their pre-injury condition or, if that is not possible, to a level allowing independent daily life.



REHABİL

"Rehabil", a cognitive remediation therapy, aims to restore the targeted area and make it usable again within its own system. Improvement is achieved through repeated computer-based or paper-and-pencil exercises. It is used in schizophrenia, autism, developmental disorders and psychiatric disorders causing other cognitive difficulties.

TDCS ALONGSİDE REHABİL OR COGNIPLUS TESTS

Children with attention deficit hyperactivity disorder, pervasive developmental disorder or autism spectrum disorder have been found to have impairments of varying severity in attention, memory, reasoning and other cognitive skills. Computer-assisted cognitive rehabilitation programmes can now treat and improve cognitive disorders in children. Clinical studies in children with cognitive disorders identified through neuropsychological testing have found that this approach alone, delivered over an average of 20 sessions lasting 30–40 minutes each, improves cognitive skills by 30%.

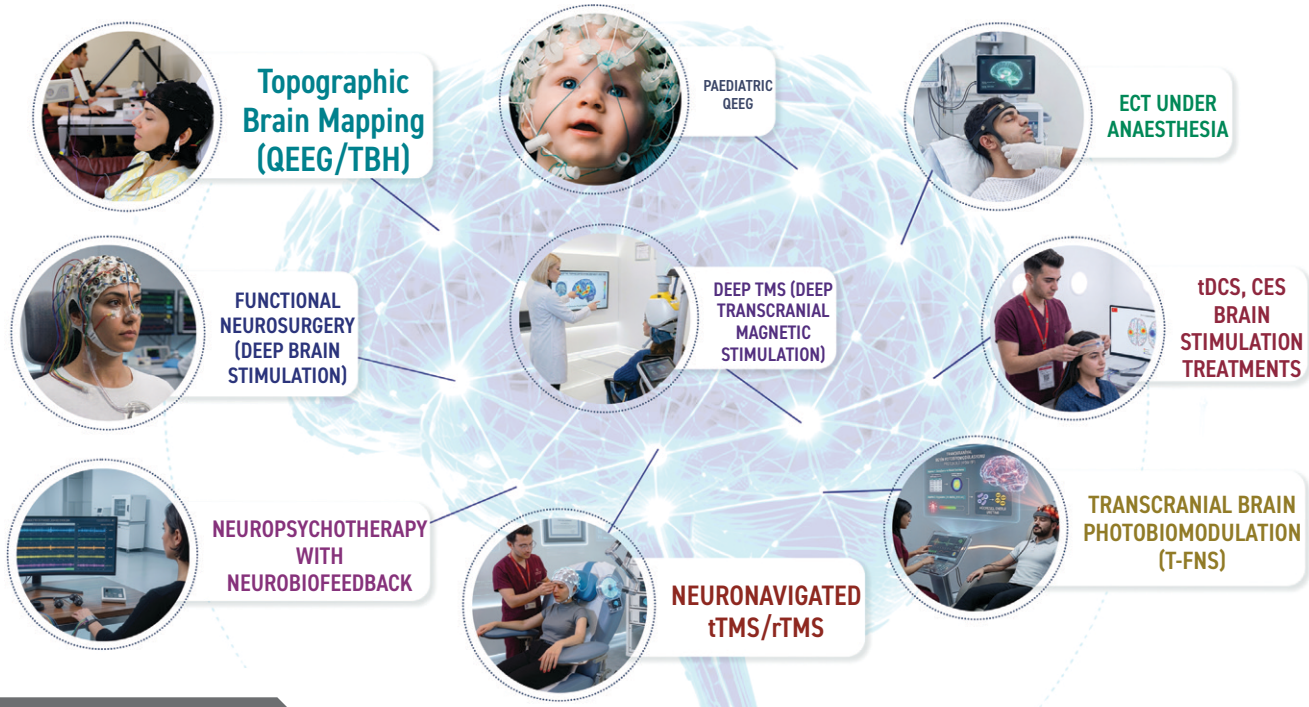
Cognitive disorders in children and adolescents have been linked to reduced activity of neurons in the front of the brain. Brain stimulation treatments can therefore be used alongside cognitive rehabilitation exercises to increase firing in these cells. This stimulation also improves the benefit gained from cognitive rehabilitation. Transcranial direct current stimulation (tDCS) uses two forehead electrodes to stimulate the brain with low-intensity direct current that does not harm human health. Recent scientific studies have demonstrated that using direct current stimulation during cognitive rehabilitation exercises in children and adolescents facilitates cognitive development and improves outcomes in memory, attention and executive functions. On this basis, combining tDCS with computerised cognitive rehabilitation exercises in children and adolescents over age 6 is becoming more widespread worldwide and taking its place among treatments of the future.

Research indicates that, in children and adolescents aged 6–15, direct current stimulation (tDCS) delivered alongside computerised cognitive rehabilitation over an average of 20 sessions improves cognitive capacity.

ADVANCED BLOOD TESts

Tests performed in addition to routine blood tests:

- Neuroinflammatory panel
- Neuroimmune panel
- TDM: Monitoring treatment through medication blood levels
- Pharmacogenetic assessment: Monitoring diagnosis and treatment through DNA analysis
- Advanced Toxicology Analysis: Blood, urine or hair testing when substance use is suspected.
- Blood and urine amino acid profile: Performed when an inherited metabolic disorder is suspected.
- Acylcarnitine profile: Performed when an inherited metabolic disorder is suspected.
- Genetic tests: Performed when a congenital genetic disorder is suspected.



BRAIN STIMULATION TECHNIQUES (NEUROMODULATİON TREATMENT)

tDCS (Attention Training)

tDCS is a neuromodulation technique used to treat neuropsychiatric conditions, also known as microstimulation therapy. It is used in treatment-resistant cases only at a doctor's request. Usually, two forehead electrodes stimulate the brain with low-intensity direct current. Treatment is brief and painless. It has no medication interactions and does not harm the body.

tTMS (Autism)

TMS changes brain activity and produces a therapeutic effect by creating a strong but brief external magnetic field. Transcranial magnetic stimulation (TMS) is a non-invasive method that stimulates neurons. It can activate or modulate brain activity without surgery or external electrodes. By mapping how the brain functions, TMS is a powerful diagnostic and research tool in neurology.



ÇEGOMER

(Child and Adolescent Development and Autism Centre)

Üsküdar University's Child and Adolescent Development and Autism Centre (ÇEGOMER) develops rehabilitation programmes supporting daily living, academic and social skills, monitors development and puts programmes into practice for neurodevelopmental disorders including Autism Spectrum Disorder, Attention Deficit Hyperactivity Disorder, Specific Learning Disorder, Communication Disorders, Intellectual Disability, and Motor and Tic Disorders.

Combining healthcare and education, the centre offers early childhood, preschool and school, and home follow-up programmes. Its early childhood programme brings together a child and adolescent psychiatrist, special education teacher, physical activity and movement instructor, clinical psychologist, speech and language therapist and occupational therapist. It aims to develop early learning, communication and interaction, play, school-readiness and parent-child relationship skills, alongside daily living skills such as eating, sleeping and toileting, and sensory development.



SPEECH DİSORDERS İN CHİLDREN: THERAPY SERVİCES

Common speech and language disorders in children include delayed language and speech, speech sound disorders, stuttering, cluttering, speech disorders associated with autism or developmental disorders, and voice disorders. Therapy services vary according to the disorder, with the aim of providing results-focused care within a short period.

Stuttering is a fluency disorder frequently seen in children aged 2–6. After it begins, a specialist should monitor the process collaboratively with the family. The therapy provided is closely related to the child's age. The most widely used approaches are fluency shaping and early awareness-based methods. Some methods involve the family and require the therapy programme to be followed at home. Fluency shaping aims to help the child adopt a new way of speaking with fewer disfluencies by coordinating breathing during speech and addressing techniques such as gentle onset and transitions between words.

Cluttering is a speech disorder involving fluency



Speech disorders in children vary, and different therapy services are offered according to the type of disorder.

difficulties, such as omitted sounds or syllables, blocks and word repetitions, caused by speaking faster than normal. The first goal of therapy is to help the child become aware of their speaking rate. Methods of controlling that rate are then taught step by step, from easier to more difficult tasks. Techniques such as breath control and gentle onset are used.

A speech sound disorder is difficulty producing particular sounds correctly or according to the rules of speech. The first goal is to teach the child to articulate sounds they cannot yet produce. Various tools and equipment are used in therapy. Once the correct sound is acquired, it is practised in words and sentences, then generalised to everyday speech using different methods and materials.

Delayed language and speech means that a child's understanding and expression lag behind peers and that they have difficulty acquiring expected communication skills. Autism, pervasive developmental disorders or other developmental difficulties may also delay language and speech compared with typically developing peers. Therapy prioritises family collaboration and continues with parental involvement. Parents are first taught effective communication



methods and play strategies to support language and speech development. Communication and play-based activities are then planned to accelerate learning. Supporting both speech and comprehension during therapy is very important. The overall aims are to expand vocabulary, develop longer sentences and produce sounds correctly.

The most common voice disorder is hoarseness, usually seen in children with habits that affect vocal health, such as shouting, crying or speaking loudly. Therapy first develops awareness of behaviours that harm the voice, then teaches correct voice production during normal speech without damaging the vocal folds. Various exercises and methods aim to resolve vocal fold damage, help the child achieve a healthy voice and maintain it.

These therapy services are provided at the Speech and Language Disorders Outpatient Clinic through interdisciplinary collaboration and current approaches.

OCCUPATİONAL THERAPY UNİT, SENSORY INTEGRATİON CLİNİC

Occupational Therapy

The main goal of occupational therapy is independence in activities of daily living. It supports participation in self-care, play/productive activities and leisure. With daily participation as the treatment goal, occupational therapy supports emotional and behavioural processes, social interaction, self-care, sensory and motor skills, pre-academic and academic skills, and executive functions in children and adolescents. Sensory integration is frequently used in work with these age groups.

Sensory Integration

This is the process of receiving information from our environment and body through the sensory organs, transmitting it to the brain, processing and interpreting it, and producing an appropriate behavioural response.

People continually receive signals from their bodies and surroundings through their senses. Signals enter through the eyes, ears, nose, mouth, and touch and movement receptors. Reception by the sensory organs and transmission to the brain form the sensory integration process. Organisation and interpretation of this information by the central nervous system constitute perception. For example, tasting something is a sensation; recognising it as lemon is perception. Behaviour is typically goal-directed, and internal and external stimuli are needed to produce it. The more accurately a person's sensory needs are met, the better they adapt to their surroundings. Our sensory system therefore underpins emotions, learning, behaviour and daily living skills.

The sensory system, which forms the foundation of development, consists of 8 parts.

1. Interoceptive Sense: Important for maintaining vital functions, interoception can underlie many emotional and behavioural problems.

2. Vestibular Sense (Movement and Balance): This is one of the first senses to develop, beginning at weeks 4–5 in the womb. The vestibular sensory organ is in the inner ear. It registers every movement and change in head position, helping us detect the direction and speed of movement of our bodies and surrounding objects and people, and adjust balance and coordination.





3. Proprioceptive Sense (Body Awareness): This receives and processes information from muscles, joints and tendons. It helps control muscle tone, body position and awareness, spatial perception and motor planning skills, known as praxis.

4. Tactile Sense (Touch): This is the first primitive sense to develop in the womb, beginning in the 3rd week of pregnancy. Light touch, deep pressure, skin stretching, vibration, movement, temperature and pain activate receptors in the skin. They help us recognise and protect ourselves from unexpected touch and learn about objects by touching them.

5. Visual Sense: This helps us recognise people, objects, colours, contrasts, and temporal and spatial information. It is a complex sensory system that lets us anticipate what is approaching and prepare to respond.

6. Auditory Sense: This enables us to perceive and interpret sounds, including their location, direction and distance.

7. Taste: This enables us to perceive different tastes, such as sweet, sour, bitter and salty.

8. Smell: This provides information about smells around us.

Paediatric occupational therapists use occupational therapy and sensory integration to help children process sensory input correctly and support all the senses working together. As children actively participate in meaningful activities that meet the central nervous system's needs for sensory intensity, continuity and quality, their adaptive behaviours also develop.

As a result, perception, learning skills, abilities, socialisation and confidence improve. The child becomes able to plan, organise, and sustain activities they need or want to do.

Sensory Integration Disorder

Sensory Integration Disorder (SID) involves difficulty making appropriate use of information received from the environment through the senses.

Sensory integration disorder may have behavioural consequences, including:

Inattention

- Emotional and anger-related problems

- Socialisation difficulties
- Sleep problems
- Eating problems
- Academic difficulties
- Difficulties with self-care
- Organisational difficulties
- Developmental difficulties.
- Problems arising from sensory integration disorder can be summarised in four groups.

1. Sensory Modulation Difficulties: These concern how a child regulates responses to sensory input. Children with poor modulation may be over-responsive, under-responsive, sensory-seeking or inconsistent. A child seeking vestibular input may want to swing, spin and run, while a child sensitive to it may avoid these activities and struggle with balance and coordination. A child sensitive to touch may react negatively to and refuse hair combing or washing, nail cutting or toothbrushing.

2. Sensory Discrimination Difficulties: These involve difficulty distinguishing one sensation from another.

3. Sensory-Based Motor Difficulties: These include difficulty positioning the body, organising and moving it during an action, and carrying out a plan.

4. Co-Regulation and Behavioural Difficulties: These arise from inadequate sensory processing and other developmental problems.

Occupational Therapy and Sensory Integration Treatment in Autism

The sensory profile of a child with autism spectrum disorder is assessed, sensory skills are supported and appropriate behaviours are taught according to their needs. Occupational therapy and sensory integration are also used to prevent anticipated difficulties and tantrums and help the child relax.

Children with autism spectrum disorder are offered activities supporting vestibular and proprioceptive processing, including balance, coordination and body awareness.

Daily living skills, such as eating, brushing teeth, combing hair, dressing, bathing and cutting nails, are also developed.

Therapy programmes are planned to support attention, memory, visual perception, motor planning (praxis), pencil grip, and fine and gross motor skills for the development of academic skills.

By developing language and communication skills, occupational therapy and sensory integration support play skills, participation in activities and socialisation in children with autism spectrum disorder.

Special Education

Special Education aims to support pre-verbal communication, self-care, social and communication skills, taking turns, joining and initiating play, and academic activities in preschool and formal education for people who develop differently from their peers. In the ÇEGOMER programme, special education teachers support these skills alongside reasoning, problem-solving, creative thinking, attention and joint attention. Work also covers taking turns, joining and initiating play, and preschool and formal academic activities. All of this is developed through family collaboration and coordination with other specialist fields within a multidisciplinary approach.

Sports/Movement Training

Sports/movement training aims to develop balance, coordination, flexibility and postural control. Education for individuals with special needs should help them become self-sufficient and live happier lives. Acquiring skills suited to their individual needs supports everyday



life, and sports education plays an important role. Sport makes a significant contribution to socialisation. For people needing special education who feel rejected or unaccepted by society, the confidence gained through sport supports development. Planned sporting activities should promote psychomotor, sensory and cognitive development, as effective progress in these areas achieves the stated long-term goals. Sports education is important for acquiring motor skills that contribute to social and emotional development.

- Improving physical and motor fitness through participation in sports education,
- Developing muscular endurance and strength,
- Developing physical abilities such as balance and flexibility,
- Improving perceptual motor functions,
- Improving movement abilities and body image,
- Developing coordination,
- Accepting limitations they cannot change and thus taking steps towards self-fulfilment.





OUR FACILITIES

"One way of harming a patient is to leave them untreated."

Prof. Dr. Nevzat Tarhan

1. Psychotherapies: These aim to address deficits and losses, provide emotional support, develop practical knowledge and skills for life events, and replace maladaptive behaviours with adaptive ones. Neurobiofeedback, psychoanalytically oriented psychotherapy and cognitive behavioural therapy are among the methods offered by NP Health Group.

2. Inpatient Treatment: Inpatient care is an effective option when a person endangers their own or others' safety, when there is a life-threatening situation or when treatment resistance occurs.

3. Clinical Pharmacogenetic Assessment: Selecting medication according to the genetic profile and monitoring the blood levels of prescribed medicines improve the chances of successful treatment. Medicines that may be unnecessary or cause substantial side effects can be identified in advance, enabling rational treatment planning.

4. Neurobiofeedback: This shows the link between a person's internal processes and physiological functioning. Sensors/electrodes attached to the fingers or scalp transmit body temperature and brain waves to a computer for display. It helps people learn to monitor and control bodily functions that are normally unnoticed and may change with emotions and thoughts.

5. Transcranial Magnetic Stimulation (TMS): This is a newer treatment for psychiatric and neurological disorders. Magnetic fields applied at brief intervals to brain regions thought to be affected by illness regulate the brain's electrical activity. It provides faster and more





powerful treatment than medication. Our clinics use it for medication-resistant depression. In certain situations where electroconvulsive therapy cannot be used (patient and family preference or anaesthesia risk), it is applied at low frequencies during manic episodes.

6. Computer-Based Training Modules (CogniPlus, Rehabil): Individual attention training programmes can help restore mental abilities or improve existing ones. Computer-based training modules are used to rehabilitate cognitive skills such as planning, organisation and attention management.

7. Biofeedback: This system uses special electrodes to measure body temperature, skin resistance, breathing rate, muscle tension and heart rate, visualising the relationship between bodily sensations and thoughts.

8. Clinical Pharmacogenetics Laboratory: Blood levels of medication above therapeutic values or drug interactions may impair brain function. Blood levels of the medicines used are measured (TDM) to detect this.

9. Personalised Occupational Therapy–Sensory Integration Clinic: This unit was established to improve daily quality of life for children and young patients aged 0–14 with developmental delays and special needs. It offers personalised occupational therapy through a new treatment approach to autism. It targets sensory integration, behavioural development, social skills, basic language skills and fine and gross motor development. Play-based methods aim to help children meet their sensory, psychological and physical needs independently and maximise their personal care skills.

Adult Psychiatry

Child and Adolescent Psychiatry

NPAMATEM Addiction Centre

Neurology

Paediatric Neurology

Brain, Nerve and Spinal Surgery

General Surgery

Orthopaedics and Traumatology

Cardiology

Ear, Nose and Throat

Gastroenterology

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Physical Medicine and Rehabilitation

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Yamanevler Mah. Ahmet Tevfik İleri Cad. No:18, 34768 Ümraniye / Istanbul T: 0 216 633 06 33 F: 0 216 634 12 50

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