SUSTAINABILITY & SPORTS SCIENCE JOURNAL

REVIEW ARTICLE

The importance of senso-perceptive skills in children of primal school age: Literature summary

Erion Peqini . *Department of Physical Education and Sports. Faculty Science of Education. University Luigj Gurakuqi. Albania.*
Bardhyl Misja. *Department of Education and Health. Faculty of Movement Sciences. Sports University of Tirana. Albania*.

ABSTRACT

The purpose of this review is to find out the importance other researchers have given to the study of senso-perceptive awareness, as well as the pathways of improvement in lower school-age children. We should use mobility activities to increase the development of coordination and balance in children. Methodology: For this literature review used database as; PubMed, Google Scholar, Web Science and Science Direct. With the help of keywords which include the phrases "*senso-perceptive skills*", "*senso-perceptive skills training*", *"kinesthetic control*", "*visual coordination*", "*proprioception*" and other combinations. Results: defining the age of 6-10 generates 154,000 items. The restriction on articles published in the last 10 years generated 16,800 articles. The increased use of keywords channels the search into 330 articles of which 40 were selected as the most relevant articles to our topic. Conclusions: This study of literature aims to illustrate that better developmental support for children can be achieved through exercise and of course a particular importance of senso-perceptive abilities. Another very important point is the definition and design of a manual, with the aim of incorporating into the teaching curriculum. People involved in the education and care of preschoolers should train children's awareness and responsibility for their bodies.

Keywords: Senso-perceptive, Children, Improvement, Cognitive ability.

Cite this article as:
Peqini, E., & Misja, B. (2024). The importance of senso-perceptive skills in children of primal school age: Literature summary. *Sustainability and Sports Science Journal*, *2*(4), 211-225. https://doi.org/10.55860/VZPM2744

Corresponding author. *Department of Physical Education and Sports. Faculty Science of Education. University Luigj Gurakuqi. Albania.*
E-mail: erjonpeqiniust@hotmail.com
Submitted for publication March 25, 2024.
Accepted for publication May 08, 2024.
Published September 30, 2024.
Sustainability and Sports Science Journal. ISSN 2990-2975.

Identifier: https://doi.org/10.55860/VZPM2744

INTRODUCTION

Nowadays, children's daily lives are increasingly characterized by a mobility poverty. Problems can arise in motor, cognitive, emotional and psychosocial development. In addition to genetic determining and malnourishment, inactivity is now considered a major cause. Furthermore, the absence of a broad range of motion during childhood leads to a general concern of the child's development. The importance of the movement for child development is increasingly moving to the secondary.

This study aims to illustrate that better development support for children can be achieved through play, exercise or other situations that ensure a more substantial integration of children with their surrounding environment. Mobility and mobility not only supports motor development, cognitive, social and affective development, as it enables different experiences that the child needs to process. The movement can also have a positive impact on the development of personalities.

Furthermore, movement also has a positive impact on the brain's structural development and information processing. Since children have a strong desire to move and are still unable to accurately select their needs, concentrated learning can probably be achieved best on the move or at least on a break for movement. Various studies have already shown that exercise causes increased cerebral activity and thus increases attention.

Movement and play are sometimes the most important elements in a child's development and serve to explore and understand their own body and environment. Experiences gained through independent activity in movement and play lead to a gradual development of the child. The child is guided by an inner drive to develop and continually improve his skills. A movement-friendly environment supports this process, while poor external conditions reduce or inhibit this natural desire to move with the relevant effects on overall development. In addition to the negative effects on health and well-being, low mobility stimuli also impair children's motor, cognitive, psychological and social development. The reason for this is that movement never occurs only as a mechanical process, but always in relation to psychological processes, according to (Zarotis, 2020).

As we humans exist in space through our bodies, we experience it through all our senses and build an integrated knowledge of the world into our memories. However, children's conception of the world differs from adults due to their developmental stages.

We live in a multi-sensory world in which we are constantly bombarded with information conveyed through different sensory modalities, and our brains are constantly synthesizing this mixture of sensory information into an adaptive and coherent whole to reveal the nature of our experiences. This is much more complicated for children, as they are much more dependent on their bodies and senses during their development to learn and understand the world they are growing up in, according to (Tuegay & Sarıberberoğlu, 2022).

The influence of movement on cognitive development and the influence of the developmental movement from a psychological point of view especially affects the first two years where the mental development of children takes the necessary impulses through movement and perception. Perception refers to the acquisition and processing of impressions with the help of sensory organs. Through verseal movements, children actively experience their environment and sensory organs receive the necessary and verse-specific stimuli for their development. Therefore, movement is an important prerequisite for the development of sensory organs. In humans, the perception of basic skills is present in average quality from birth, but to reach a higher level, it

must be practiced in childhood. Through various practices of sensory functions, movements become safer. For sensory interaction, movement activities have a supportive and stimulating effect, as physical mobility stimulates the sensory organs and triggers adaptation reactions.

Experiences of body and movement are an important component in the development of a child's self-conception. Self-concept is the image a child makes of himself. Self-concept shapes the child's appreciation, expectations and attitudes towards themselves. Through mobility activities, children learn about the possibilities and limitations regarding themselves and their environment, discover their effectiveness, and directly feel success or failure, according to (Zarotis, 2019).

The vestibular system also makes a vital contribution to help distinguish visually perceived self-movements from object movements in the environment. Vestibular inputs help to reconcile different and contradictory signals including vision, proprioception (and other somatic sensations) and internally generated motor commands. Selecting the right vertical and horizontal references can thus lead to problems in postural and motor coordination, fine motor control and visual processing. Individuals with vestibular problems depend more on sight and proprioception for determining the vertical orientation of the ground and if an object that is taken as a stable reference point move, it can lead to postural instability and disorientation, according to (Wiener-Vacher et al., 2013).

Kinesthetic control

This sensory ability (we can also call it proprioceptive) is nothing but the recognition of our organism and the perception we manage to achieve with the surrounding space on the one hand, and the ratio of the body to its particular segments on the other. Improved motor imagery during childhood may have a partial correlation with the ability to integrate proprioceptive data with other sources of sensory information said by (Guilbert et al., 2018).

The body's image recognition

Self-discovery***,*** self-sponge***,*** car control.

This ability is aimed at integrating the fit of the Unit with the outside world, considering it as the physical space of the body itself. Inclusion in sports children positively affects cognitive and emotional functions according to (Bidzan-Bluma & Lipowska, 2018).

Visual coordination

The ability of sight gives us the most important data on space ownership and its relationship (distance type, trajectory, direction, ability to visually track a moving object, etc.). One of the other goals of this ability is that of precision in throwing and waiting objects. According to (Amarawardana, 2018), the study of visual perception involves a host of skills that allow selection, analysis and integration of information from the outside. Developing these skills is essential for children.

Coordination of hearings

a) Development of audio-visual perceptions, b) Develop rhythmic skills and space-time orientation, c) Developing skills for orientation and evaluation of space.

The hearing system plays a very important role in obtaining information from objects and groups, sequencing sounds and providing meaning and access to communication tools such as language (Litovsky, 2015). The ability to distinguish noise during motor activity phases is of particular importance to children, especially in cases where movement must be adapted to the rhythm of a sound, music, etc.

Touching control

The content of this control concerns pressure, as well as other external characteristics of an object when it comes into direct contact with the surface of the body skin. Proprioceptive kinesthetic control supports the motor movements of developing children and may be affected by several factors according to (Bonafede & De Waal, 2023).

METHODOLOGY

For this literature review on the study of senso-perceptive abilities and their perceptual pathways with lower school-age children, a time-spanned study was used. Below I will describe the methodology used, which enabled us to collect and analyse the study and important articles related to the topic:

Identifying the sources of the study

We used data from databases such as PubMed, Google Scholar, Web Science and Science Direct, which helped us search for important articles. With the help of keywords and phrases that included "*senso-perceptive skills*", "*training senso-perceptive abilities*", "*kinesthetic control*", "*visual coordination*", "*proprioception*" and other combinations.

Criteria for inclusion

The main focus was on using keywords, with the aim of priority of articles published in magazines with reviews. Using the keywords "*senso-perceptive skills*" on the platforms used, 4,770,000 articles related to this word were generated. Then the use of keywords was added by channelling the search into the direction of our topic. I stress here that no Albanian language publication was generated. Use filters for platforms to enable the following:

- The definition of age 6-10 generated 154,000 items,
- Restriction on articles published in the last 10 years generated 16,800 articles,
- Excluding from searching for articles with displays of various pathologies and specifically autism generated 1,130 articles,
- The addition of keyword use channelled the search to 330 articles of which 40 were selected as the most relevant articles to our topic.

I stress here that the biggest focus of published publications involved children with autism, who do not fit the conditions of the topic we have chosen.

Data analysis

The data was collected and organized into thematic groups, including auditory control, motor skills, kinesthetic control, visual coordination and training programs. Within each section, the studies were organized based on focus and key findings. Discussion and conclusion: Work was conducted to filter information and draw connections between the different studies and their effects. Recommendations: Based on the results of this literature review, recommendations were made to physical education teachers, parents and sports scientists for building training protocols. Quotes and references: Citations and references serving our study were used to guarantee transparency and reliability of the resources used in this literature review.

For this literature review on the study of senso-perceptive abilities and their improvement pathways with children of lower school age, a time-spanned study was used. The literature review will also provide insight into the role of recommended training programmes and strategies for improving senso-perceptive skills, developing and evaluating them in children of lower school age.

RESULTS

In total, 40 articles were taken in the study that were compatibility with the inclusion criteria in our study. The selected scientific articles will be viewed below in tables 1, 2, 3 and 4.

Table 1. Summary of articles and conclusions included in the study.

Title Article Authors, Year.	Overview	Conclusions
"The Role of the Senses in Children's Perception of Space". (Turgay & Sarıberberoğlu, 2022)	This study focused on the importance of the senses in the perception of space in children. They are bodily activities that provide cognitive information about the environment experienced, as well as internal or external situations, to survive as socially active beings.	Data on the child-space relationship indicate that different sensory stimuli have different effects and influences on the understanding and recall of space. The perception of space consists of a multi-sensory system.
"The influence of sensory processing tools on attention and arithmetic performance in Dutch primary school children" (Van Der Wueff et al., 2021)	Sensory processing is a very important ability of the nervous system to process sensory input. The study focuses on giving some tools to help children if these tools have an impact and if the effects depend on sensory processing.	There was no positive effect of using tools on sensory processing. Children with poor sensory processing showed more sensory processing than others.
"Sensory Processing and Movement Control in Children" (Sultan, Shaikha A M M., 2022)	Identifying the role of sensory processing in perceptual decision-making, controlling mobility skills and participation in children.	Study 1 show that different amounts of sensory processing contribute to mobility skills. Study 2 shows that mobile skills can be affected by sensory processing skills in children. Finally, multisensorial stimuli can improve decision-making skills.
"Skeletal maturation, fundamental motor skills and motor coordination in children 7–10 years" (Freitas et al., 2015)	The relationship between skeletal maturity, underlying motor skills and motor coordination in children 7-10 years old was the main focus.	In conclusion, interaction with body size has a negligible impact on motor skills and coordination skills in children 7-10 years old.
"Motor skills and school performance in children with daily physical education in school – a 9-year intervention study" (Ericsson & Karlsson, 2012)	The focus of the study is the effects of increased levity and physical activity on motor skills and school performance over the long-term.	Engaging in training with mobility activities and motor skills adapted during the schooling process improves not only motor skills but also school performance.
"Motor skill depends on knowledge of facts" (Stanley & Krakauer 2013)	The study questions the view that being proficient in a moving activity is independent of knowing the facts about that activity.	Mobile activity requires both sharpness and knowledge, both develop with practice. Our effort goes beyond discussions of rhetorical skills, where it is thought that it endangers any attempt to make a distinction between moving and theoretical activities.
"Global levels of fundamental motor skills in children: A systematic review" (Bolger et al., 2020)	This study aims to systematically review the levels of underlying motor skills of children worldwide, using the Gross Motor Development Test-2 (TGMD-2).	The analysis found that the importance of essential motor skills increases over childhood age, from greater skills to moving abilities than object control abilities.
"The relationship between motor skills and cognitive skills in 4–16 year old typically developing children: A systematic review" (Van Der Fels et al., 2015)	The literature review in this article is about the relationship between motor and cognitive skills in developing children aged 4-16. There have been differing views about the relationship between motor skills and cognitive abilities in children.	The connections between some motor and cognitive skills were average and in some cases had strong connections with each other. Motor intervention programs can be used to stimulate both motor and higher cognitive abilities in children before puberty.
"The Importance of Movement for the Overall	The study focuses on the importance of movement and the consequences of lack of	Lack of levity activities, it leads to general developmental worry of the child in

Development of the Child at Pre-School Age" (Zarotis, 2020)	exercise. Impact of movement on cognitive development. The impact of the movement on development from a psychological point of view.	childhood. The chances of serious problems in motor, cognitive, emotional and psychological development are evident.
"Sensory cue combination in children under 10 years of age" (Negen, et al., 2019)	Independent perceptual assessments were considered, creating a unified assessment. The study provides the first evidence of combination between the ages of 7-10.	The study gives us independent insight into children at the same age who fail to combine the signs, but this is done at the age of 10.5.
"Growth, Development and Proprioception in Children" (Tarakci et al., 2016)	Sensory sites are well organized in adults, but in children, sensory systems are not fully developed. The first level of development is sensory motor skills, as a result of movement and gravity.	The study concludes that there is strong evidence that proprioceptive movement control continues to strengthen from childhood to adolescence.

Table 1 articles contain the most important importance that counterpart studies give to the study of senso-perceptive fists and the role in child development. It provides important information about the focus we should have on the study of the senses since they have a role in determining space in children.

Table 2. Study of proprioceptive, sensory and cognitive abilities.

Title of study and author, year	**Review Summary**	**Conclusions**
"Motor imagery development and proprioceptive integration: which sensory reweighting during childhood." (Guilbert et al., 2018)	Studying the perfection rate of motor images observed between the ages of 5-9 years, was associated with the increasing impact of incorporating proprioceptive abilities with vision and hearing signals.	Improved motor imaging during childhood may have a partial correlation with the ability to integrate proprioceptive data with other sources of sensory information.
"Development of the auditory system" (Litovsky, 2015)	The hearing system plays a very important role in obtaining information from objects and groups, isolating sounds and providing meaning and access to communication tools such as language.	Hearing skills have the power to rebuild perceptual spaces. They group several objects together by densering sounds from each other. The development of these skills extracts, sound features to be included in an analysis of the hearing world.
"Physical Activity and Cognitive Functioning of Children: A Systematic Review" (Bidzan-Bluma & Lipowaska, 2018)	There are few published studies showing the link between sports and children's cognitive functions. They were taken in analysis, thinking, learning and memory about sport and childhood.	The results show that involvement in late childhood with sports positively affects cognitive and emotional functions. Such knowledge would be very useful for developing sports programs aimed at improving cognitive functions.
"*The Impact of Auditory Processing and Cognitive Abilities in Children"* (Tomlin, et al., 2015)	Examine the connections between the test of the processing of the deer, functional differences and cognitive abilities. The study involved 155 children aged 7-12 years.	There is a significant multifunctional impact between cognitive abilities and auditory processing test results.
"Influence of Children's Motor Development Primary School Age in the Learning Process" (Arqiya, 2023)	Motor skills are skills related to body movements, and also a site called the sensory motor. The study focuses on the sensory system which is an important part of motor nets.	The importance of motor skills development in children is that the child will react faster, especially in coordination of the eyes and hands, and thus the child is more agile in movement.
"Vestibular activity and cognitive development in children" (Wiener-Vacher et al., 2013)	The importance of the vestibular apparatus has an essential role in oculo-motor functions, as well as static and dynamic posture-motors. There are few findings about the impact the loss of the vestibular system has on cognitive development.	The study confirms the hypothesis that vestibular dysfunction leads to delays in normal cognitive development, until specific changes.

"Balance and lower limb proprioception of multiple joints in typically developing children aged 6 to 10 years" (Jacobs et al., 2022)	The study examined the relationship between balance performance and lower limb proprioception in children aged 6-10 years of age with normal development.	Lower limb proprioception is associated with balance performance in children with typical development ages 6-10. To better support this study a large number of children will be tested.
"Visual Perceptual Evaluation in Early School Aged Children" (Amarawardana, 2018)	The study of visual perception involves a host of skills that allow selection, analysis, and integration of information from the outside. Developing these skills is essential for children.	New York State University allows visual motor skills to be evaluated in young children between the ages of 2 and 9. This assessment highlights children with delays in these skills, improving this component.
"Children with low motor ability have lower visual-motor integration ability but unaffected perceptual skills" (Bonifacci, 2004)	The purpose of this study was to examine perceptual, visual-motor and intellectual abilities in children with low, medium and above-average motor skills. 144 children aged 6-10 participated.	The results highlight a difference in visual-motor integration between children with high and low gross motor skills. There is a lack of significant differences in perceptual or intellectual abilities.
"Differentiating visual and kinesthetic imagery in mental practice" (Féry, 2003)	The study sought to uncover the benefits of visual and kinesthetic imagery in mental practice.	When mental practice is used to initially adopt a task, visual images are best for those tasks that emphasize form. Kinesthetic images are best for those tasks that emphasize the timing or coordination of both hands.
"Training Motor Skills of Children with Low Vision" (Aki et al., 2007)	The purpose of the study was to observe the effects of a specific motor training program in children with impaired vision. The training program included balance of training, coordination, strength, visual control and finger density.	Some significant changes were achieved across all abilities, but no significant differences were observed, with the exception of motor visual control.
"The Effects of an Eight Week Plyometric-based Program on Motor Performance Skills and Muscular Power in 7–8-Year-Old Primary School Students" (Sortwell et al., 2021)	The study aims to examine the effect of a plyometrics-based curriculum, for pupils' motor skills in primary schools, the muscular power of upper and lower sides and the reactive strength index.	Our findings show that physical education includes lavatory activities of plyometric character and can increase motor performance ability and muscular power in young primary school students. Plyometric training can be a safe pedagogical method, to help develop motor performance skills.
"The Relationship between Children's Sensory Processing and Executive Functions: An Exploratory Study" (Brown et al., 2021)	The purpose of the study is to uncover the links between sensory processing capabilities and execution function.	The results showed that, there is a statistically significant link between sensory processing measured by SP-2 and executive function which was measured by BRIEF-2.

Table 2. This summary refers to the Study of the degree of perfection of motor images observed between the ages of 5-9 years, which relates to the increasing impact of the intuitiveness of proprioceptive ness with vision and hearing signals. Motor imaging during childhood may have a partial correlation with the ability to integrate proprioceptive data with other sources of sensory information (Guilbert et al., 2018).

In Table 3, you will follow: According to Le Boulch: "The body scheme regulates the position of the muscles and different parts of the body in relation to each other and in each particular movement changes according to the position of the body. A person's balance depends on their body scheme; Without this he would not have been able to walk, sit, dance, and perform any other motion without falling." Children with a disorder in coordinative development have a higher risk of developing health problems (Smits-Engelsman et al., 2017).

Table 3. Motor and coordination skills.

Title of Study and Authors, Year.	**Review Summary**	**Conclusion**
"Study regarding the development of agility skills of students aged between 10 and 12 years old" (Sopa & Pomohaci, 2016)	The study focused on an elementary school classroom that practices physical education, and we tried to see how they developed their combined coordination and speed skills.	The results showed that the experimental group developed skills like speed, coordination and agility more easily than the other group. Participation of young children in special programs for the development of skills is important for their future by developing skills such as speed, coordination, lateral movement, etc.
"Partly randomised, controlled study in children aged 6–10 years to investigate motor and cognitive effects of a 9-week coordination training intervention with concurrent mental tasks" (Santner et al., 2018)	Physical activity can play a very important role in physical development in children of low school age. The goal is to discover a mobile program that brings high cognitive effects to children 6-10 years old. Some challenging coordinate exercises with cognitive tasks will be included.	The program showed some limitations: short duration (9-weeks) and low frequency (only one hour of 50 min. a week).
"Effectiveness of exercise intervention on improving fundamental movement skills and motor coordination in overweight/obese children and adolescents: A systematic review" (Han et al., 2018)	Developing motor skills and coordination in childhood can help break a taboo to reduce childhood obesity. The main goal is to identify physical activities in improving basic movement skills and motor coordination skills in obese children.	Physical exercises and levity activities are effective in improving their abilities. To get the best of these skills, we recommend focusing on basic mobility skills and motor coordination activities.
"Motor Coordination Correlates with Academic Achievement and Cognitive Function in Children" (Fernandes et al., 2016)	Here they examine the link between motor skills, cognitive function and school performance, for 45 students aged 8-14.	The data show that motor coordination and selective visual attention, excluding agility, can influence academic and cognitive growth in children aged 8-14.
"Specifically designed physical exercise programs improve children's motor abilities" (Chiodera et al., 2007)	The study focused on using a specific professionally run program. Conditional and coordinating motor skills were measured.	At the end of training, both men and women fared better than at the beginning. Professionally-driven physical education programs in primary schools have significant advances without interfering with body balance performance.
"Kinesthetic Coordination Abilities in 6-Year-Old Children: School Quintile, Gender, and Hand Dominance Differences" (Bonafede & De Waal, 2023)	This article was taken up with the determination of kinesthetic proprioceptive coordination changes at age 6, in relation to different schools, different genders and different hands.	In conclusion, no substantial changes in kinesthetic proprioceptive coordination were found in this age group. It takes a lot of work to distinguish between the younger children.
"The effect of exergames on functional strength, anaerobic fitness, balance and agility in children with and without motor coordination difficulties living in low-income communities" (Smits-Engelsman et al., 2017)	Children with disorders in coordinative development, have a risk of being more at risk of health problems. The study focused on 18 children aged 6-10 with low levels of mobility coordination, compared to the same age group with normal development.	Levity games improved strength and anaerobic ability in both groups. Furthermore, the program used leads to better balance skills in children with low levels of coordination while children with normal development improved in skills.

Table 4. T-tested and assessments of senso-perceptive abilities.

Study title, author and years	**Review Summary**	**Conclusions**
"Reitan–Klove Sensory Perceptual Examination" (Jasinski & Podell, 2011)	The children's versions are the Halstead Neuropsychological Test Battery for Older Children (from nine to 14 years old) and the Reitan Indiana Neuropsychological Test Battery (from ages five to eight).	Because of its complexity, Halstead-Reitan requires management by a professional examiner and interpretation by a trained psychologist. Because Halstead-Reitan is a fixed battery of tests, some unnecessary information can be collected or some important information may be missing.
"Assessment of Sensory Processing Characteristics in Children Between 0 and 14 Years of Age: A Systematic Review" (Shahbazi & Mirzakhani, 2021)	Neurodevelopmental problems are related to sensory processing disorder. They can have a negative impact on objective, emotional and behavioural functioning. This assessment and component is critical in children. The focus is on determining sensory processing instruments at the age of 0-14.	The results of the study concluded that each of the sensory processing assessment tools controlled different aspects of sensory processing. The selection of tools to measure sensory processing depends heavily on the specific components that need to be evaluated.
"Fundamental Movement Skills Are More than Run, Throw and Catch: The Role of Stability Skills" (Rudd et al., 2015)	Initially the goal of this study was to validate a test battery to assess stability abilities structure, in children aged 6 to 10. Second, assess how stability skills fit into a model of basic movement skills.	Among the most important conclusions of the study, it offers a rationale for incorporating stability skills into evaluating basic movement skills. Stability skills can be used alongside other basic moving skills assessment tools to provide overall assessment of children's basic mobility skills.
"Assessment of motor coordination in students aged 6 to11 years" (Benjumea et al., 2015)	The main objective of this study is to assess the level of coordination skills in students 6-10 years old. Analyse the connection they have between the essential motor skills that come from the realization of the 3JS test goals.	The results show that the older the age, the more coordinated they are. With age increases the correlation between the tasks that the 3JS test offers and motor coordination are strong.
"Assessment of Sensory Processing Characteristics in Children between 3 and 11 Years Old: A Systematic Review Front" (Jorquera-Cabrera et al., 2017)	Studying the tools we currently have to evaluate sensory processing. We have 15 psychometric tests available for the American population.	There are 21 tools available to evaluate sensory processing in children aged 3-11. 15 tests are supported by psychometric studies. Nine of these tests can be used for children from preschool up to age 12.
"Coordination development in children aged 7 to 11 years old through games" (Bushati, 2023)	The main focus of this study is: measuring, recording, comparing and studying coordinate skills in primary school children.	Engaging in mobile games during the lesson class has an increase in the degree of involvement effectively, increases contact between students and develops attention.
"Psychometric Properties of Sensory Processing and Self-Regulation Checklist (SPSRC)" (Lai et al., 2019)	This study aims to evaluate the psychometric aspect of SPSRC and detect patterns of self-control and sensory processing in children with and without problems.	The findings support the reliability and validity of the SPSRC, which assesses sensory processing and self-control activity in a child in daily activities. The evidence requires further study to compare the level of SPSRC with laboratory tests.

In the 4th tab, a range of tests and assessments are provided as to the senso-perceptive abilities and their component parts. There are 21 tools available to evaluate sensory processing in children aged 3-11. 15 tests

are supported by psychometric studies. Nine of these tests can be used for children from preschool to age 12 according to (Jorquera-Cabrera et al., 2017).

DISCUTIONS

Sensory abilities are well organized in adults, but in children, sensory systems are not fully developed. The first level of development is sensory motor skills, as a result of movement and gravity according to (Tarakci et al., 2016). The importance of movement and the consequences of lack of exercise increase the chances of serious problems in motor, cognitive, emotional and psychological development (Zarotis, 2020). The study (Ericsson & Karlsson, 2012) points out that the incorporation into training with mobility activities and motor skills adapted during the schooling process improves not only motor skills but also performance in school. Since the child is surrounded by an environment rich in external stimuli, which stimulate him from all sides, as well as by internal stimuli of his body, the task of the master (specialist) is to teach him to choose and organize, from such a variety of chaotic stimuli, the most appropriate ones, with whose side to succeed in solving the mobility task. According to (Stanley & Krakauer, 2013) mobility activity requires both sharpness and knowledge, both of which develop with practice. Our effort goes beyond discussions of rhetorical skills; we think it jeopardizes any attempt to distinguish between moving and theoretical activities. The viewing device supplies us with rich material of environmental impressions, giving us notices about the colours, shapes and dimensions of objects that surround us in everyday life. The ability of sight gives us the most important data on the possession of space as well as the relationship with it (distance type, trajectory, direction, ability to observe an object in motion, etc.). The State University of New York allows the assessment of visual motor skills in young children between the ages of 2 and 9. This assessment also highlights children with delays in these skills, improving this component. Improved motor imaging during childhood may have a partial correlation with the ability to integrate proprioceptive data with other sources of sensory information according to Guilbert et al., 2018). The hearing system plays a very important role in obtaining information from objects and groups, by sequestering sounds and providing an understanding and access to communication tools such as language. Hearing skills have the power to reconstruct perceptual spaces. Formation of this ability is closely related to information that arrives from muscle perceptors of tendons, vestibular labyrinth, neural pathways and efferents as well as from articulations. Kinesthetic sensations give us information about the state of the body (position, movement of the body and limbs) or the surrounding environment (inform us about the distance of objects, heights, depth, the spatial time ratio during the performance of a movement, as well as the weight of the objects we lift or the resistance we encounter during their use). The processing, control and transformation of computing kinesthetic or proprioceptive sensations, together with information coming from esteroceptive receptors, is done by the small brain that provides control of static and dynamic positions of the body and muscle tonicity. When mental practice is used to first adopt a task, visual images are better according to (Féry, 2003). The importance of the vestibular apparatus has an essential role in oculo-motor functions, as well as static and dynamic posture-motors. Vestibular dysfunction leads to delays in the normal development of cognitive functions, until specific changes, conclusions reached by (Wiener-Vacher et al., 2013).

If an individual has concerns of the bodily scheme he will encounter great difficulties in executing coordinated movements, as well as maintaining a certain balance. A child's ability to coordinate his eye and hand, and the correct perception of his position in space, depend on the degree of development of the concept and imagination he has for his body. All motor activity, which is kinesthetic of the tonic (kinesthetic for all movements, tonic for postures and positions in maintaining balance), gives an image of the body, which is the resultant synthesis of bodily experience in a given situation. Participation of young children in special programs for the development of skills is important for their future by developing skills such as speed,

coordination, side movement, etc. taken by the author (Sopa & Pomohaci, 2016). According to Pandolfini: "*Bodily imaging is therefore the mental reflection we make of our bodies in a subjective way, conditioned by the level of our movement experience, motivational factors and other influences of the social sphere*." The messages and stimuli that come from the external environment stimulate the ability to integrate and then differentiate the child with this environment through motor activity that can be performed in a gesture, expressive (static, dynamic, global or segmental) way, which will ultimately increase the possibility of accurate bodily immaturity. According to this concept, the child organizes and develops his body image through movement that is realized not only in space but also in time. According to (Bushati, 2023) the use of different mobility activities should focus on increasing the desire for development of coordination in children.

The children's versions are the Halstead Neuropsychological Test Battery for older children (from nine to 14 years old) and the Reitan Indiana Neuropsychological Test Battery (ages five to eight). Because of its complexity, Halstead-Reitan requires management by a professional examiner and interpretation by a trained psychologist. Because Halstead-Reitan is a fixed battery of tests, some unnecessary information may be collected or some important information may be missing, as stated by (Jasinski & Podell, 2011). Another study focuses on determining the evaluating sensory processing intuitions at ages 0-14. The results of the study concluded that each of the sensory processing assessment tools examined different aspects of sensory processing. The selection of tools to measure sensory processing depends heavily on the specific components to be assessed according to (Shahbazi & Mirzakhani, 2021). To evaluate the psychometric aspect, the SPSRC detects patterns of self-control and sensory processing in children with and without problems. This data supports the reliability and validity of the SPSRC which assesses sensory processing and self-control activity in a child in everyday activities. Evidence requires further study to compare spsrc level with laboratory tests according to (Lai et al., 2019).

CONCLUSIONS

This study of literature aims to illustrate that better developmental support for children can be achieved through exercise and of course a particular importance of senso-perceptive abilities. Support motor development, but also cognitive development, as it enables different experiences that the child needs to process. Another very important goal is to define and design a manual, with the aim of inclusion in the curriculum. The study focuses on improving senso-perceptive abilities. Lack of mobility activities leads to a development of problems in childhood. Problems in motor, cognitive, emotional and psychosocial development may arise. People involved in the education and care of preschoolers should train children's awareness and responsibility for their bodies. Parents and educators should act as role models to convey the enjoyment of daily exercise and healthy eating. Special importance in children's health education has institutional facilities such as schools or other facilities for low school age. The lack of understanding among some adults about active living and healthy eating, as well as inadequate design of areas in order to increase mobility activities, should be compensated by the introduction of mobility programs. These physical activity programs would affect most children at an age when the development of individual risk factors could still be effectively prevented. Therefore, it is useful to introduce primary preventive measures to promote mobility activity as soon as possible. Through the promotion of mobile activity, children can gain awareness, sensory experience, world experience, experience of expression and creativity, which they need for the development of positive self-perception in the sense of salutogenesis.

Due to the increasing number of overweight and obese children, the greatest attention should be paid to primary prevention, as children and adolescents may also appear as companion diseases such as adult diabetes, high blood pressure, etc. Developing motor skills and coordination in childhood can help break a

taboo to reduce childhood obesity. To get the best of these skills, we recommend focusing on basic mobility skills and motor coordination activity.

Schools offer good conditions for strengthening children's personal health resources. After all, they are the first educational institutions to attend many children and parents from all social strata. Interdisciplinary cooperation between parents, physical education teachers, pre-university education institutions, associations, the curriculum design headquarters and other institutions contributing to this sector should be continued. The level of motor capacity is not only related to the correct functioning of the sensory organic apparatus of the cerebral structure but is simultaneously conditioned by the specific education that society makes available to the educational system as an inalienable task for new life experiences, enabling every individual to choose, organize, control and direct in the most useful way sensorial stimuli, as well as his motor.

Here we are adding some general recommendations for trainers, sports teachers, and youth who are part of these sports:

1. For teachers and specialists in physical and mobile education:

- Increased focus to develop senso-perceptive skills: Since the child is surrounded by an environment rich in external stimuli, which stimulate him from all sides, as well as by the inward stimuli of his body, the task of the teacher (specialist) is to teach him to choose and organize, from such a variety of chaotic stimuli, those most suitable, with the side of which to succeed in solving the mobility task.
- Development of motors and senso-perceptive activities: Teachers should strive, from esteroceptive stimuli and proprioceptive to simple movements, to make a gradual transition to more complex movements, as well as in automating basic motor schemes and further in the formation and development of coordinative and conditional (physical) skills.

2. For preschool education institutions:

- The best developmental support for children can be achieved through exercise and of course a special importance have senso-perceptive abilities. To support motor development, but also cognitive development, as it enables different experiences that the child needs to process.
- Designing a manual: Another very important point is the design and design of a manual, with the aim of inclusion in the curriculum. The project focuses on improving senso-perceptive skills.

3. For parents:

- Support for mobile activities: Parents should support their children's commitment and passion for sport and other mobile programs, but should be careful not to put too much pressure.
- Promote mobile diversity: Allow children to explore many mobility activities such as popular games, recreational sports, and competitive sports activities to develop a wide range of mobility skills.

AUTHOR CONTRIBUTIONS

The contribution to this review is joint, where Erjon Peqini is a PhD candidate and Bardhyl Misja is his scientific leader.

SUPPORTING AGENCIES

No funding agencies were reported by the authors.

DISCLOSURE STATEMENT

No potential conflict of interest was reported by the authors.

REFERENCES

Akı, E., Atasavun, S., Turan, A., & Kayıhan, H. (2007). Training Motor Skills of Children with Low Vision. Perceptual and Motor Skills, 104(3_suppl), 1328-1336. https://doi.org/10.2466/pms.104.4.1328-1336

Amarawardana, T. (2018, June 1). Visual Perceptual Evaluation in Early School Aged Children. Optometry & Visual Performance.

Arqiya, S., & Khairunnisa Ramadani, C. (2023). Influence of Children's Motor Development Primary School Age in the Learning Process . International Journal of Students Education, 1(2), 184–189. https://doi.org/10.62966/ijose.v1i2.406

Benjumea JMC. Afonso B & Ramirez (2015). Assessment of motor coordination in students aged 6 to 11 years. Journal of Physical Education and Sport, 2015(04), 765-774. https://doi.org/10.7752/jpes.2015.04117

Bidzan-Bluma, I., & Lipowska, M. (2018). Physical Activity and Cognitive Functioning of Children: A Systematic Review. International Journal of Environmental Research and Public Health, 15(4), 800. https://doi.org/10.3390/ijerph15040800

Bolger, L., O'Neill, C., Coughlan, E. K., O'Brien, W., Lacey, S., Burns, C., & Bardid, F. (2020). Global levels of fundamental motor skills in children: A systematic review. Journal of Sports Sciences, 39(7), 717-753. https://doi.org/10.1080/02640414.2020.1841405

Bonafede, C., & De Waal, E. (2023). Kinesthetic coordination abilities in 6-Year-Old children: school quintile, gender, and hand dominance differences. International Journal of Early Childhood. https://doi.org/10.1007/s13158-023-00350-5

Bonifacci, P. (2004). Children with low motor ability have lower visual-motor integration ability but unaffected perceptual skills. Human Movement Science, 23(2), 157-168. https://doi.org/10.1016/j.humov.2004.08.002

Brown, T., Swayn, E., & Pérez-Mármol, J. M. (2021). The Relationship between Children's Sensory Processing and Executive Functions: An Exploratory Study. Journal of Occupational Therapy, Schools, & Early Intervention, 14(3), 307-324. https://doi.org/10.1080/19411243.2021.1875386

Bushati, M., & Bushati, S. (2023). Coordination development in children aged 7 to 11 years old through games. Journal of Physical Activity and Sports. 5(1), 72-82. Retrieved from [Accessed 2024, June 12]: https://ust.edu.al/wp-content/uploads/2023/06/JPAS-2023.pdf

Chiodera, P., Volta, E., Gobbi, G., Milioli, M. A., Mirandola, P., Bonetti, A., Delsignore, R., Bernasconi, S., Anedda, A., & Vitale, M. (2007). Specifically designed physical exercise programs improve children's motor abilities. Scandinavian Journal of Medicine & Science in Sports, 18(2), 179-187. https://doi.org/10.1111/j.1600-0838.2007.00682.x

Ericsson, I., & Karlsson, M. K. (2012). Motor skills and school performance in children with daily physical education in school - a 9-year intervention study. Scandinavian Journal of Medicine & Science in Sports, 24(2), 273-278. https://doi.org/10.1111/j.1600-0838.2012.01458.x

Fernandes, V. R., Ribeiro, M. L. S., De Melo, T. R. F., De Tarso Maciel-Pinheiro, P., Guimarães, T. T., De Araújo, N. B., Ribeiro, S., & Deslandes, A. C. (2016). Motor Coordination Correlates with Academic Achievement and Cognitive Function in Children. Frontiers in Psychology, 7. https://doi.org/10.3389/fpsyg.2016.00318

Féry, Y. (2003). Differentiating visual and kinesthetic imagery in mental practice. Canadian Journal of Experimental Psychology, 57(1), 1-10. https://doi.org/10.1037/h0087408

Freitas, D. L., Lausen, B., Maia, J., Lefevre, J., Gouveia, É. R., Thomis, M., Antunes, A., Claessens, A., Beunen, G., & Malina, R. M. (2015). Skeletal maturation, fundamental motor skills and motor coordination in children 7-10 years. Journal of Sports Sciences, 33(9), 924-934. https://doi.org/10.1080/02640414.2014.977935

Guilbert, J., Jouen, F., & Molina, M. (2018). Motor imagery development and proprioceptive integration: Which sensory reweighting during childhood? Journal of Experimental Child Psychology, 166, 621-634. https://doi.org/10.1016/j.jecp.2017.09.023

Han, A., Fu, A. C. L., Cobley, S., & Sanders, R. (2018). Effectiveness of exercise intervention on improving fundamental movement skills and motor coordination in overweight/obese children and adolescents: A systematic review. Journal of Science and Medicine in Sport, 21(1), 89-102. https://doi.org/10.1016/j.jsams.2017.07.001

Jacobs, N., Hallemans, A., Ortibus, E., Desloovere, K., & Meyns, P. (2022). Balance and lower limb proprioception of multiple joints in typically developing children aged 6 to 10 years: Preliminary results. Gait & Posture, 97, S11-S12. https://doi.org/10.1016/j.gaitpost.2022.07.016

Jasinski, N., & Podell, K. (2011). Reitan-Klove Sensory Perceptual Examination. In Springer eBooks (pp. 2144-2145). https://doi.org/10.1007/978-0-387-79948-3_209

Jorquera-Cabrera, S., Ayuso, D. M. R., Rodriguez-Gil, G., & Triviño-Juárez, J. M. (2017). Assessment of Sensory Processing Characteristics in Children between 3 and 11 Years Old: A Systematic Review. Frontiers in Pediatrics, 5. https://doi.org/10.3389/fped.2017.00057

Lai, C. Y. Y., Yung, T. W. K., Gomez, I. N., & Siu, A. M. H. (2019). Psychometric Properties of Sensory Processing and Self-Regulation Checklist (SPSRC). Occupational Therapy International, 2019, 1-9. https://doi.org/10.1155/2019/8796042

Litovsky, R. Y. (2015). Development of the auditory system. In Handbook of Clinical Neurology (pp. 55-72). https://doi.org/10.1016/B978-0-444-62630-1.00003-2

Negen, J., Chere, B., Bird, L., Taylor, E., Roome, H. E., Keenaghan, S., Thaler, L., & Nardini, M. (2019). Sensory cue combination in children under 10 years of age. Cognition, 193, 104014. https://doi.org/10.1016/j.cognition.2019.104014

Psychocinétique. (n.d.). Google Books. Retrieved from [Accessed 2024, June 12]: https://books.google.al/books/about/Psychocin%C3%A9tique.html?id=HN9bMwEACAAJ&redir_esc=y

Rudd, J., Barnett, L. M., Butson, M., Farrow, D., Berry, J., & Polman, R. (2015). Fundamental Movement Skills Are More than Run, Throw and Catch: The Role of Stability Skills. PLOS ONE, 10(10), e0140224. https://doi.org/10.1371/journal.pone.0140224

Santner, A., Kopp, M., & Federolf, P. (2018). Partly randomised, controlled study in children aged 6-10 years to investigate motor and cognitive effects of a 9-week coordination training intervention with concurrent mental tasks. BMJ Open, 8(5), e021026. https://doi.org/10.1136/bmjopen-2017-021026

Sultan, Shaikha A M M. (2022). Sensory Processing and Movement Control in Children. White Rose eTheses Online. Retrieved from [Accessed 2024, June 12]: https://etheses.whiterose.ac.uk/32620/

Shahbazi, M., & Mirzakhani, N. (2021). Assessment of sensory processing characteristics in children between 0 and 14 years of age: a systematic review. PubMed, 15(1), 29-46. https://doi.org/10.22037/ijcn.v15i1.21274

Smits-Engelsman, B., Jelsma, D., & Ferguson, G. (2017). The effect of exergames on functional strength, anaerobic fitness, balance and agility in children with and without motor coordination difficulties living in low-income communities. Human Movement Science, 55, 327-337. https://doi.org/10.1016/j.humov.2016.07.006

Sopa, I. S., & Pomohaci, M. (2016). Study regarding the development of agility skills of students aged between 10 and 12 years old. Timisoara Physical Education and Rehabilitation Journal, 9(17), 7-16. https://doi.org/10.1515/tperj-2016-0009

Sortwell, A., Newton, M., Marinho, D. A., Ferraz, R., & Perlman, D. J. (2021). The effects of an eight week plyometric-based program on motor performance skills and muscular power in 7-8-Year-Old primary school students. International Journal of Kinesiology and Sports Science, 9(4), 1. https://doi.org/10.7575/aiac.ijkss.v.9n.4p.1

Stanley, J., & Krakauer, J. W. (2013). Motor skill depends on knowledge of facts. Frontiers in Human Neuroscience, 7. https://doi.org/10.3389/fnhum.2013.00503

Tarakci, E., & Tarakci Devrim. (2016). Growth, Development and Proprioception in Children. OMICS Group. 1-11.

Tomlin, D., Dillon, H., Sharma, M., & Rance, G. (2015). The impact of auditory processing and cognitive abilities in children. Ear And Hearing, 36(5), 527-542. https://doi.org/10.1097/AUD.0000000000000172

Turgay, Z. T., & Sarıberberoğlu, M. T. (2022). The Role of the Senses in Children s Perception of Space. Iconarp International Journal Architecture and Planning. https://doi.org/10.15320/ICONARP.2022.194

Van Der Fels, I. M., Wierike, S. C. M. T., Hartman, E., Elferink-Gemser, M. T., Smith, J. K., & Visscher, C. (2015). The relationship between motor skills and cognitive skills in 4-16 year old typically developing children: A systematic review. Journal of Science and Medicine in Sport, 18(6), 697-703. https://doi.org/10.1016/j.jsams.2014.09.007

Van Der Wurff, I., Meijs, C., Hurks, P. P. M., Resch, C., & De Groot, R. (2021). The influence of sensory processing tools on attention and arithmetic performance in Dutch primary school children. Journal of Experimental Child Psychology, 209, 105143. https://doi.org/10.1016/j.jecp.2021.105143

Wiener-Vacher, S., Hamilton, D. A., & Wiener, S. I. (2013). Vestibular activity and cognitive development in children: perspectives. Frontiers in Integrative Neuroscience, 7. https://doi.org/10.3389/fnint.2013.00092

Zarotis, G. F. (2020). The importance of movement for the overall development of the child at Pre-School age. Journal of Advances in Sports and Physical Education, 03(02), 36-44. https://doi.org/10.36348/jaspe.2020.v03i02.003

Zarotis, G. F. (2019). Positive self-concept through physical-sport activity of preschool children. American Journal of Humanities and Social Sciences Research, 3(2), 53-60. Retrieved from [Accessed 2024, June 12]: https://www.ajhssr.com/wp-content/uploads/2019/02/G19325360.pdf