

The Effectiveness of Karate Sports for Children with Attention Deficit Hyperactivity Disorder (ADHD): A Review of Literature Studies

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Abstract

Attention Deficit Hyperactivity Disorder (ADHD) is a neurobiological disorder characterized by symptoms of inattention, impulsivity, and hyperactivity that hinder children's academic, social, and emotional development. The treatment of ADHD has relied heavily on pharmacological therapy, which although effective, cannot be separated from side effects. Therefore, an alternative approach that is safe and sustainable is needed, one of which is through physical activities such as martial arts. This study aims to examine the effectiveness of karate sports in helping manage ADHD symptoms in children. The method used is a literature study with a descriptive qualitative approach, referring to the PRISMA selection flow and using the Google Scholar database. From the results of screening 761,000 articles, 7 relevant articles were selected for analysis. The results of the study showed that karate contributed to improving focus, impulse control, emotion regulation, and social interaction in children with ADHD. Karate is considered to be able to be a holistic intervention because it combines physical, mental, and social aspects. The conclusions of this study suggest that karate has the potential to be an effective non-pharmacological approach, especially if supported by the integrated involvement of teachers, counselors, and families. Further studies based on controlled experiments remain needed to strengthen the empirical evidence.

Keywords

ADHD; child; karate; martial arts; Non-pharmacological interventions

INTRODUCTION

Attention Deficit Hyperactivity Disorder (ADHD) is one of the most common neurobiological disorders in childhood. This disorder is characterized by main symptoms such as difficulty in maintaining inattention, high impulsivity, and excessive levels of motor activity (hyperactivity) that are not appropriate for the child's developmental stage. ADHD is not just a problem of "bad boys" or undiscipline, but a medical condition that has serious implications for the child's overall development. In many cases, children with ADHD experience significant academic, social, and emotional barriers that if not handled appropriately, can last into adolescence and even adulthood.

According to Devi et al. (2024), children with ADHD tend to have difficulty concentrating, controlling impulsive impulses, and managing daily behavior. This inability not only leads to lagging behind in academic achievement, but also hinders the process of socialization with peers. They are often perceived as "intrusive," "unruly," or even "disrespectful," when in reality they are struggling to understand and control themselves. As a result of this misunderstanding, many ADHD children become victims of bullying, are excluded from social groups, or experience isolation in the school and home environment.

In the long run, the impact of ADHD can extend to the psychological and emotional aspects of the child. Devi et al. (2024) emphasize that these disorders often contribute to an increased risk of anxiety disorders and depression. Children who constantly fail to complete assignments, are reprimanded by teachers, or are criticized by parents for "not being able to sit still" or "not being able to hear instructions," are at high risk of developing feelings of inferiority. They begin to question their own abilities, feel not good enough, and lose motivation to learn. When not addressed with an appropriate and empathetic approach, it can develop into more complex behavioral issues such as aggressiveness, withdrawal, or even juvenile delinquency.

Conventionally, the treatment of ADHD relies heavily on pharmacological approaches, especially through the use of stimulant drugs such as methylphenidate and amphetamines. These drugs have indeed been shown to improve focus and reduce hyperactivity in the short term. However, as explained by Devi et al. (2024), pharmacological therapy is not risk-free. Side effects such as loss of appetite, sleep disturbances, and drug dependence are a serious concern, especially when drugs are used in the long term. This is where the urgency arises to find alternative approaches that are not only safe, but also capable of forming positive behaviors on a sustainable basis.

One approach that has recently gained attention is non-pharmacological interventions through physical activity. Physical activity has long been recognized as a medium that not only improves a child's physical health, but also aids in the regulation of emotions, improvement of the brain's executive function, and social abilities. Among the various forms of physical activity, martial arts such as karate stand out for blending physical and mental elements at once. Karate training

emphasizes self-discipline, focus, control over emotions, and positive social interactions, aspects that children with ADHD desperately need.

Furthermore, karate is not only an energy-draining activity, but it also teaches structure, concentration, and appreciation for the process. In a karate training session, children learn to wait their turns, follow instructions gradually, and control body movements in a certain pattern. These things directly contribute to increased self-control and decreased impulsivity. As noted in various studies, martial arts are able to stimulate parts of the brain related to executive function, such as the prefrontal cortex, which in ADHD children often experience delays in maturation.

However, despite the various claims about the benefits of karate for children with ADHD, there have not been many scientific studies that specifically prove its effectiveness as a standardized form of intervention. Mahfuji & Lastriani (2023) reminded that a more in-depth scientific review and empirical data need to be conducted before it can be concluded that karate is effective as the main intervention for ADHD children. Most of the available evidence is still anecdotal or based on practitioners' experiences in the field, rather than the results of controlled experimental trials. Therefore, a systematic approach is needed to identify, assess, and synthesize existing research results.

Thus, it is important to conduct a structured and comprehensive literature review to assess whether karate can really be used as a supportive intervention for ADHD children. This literature review uses the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) approach to screen and review various related scientific publications. The main focus is to examine the effectiveness of karate in the context of improving focus, impulse control, social ability, and emotional balance of children with ADHD.

This approach is not only beneficial for enriching the scientific treasures in the fields of education, psychology, and counseling guidance, but also provides practical contributions for teachers, counselors, and parents in dealing with children with special needs in a more comprehensive and humane manner. In today's era of inclusive education, understanding the characteristics of ADHD children and providing appropriate support is essential to ensure they can thrive optimally both academically, socially, and emotionally.

More than just symptom control, the goal of interventions such as karate is to shape children into more confident individuals, able to manage themselves, and have healthy social interactions. Fun and meaningful interventions like this not only provide short-term results, but also build a long-term foundation for the mental and social well-being of children with ADHD.

Against this background, this study aims to answer the fundamental question: to what extent is the effectiveness of karate in helping children with ADHD? And how can this approach be practically integrated into intervention programs in schools or communities? Through a systematic review of the literature, it is hoped that the findings in this study can provide a strong scientific basis to

support the karate approach as part of a more holistic and humane ADHD treatment strategy.

METHOD

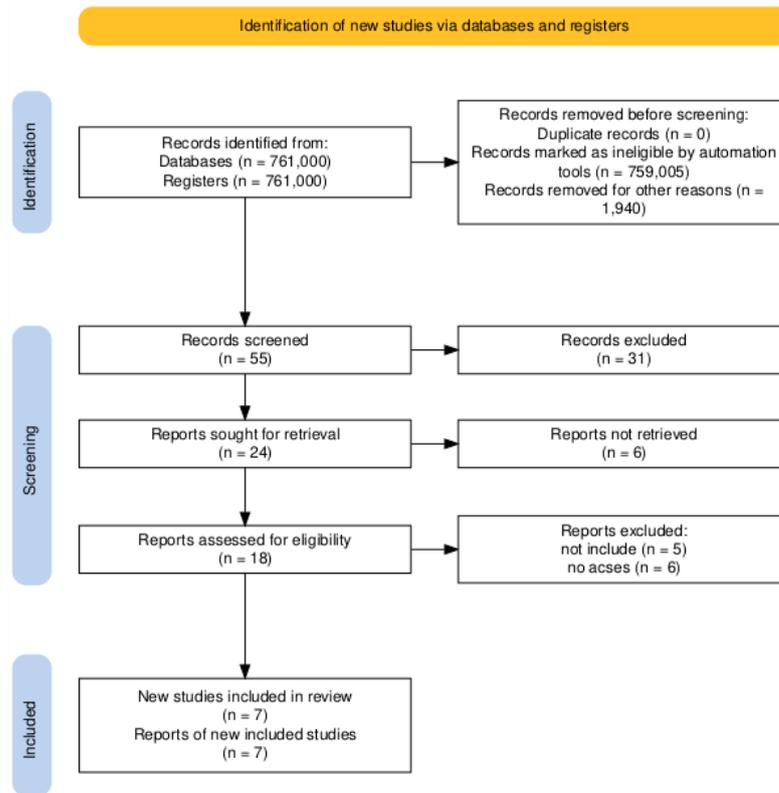
This study uses a literature review method with a descriptive qualitative approach. The focus of the research is to examine the effectiveness of karate in helping to reduce ADHD symptoms in children. The data source was obtained by searching for scientific articles in the Google Scholar database. Literature search is carried out systematically by entering relevant keywords such as: sports; ADHD; karate; javanese

The article selection process follows the guidelines of PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses). From an initial search on Google Scholar, 761,000 articles were found. After being automatically filtered by the system, as many as 759,005 articles were declared irrelevant and removed. In addition, 1,940 articles were removed for other reasons, such as off-topic titles or unverifiable publications. No duplicate articles were found in the search results.

After the automatic elimination process, there are 55 articles left that are then manually selected. Of these, as many as 31 articles were not in accordance with the focus of the study and were issued. A total of 24 articles were advanced to further exploration, but six of them were not fully accessible. Furthermore, a feasibility assessment was carried out on 18 articles, and it was found that 11 of them were not eligible, either because they did not discuss the topic in depth or did not provide adequate empirical data.

Finally, there are 7 articles that are considered to meet the criteria to be analyzed in this study. These articles were selected because they are highly relevant to the topic being studied, present empirical data, and discuss the relationship between physical activity—especially martial arts such as karate—and aspects of behavioral, emotional, and concentration development in children with ADHD.

The PRISMA flowchart illustrating the article selection process is included in the results section as a visualization of the systematic selection process that has been undergone



https://estech.shinyapps.io/prisma_flowdiagram/

Data Analysis

Table. 1 Results of the study that has been reviewed

No.	Writer	Heading	Key findings	Relevance to the topic
1.	Hefley, A.R. (2015)	Martial Arts as a Behavioral Treatment Modality for Children on the Autism Spectrum	Significant improvements in balance (BESS), attention (reduction of off-task), and social skills (social response & interaction)	Karate improves focus, self-control, and social interaction that are relevant to children with ADHD
2.	Zain, D. (2018)	The Influence of Physical Education on Early Childhood and	Behavioral changes: children become more disciplined, confident,	Taekwondo forms positive behaviors and children's focus that is

		Elementary School Character and Behavior Development	expressive, and show increased attention and discipline after 1 month	beneficial for ADHD conditions
3.	Rachmani, H. & Wijayati, R. (2024)	Meta-Analysis Study of Sports Participation and Aggressiveness in Children	There was no significant association between sports participation and a decrease in children's general aggressiveness ($p = 0.752$), but the type of exercise was influential	Karate as a disciplined sport has the potential to be more effective than competitive sports in managing ADHD
4.	Najwa Huriyah et al. (2024)	Gross Motor Skills of Children Aged 4-6 Years Taekwondo Extracurricular Participants	Taekwondo extracurriculars significantly improve gross motor skills (average score: 18.14 = Very Well Developed)	Martial arts stimulate focus, motor control, and discipline that are important for children with ADHD
5.	Rafael Lisinius Ginting et al. (2025)	The Role of Physical Activity in Overcoming Hyperactivity in Children	Physical activity improves focus, executive function, and motor skills of a child with ADHD; Systematic planning is needed	Karate as a structured physical activity has great potential to improve cognitive function and behavior of ADHD children
6.	Geraisa Dayura Chanet & Adnani B. U. (2021)	Reducing ADHD Behavior by Doing Physical Activity in	Physical activity (swimming/karate) for 2 weeks reduced ADHD symptoms such as difficulty	Karate effectively reduces ADHD symptoms through positive fatigue and energy regulation as well

		Early Childhood	concentrating and sitting still in class	as teacher/parent counseling assistance
7.	Laurencia Josita & Rudy Surya (2023)	Designing Youth Courts as a Media for Expression and Togetherness for Adolescents with ADHD in West Jakarta	Designed youth rink with karate studio, community space, art workshop, and field to channel energy and enhance social interaction	Karate is used as part of the facility to channel hyperactivity and build social togetherness for ADHD adolescents

A literature review of the seven articles analyzed showed that physical activity, especially martial arts such as karate and taekwondo, has a significant contribution in the treatment of symptoms of Attention Deficit Hyperactivity Disorder (ADHD) in children. While most studies have focused more on physical activity in general, there is a consistent thread in confirming that ADHD children's involvement in sports activities can help improve focus, reduce impulsivity, and improve executive function.

The study by Chanet and Utami (2021) is the only study that directly tested karate as part of a physical intervention on children with ADHD. In the study, karate and swimming were used as forms of physical activity for two weeks, complemented by counseling and mentoring sessions for parents and teachers. The results showed significant behavioral changes in the subjects, especially in aspects of focus and the ability to sit quietly in class. The authors state that, "*Subjects can minimize difficult behavior of focus, sitting still in class... physical activities such as swimming or karate and mentoring parents and teachers have a positive impact*" (Chanet & Utami, 2021, p. 292). This corroborates that karate has real therapeutic value in the context of ADHD management.

In the main article by Afinanto (2025), karate is reviewed from various perspectives as a physical activity that combines cognitive, affective, and social elements. The author states that karate practice can improve emotional regulation, focus, and self-control in ADHD children. Furthermore, karate is said to be able to be an *alternative intervention medium for counselors in helping ADHD children manage behaviors and emotions* (Afinanto, 2025). This approach shows that karate is not only a physical sport, but also a behavioral intervention strategy that can be developed in a structured manner in the school environment, especially in guidance and counseling services.

Meanwhile, Rafael Ginting and his team (2025) examined the role of physical activity in general on the symptoms of ADHD child hyperactivity. In the study, physical activity was said to play an important role in improving children's

focus, attention, and executive function, although there are still challenges such as lack of social support or children's difficulties in maintaining focus during activities. This study confirms that, *"Physical activity has been shown to reduce ADHD symptoms, improve attention, and improve executive function"* (Ginting et al., 2025, p. 75). Although it does not specifically mention karate, this conclusion supports the effectiveness of structured exercise as part of an ADHD management strategy.

Research by Huriah et al. (2024) focuses more on taekwondo and its influence on gross motor development of children aged 4–6 years. Their findings show that martial arts such as taekwondo can stimulate children's coordination, strength, and flexibility, as well as have a positive impact on children's readiness to participate in learning activities. In his report, it is stated that, *"Every movement in Taekwondo is a form of positive stimulation for early childhood gross motor skills"* (Huriah et al., 2024, p. 712). Given that many ADHD children have barriers in motor development, these results reinforce the argument that self-defense could be a means to improve body and emotional regulation.

In addition to the physical approach, a study by Laurencia Josita and Rudy Surya (2023) offers an alternative view through inclusive environmental design for ADHD adolescents. They designed a youth court with a sensory approach to accommodate the emotional and social needs of people with ADHD. The venue is designed to support physical activities such as sports, dance, and music, as well as provide a safe social space for self-expression. This study emphasizes that *"Youth courts can help adolescents with ADHD in the aspect of togetherness as well as a medium to channel their energy"* (Josita & Surya, 2023, p. 1413). Although it does not focus on karate, this design approach supports the principle that movement-based and social interventions can improve the quality of life of people with ADHD.

Meanwhile, the meta-analytical study cited in the article Rafael Ginting et al. (2025) also corroborates the position of exercise as a promising non-pharmacological intervention. A review of 15 controlled trials found that exercise had a positive impact on attention, executive function, and motor skills, although it did not always have a significant impact on symptoms of hyperactivity or aggressiveness. These findings reinforce that karate, as a structured and disciplined form of sport, has great potential if developed as a regular support program for ADHD children.

The overall results of the seven articles show consistency that physical activity, including karate, has broad benefits in managing ADHD symptoms, both directly and indirectly. Karate is considered to be able to provide structure, repetition, and behavioral learning that are beneficial for children with ADHD. However, as Mahfuji & Lastriani (2023) state, *"It is important to review the scientific evidence that supports this claim. Currently, there are no references that specifically support the statement about the effectiveness of karate as an intervention for ADHD"* (Mahfuji & Lastriani, 2023). Therefore, although this study provides a strong indication of the effectiveness of karate, further research

with controlled experimental methodologies is still needed to strengthen the empirical evidence.

Discussion and discussion

Children with Attention-Deficit/Hyperactivity Disorder (ADHD) are often in socially, academically, and emotionally challenging positions. They struggle daily with difficulties in regulating emotions, controlling impulses, and maintaining focus, a condition that not only interferes with the learning process, but also often impacts the quality of their social relationships (Bhide et al., 2023; Lukban et al., 2024). This condition demands an interventional approach that does not solely emphasize the medical aspect, but also touches on their human side: the need for structure, positive reinforcement, and self-confidence.

One approach that is starting to gain a place is sports, especially karate, as part of physical and behavioral therapy. Karate, unlike many other physical activities, teaches children to move with discipline, focus, and full awareness of the body and the surrounding environment. Training conducted in a structured manner allows children to learn to follow instructions, delay impulses, and understand the limitations of skills that are important for anyone, even more so for those living with ADHD (Costanza et al., 2025; Suchołbiak, 2025). In this case, karate is not just a sport, but a forum for character building.

Some studies have shown that martial arts such as karate have a positive impact on executive function, which is the brain's ability to make decisions, plan actions, and control impulsive behavior. As explained by Suchołbiak (2025) and Stefanidi et al. (2025), martial arts support the strengthening of the ability to think before acting, manage time, and evaluate behavioral consequences, which is needed by children with ADHD. This means that children not only "practice movements", but also practice becoming more aware and directed in daily behavior.

Furthermore, karate provides room for confidence growth. When children learn to master new techniques, acquire belts as a symbol of achievement, or perform in exams and matches, they gain positive validation that they may rarely find in academic contexts. Research reveals that participation in karate has an impact on increasing self-esteem and social adaptability (Costanza et al., 2025; Suchołbiak, 2025). In this process, they feel valued not because they can be "calm in class", but because they are able to develop to their potential.

Karate also teaches cooperation in the context of group training. Children learn to appreciate turns, keep their distance, read the expressions of their practice friends, and even encourage others. These healthy interactions naturally build social skills, and reduce feelings of isolation or exclusion – a common problem in ADHD children (Stefanidi et al., 2025; Suchołbiak, 2025). It is not an exaggeration to say that dojo or training ground becomes a miniature community that educates and heals socially.

In the context of education, karate can be integrated as a medium of behavioral intervention, especially in school guidance and counseling programs.

This opens up a space for collaboration between teachers, counselors, and martial arts coaches to synergistically build an environment that supports the growth and development of ADHD children (Fahmy et al., 2020; Costanza et al., 2025). Programs like these, if structured with a systematic and inclusive approach, not only target the reduction of ADHD symptoms, but also encourage character strengthening, independence, and empathy.

In addition to individual benefits, the integration of karate in the school curriculum also reflects efforts to build an education system that is responsive to the diversity of student needs. Karate teaches values such as respect, hard work, and courage in the face of challenges – values that are very much in line with the goals of character education. As revealed by Hayati (2021) and Suchołbiak (2025), this approach also supports students in "internalizing discipline and responsibility" that they can apply in their daily lives, not only in the dojo, but also in their classrooms, homes, and communities.

The importance of consistency in karate training cannot be ignored either. As explained by Costanza et al. (2025) and Stefanidi et al. (2025), targeted and repetitive exercises are key in forming new and more adaptive behaviors. Each practice session is an opportunity for children to hone focus, manage excess energy, and practice social skills. This activity also helps reduce stress and anxiety, as well as improve sleep quality and mental health in general.

As a strategy that approaches the physical and emotional aspects at the same time, karate can be considered an effective and meaningful form of complementary therapy. With the right teaching approach, karate can be a means of learning "life lessons" – about limits, about failure and bounce back, about teamwork, and about believing in yourself (Suchołbiak, 2025; Costanza et al., 2025). Therefore, schools as educational institutions are not only tasked with teaching knowledge, but also provide space for comprehensive and contextual life learning.

Collaboration between teachers, counselors, and martial arts coaches is very important in adapting karate programs according to the characteristics of ADHD children. A good program is not one that imposes uniformity, but one that understands that each child has a unique rhythm, needs, and way of learning (Fahmy et al., 2020; Stefanidi et al., 2025). With this approach, karate can be a bridge between regularity and flexibility, between discipline and compassion.

Finally, integrating karate as part of an inclusive education pattern is not just a momentary solution, but rather a long-term investment in shaping resilient, confident, and socially connected individuals. In an increasingly complex world, children with ADHD don't need to feel left behind. They just need the right space, an empathetic approach, and consistent guidance – and karate can be part of that answer (Hayati, 2021; Costanza et al., 2025; Suchołbiak, 2025).

CONCLUSION

The study concluded that martial arts such as karate have the potential to be an effective form of non-pharmacological intervention for children with Attention

Deficit Hyperactivity Disorder (ADHD). Karate not only serves as a channel of excess energy, but also forms discipline, improves focus, improves emotional regulation, and fosters confidence. In the process of training, children are trained to follow instructions, delay impulses, and build healthy social interactions – skills that are very important in the lives of children with ADHD.

Based on the seven articles analyzed, there is a common thread that emphasizes that structured physical activity, especially karate and taekwondo, is able to support the development of executive functions, reduce hyperactive behavior, and strengthen children's social relationships with their environment. While more standardized experimental research is still needed, these findings provide a strong scientific and practical basis for considering karate as part of ADHD management strategies, whether in school, community, or family contexts.

More than just a sport, karate provides a learning space that values process, validates small achievements, and helps children to know themselves more fully. In an increasingly inclusive world of education, karate can be a bridge between special needs and the formation of a whole character. With an empathetic, collaborative, and sustainable approach, karate can be an important part of accompanying the growth and development journey of children with ADHD – not to make them like everyone else, but to grow them to their best potential

REFERENCES

- Haddaway, N.R., Page, M.J., Pritchard, C.C., & McGuinness, L.A. (2022). PRISMA2020: R package and Shiny application to generate flowcharts compliant with PRISMA 2020, with interactivity for optimized digital transparency and Open Synthesis Campbell Systematic Reviews, 18, e1230. <https://doi.org/10.1002/c12.1230>
[Download the quote \(.ris\)](#)
- Bailey, R., Armour, K., Kirk, D., Jess, M., Pickup, I., & Sandford, R. (2009). The educational benefits claimed for physical education and school sport: An academic review. *Research Papers in Education*, 24(1), 1–27. <https://doi.org/10.1080/02671520701809817>
- Cho, H.-S., Shin, M.-S., Song, W., Jun, T.-W., Lim, B.-V., Kim, Y.-P., & Kim, C.-J. (2013). Treadmill exercise alleviates short-term memory impairment in 6-hydroxydopamine-induced Parkinson's rats. *Journal of Exercise Rehabilitation*, 9(3), 354–361. <https://doi.org/10.12965/jer.130048>
- del Barrio, V. (2004). Diagnostic and Statistical Manual of Mental Disorders. In *Encyclopedia of Applied Psychology, Three-Volume Set* (Vol. 1). <https://doi.org/10.1016/B0-12-657410-3/00457-8>
- Ernawati, L. (2020). *Analysis of the Implementation of Karate Extracurricular Activities at Aisyiyah Flagship Elementary School Taman Harapan Curup*.
- Funakoshi, G. (1981). *Karate-dō : my way of life*. 127.

- Geraiisa Dayura Chanet and Adnani Budi Utami. (2021). *Reducing ADHD Behavior by Engaging in Physical Activity in Early Childhood*. 3(2), 1–23.
- Janssen, I., & LeBlanc, A. G. (2015). Systematic review of the health benefits of physical activity and fitness in school-aged children and youth. *School Nutrition and Activity: Impacts on Well-Being*, 183–219. <https://doi.org/10.1201/b18227-18>
- Kadri, A., Slimani, M., Bragazzi, N. L., Tod, D., & Azaiez, F. (2019). Effect of taekwondo practice on cognitive function in adolescents with attention deficit hyperactivity disorder. *International Journal of Environmental Research and Public Health*, 16(2), 1–10. <https://doi.org/10.3390/ijerph16020204>
- Lakes, K. D., & Hoyt, W. T. (2004). Promoting self-regulation through school-based martial arts training. *Journal of Applied Developmental Psychology*, 25(3), 283–302. <https://doi.org/10.1016/j.appdev.2004.04.002>
- Lee, S., Hong, K.-S., & Kim, K. (2016). Effect of previous strength training episode and retraining on facilitation of skeletal muscle hypertrophy and contractile properties after long-term detraining in rats. *Journal of Exercise Rehabilitation*, 12(2), 79–82. <https://doi.org/10.12965/jer.1632608.304>
- Mental, K., Branch, P., & Karate, O. (2024). *Proceeding Senadimas Undiksha 2024 Education is a universal activity in human life, because education will humanize human beings themselves, for human beings to have dignity in order to increase cognitive, affective and m. potential*. 9(November), 1086–1091.
- Polanczyk, G. V., Salum, G. A., Sugaya, L. S., Caye, A., & Rohde, L. A. (2015). Annual research review: A meta-analysis of the worldwide prevalence of mental disorders in children and adolescents. *Journal of Child Psychology and Psychiatry and Allied Disciplines*, 56(3), 345–365. <https://doi.org/10.1111/jcpp.12381>
- Song, P., Zha, M., Yang, Q., Zhang, Y., Li, X., & Rudan, I. (2021). The prevalence of adult attention-deficit hyperactivity disorder: A global systematic review and meta-analysis. *Journal of Global Health*, 11, 1–9. <https://doi.org/10.7189/jogh.11.04009>
- Bhide, S., Efron, D., Ukoumunne, O., Anderson, V., Nicholson, J., Silk, T., ... & Sciberras, E. (2023). Family functioning in children with adhd and subthreshold adhd: a 3-year longitudinal study. *Journal of Attention Disorders*, 28(4), 480-492. <https://doi.org/10.1177/10870547231217089>
- Costanza, C., Colecchia, F., Polito, R., Monda, M., Carotenuto, M., Messina, G., ... & Ruberto, M. (2025). Martial arts and adhd: a narrative review of cognitive, behavioral, and epigenetic effects. *Teoriã Ta Metodika Fiziãnogovihovannã*, 25(3), 684-690. <https://doi.org/10.17309/tmfv.2025.3.26>
- Fahmy, E., El-Bakry, S., Hegab, A., & Kasem, S. (2020). Knowledge and attitude of primary school teachers on attention deficit hyperactivity disorder. *Benha*

Journal of Applied Sciences, 5(6), 1-11.
<https://doi.org/10.21608/bjas.2020.137117>

Hayati, S. (2021). The holistic therapy for effective services for children with adhd in kindergartens. *Psychology and Education Journal*, 58(1), 4622-4631.
<https://doi.org/10.17762/pae.v58i1.1582>

Lukban, A., Custodio, Z., Datu, J., Arrieta, C., Estacio, A., Julian, A., ... & Andrada, L. (2024). Enhancing motivation in filipino learners with adhd: insights from kindergarten mesosystems. *Journal of Research in Special Educational Needs*. <https://doi.org/10.1111/1471-3802.12740>

Stefanidi, E., Wagener, N., Chatzakis, I., Woźniak, P., Ntoa, S., Margetis, G., ... & Niess, J. (2025). Supporting communication and well-being with a multi-stakeholder mobile app: lessons learned from a field study with adhd children and their caregivers.. https://doi.org/10.31219/osf.io/fh4ep_v1

Suchołbiak, A. (2025). Martial arts as complementary interventions to support adhd-related symptom control., 58(384), 27-38.
<https://doi.org/10.2478/bgbl-2025-0003>

Devi, I., Susetyo, Y., & Haryanta, H. (2024). Behavioral and multisensory interventions for children with ADHD who are sensory impairments. *Gadjah Mada Journal of Professional Psychology (Gamajpp)*, 10(2), 122.
<https://doi.org/10.22146/gamajpp.93750>

Mahfuji, M. and Lastriani, K. (2023). The impact of smartphones on the social-emotional development of children aged 4-8 years in Serang Village, South Cikarang District. *El Banar Journal of Education and Teaching*, 6(1), 37-48.
<https://doi.org/10.54125/elbanar.v6i1.153>