

An Exploratory Research Study to observe the effect of the use of K-MEPSE kit (Kamalpuria's Mental Exercise and Physical Strength Enhancer Kit) in ADHD patients (child and adult) in a span of six months

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Abstract - Attention Deficit Hyperactivity Disorder (ADHD) is a neurodevelopmental disorder marked by ongoing difficulties with attention, hyperactivity, and impulsivity, often beginning in childhood and extending into later life stages. Although medication is a common treatment, it may not yield optimal results for all individuals, and long-term adherence can be challenging. Recent developments in cognitive science suggest that mental exercises—such as attention training and memory-enhancement activities—could strengthen brain function and support behavioural regulation. These techniques offer a promising complementary strategy to medication by addressing additional cognitive challenges. However, current research often isolates age groups, lacking comprehensive analysis across both children and adults. This study aims to bridge that gap by evaluating the combined impact of mental exercises and pharmacological treatment across age groups, potentially guiding the development of more personalized and effective ADHD treatment approaches.

The aim of this exploratory research study was to track the mental and physiological progress of patients of ADHD, targeted towards both child and adult patients, with the periodic (weekly) use of newly developed K-MEPSE (Kamalpuria's Mental Exercise and Physiological Strength Enhancer) kit, in a specific period of six months. There were weekly sessions involving conduction of the kit exercises along with blood pressure and sugar tests. The progress was tracked monthly by the K-MEPSE Scoring sheet, and the final score of Conner's Scale for children and ASRS for adults was compared by testing once before the trial and once after the trial (six months). This study also reviews the existing literature and understandings about ADHD and the effect of therapeutic measures on helping slow down its progression.

Keywords – *Attention Deficit Hyperactivity Disorder, Mental Exercises, ADHD in Children, Treatment of ADHD, physical Exercises*

I. INTRODUCTION

A. Attention Deficit Hyperactivity Disorder (ADHD)

Attention Deficit Hyperactivity Disorder (ADHD) is a neurodevelopmental condition characterized by persistent patterns of inattention, hyperactivity, and impulsivity that interfere with functioning or development. It typically begins in childhood and may continue into adolescence and adulthood. Individuals with ADHD often struggle to focus on tasks, follow through on instructions, and regulate their activity levels according to the demands of their environment. Although the exact causes remain unclear, research suggests that a combination of genetic, neurological, and environmental factors contribute to its development. Effective management often involves a combination of behavioural therapy, educational support, and, in some cases, medication.

Attention Deficit Hyperactivity Disorder (ADHD) is one of the most common neurodevelopmental disorders, characterized by symptoms such as difficulty sustaining attention, impulsive behavior, and excessive activity that is not appropriate for a person's age. It often emerges in early childhood, typically before the age of 12, and can persist into adolescence and adulthood. The condition affects various aspects of daily functioning, including academic performance, social interactions, and emotional regulation. Globally, the estimated prevalence of ADHD varies, but studies suggest that it affects approximately 5–7% of children and about 2.5–4% of adults. The variation in prevalence rates may be attributed to

differences in diagnostic criteria, cultural perceptions, and access to mental health services. Males are more frequently diagnosed than females, though recent research indicates that girls may be underdiagnosed due to differing symptom presentation, often showing less overt hyperactivity. Increased awareness, early detection, and comprehensive treatment approaches are crucial for improving long-term outcomes for individuals with ADHD.

B. Symptoms of ADHD

1. Inattention Symptoms:

- **Easily distracted** by unrelated stimuli or thoughts, often losing focus during tasks or conversations.
- **Difficulty sustaining attention** in activities such as reading, lectures, or lengthy conversations.
- **Fails to follow through** on instructions or finish tasks (e.g., homework, chores, work duties), often due to losing focus rather than defiance.
- **Frequently makes careless mistakes** in schoolwork or other activities due to inattention to detail.
- **Avoids or dislikes tasks** that require sustained mental effort, such as paperwork or school assignments.
- **Often loses necessary items** (e.g., keys, books, glasses, school materials).
- **Forgetful in daily activities**, like missing appointments, deadlines, or daily routines.
- **Poor organizational skills**, leading to messy workspaces or difficulty managing time effectively.

2. Hyperactivity Symptoms:

- **Fidgets or squirms** in seats, often tapping hands or feet.
- **Difficulty staying seated**, especially in settings where remaining still is expected.
- **Runs or climbs excessively** in inappropriate situations (in teens or adults, this may appear as restlessness).
- **Talks excessively**, often disrupting conversations or classroom environments.
- **Feels constantly “on the go”** or behaves as if “driven by a motor,” unable to relax or be still.

3. Impulsivity Symptoms:

- **Blurts out answers** before questions are completed, interrupting conversations or activities.
- **Difficulty waiting their turn**, whether in lines or group activities.
- **Interrupts or intrudes on others**, such as breaking into conversations or games.
- **Acts without considering consequences**, which can lead to accidents or risky behaviours.

Additional Note:

- Symptoms must be **persistent**, usually appearing for **six months or more**.
- The behavior should be **inconsistent with the individual’s developmental level**.
- Symptoms must be observed in **multiple settings** (e.g., home, school, work).
- In adults, symptoms may be more subtle, often involving **disorganization, poor time management, or internal restlessness** rather than overt hyperactivity.

C. Causes of ADHD

The causes of Attention Deficit Hyperactivity Disorder (ADHD) are complex and involve an interplay of genetic, neurological, and environmental factors. Research indicates that genetics play a significant role, with ADHD often running in families and specific genes related to dopamine regulation being linked to the condition. Neuroimaging studies have shown that individuals with ADHD may have differences in brain structure and function, particularly in areas that control attention, impulse regulation, and executive functioning. Additionally, lower levels of dopamine and norepinephrine—chemicals involved in brain signalling—have been observed in those with ADHD. Environmental influences during pregnancy and early childhood, such as prenatal exposure to tobacco, alcohol, or drugs, premature birth, low birth weight, and lead exposure, may increase the risk of developing the disorder. While dietary factors like food additives or nutrient deficiencies have been suggested to influence symptoms, the evidence remains inconclusive. Overall, ADHD arises from a combination of biological and environmental influences rather than a single identifiable cause.

D. Diagnosis of ADHD

Diagnosing Attention Deficit Hyperactivity Disorder (ADHD) involves a comprehensive evaluation that considers behavioural, developmental, and medical factors. There is no single test to confirm the condition; instead, clinicians rely on a detailed history gathered through interviews with the individual, parents, teachers, or caregivers. Diagnostic criteria outlined in the *Diagnostic and Statistical Manual of Mental Disorders* (DSM-5 or DSM-5-TR) are used, requiring the presence of specific symptoms of inattention and/or hyperactivity-impulsivity that persist for at least six months, are inappropriate for the individual’s developmental level, and are present in two or more settings, such as home and school. The symptoms must also significantly impair academic, occupational, or social functioning. To rule out other potential causes, a thorough medical and psychological assessment is often conducted, including screening for learning disabilities, mood disorders, and other conditions that may mimic or coexist with ADHD. Standardized behavior rating scales and

questionnaires, such as the Vanderbilt or Conners scales, are commonly used tools to support the diagnostic process. Early and accurate diagnosis is crucial for effective intervention and long-term management.

E. ADHD in Children

Childhood Attention Deficit Hyperactivity Disorder (ADHD) is a neurodevelopmental condition that typically emerges before the age of 12 and is marked by persistent patterns of inattention, hyperactivity, and impulsivity that are inappropriate for the child's developmental stage. Children with ADHD may have difficulty staying focused on tasks, frequently forget or lose items, and struggle to follow instructions or complete assignments. Hyperactive behaviours such as constant fidgeting, running or climbing in inappropriate settings, and excessive talking are also common. Impulsivity can lead to challenges in waiting for turns, interrupting others, or acting without considering consequences. These symptoms can significantly interfere with academic performance, peer relationships, and family dynamics. While the exact cause is not fully understood, a combination of genetic, neurological, and environmental factors is believed to contribute to the disorder. Early identification and intervention are critical, as they can help manage symptoms and support the child's social, emotional, and educational development. Treatment often involves behavioural therapy, parent training, school-based support, and, in some cases, medication.

F. ADHD in Adults

Adult Attention Deficit Hyperactivity Disorder (ADHD) is a continuation of the childhood neurodevelopmental disorder that often persists into adulthood, though its symptoms may manifest differently with age. While hyperactivity may decrease, adults typically experience difficulties with sustained attention, time management, organization, and impulse control. They may struggle with maintaining focus at work, meeting deadlines, managing finances, or maintaining stable relationships. Emotional regulation can also be challenging, leading to frequent mood swings, frustration, or low self-esteem. Many adults remain undiagnosed, often attributing their difficulties to stress or personality traits, especially if their childhood symptoms were overlooked or misinterpreted. Diagnosis in adulthood usually involves a thorough clinical evaluation, including a review of past and present symptoms across various life settings. Treatment for adult ADHD often includes a combination of medication, particularly stimulants or non-stimulants, and psychotherapy such as cognitive-behavioural therapy (CBT) to help develop coping strategies, improve executive functioning, and manage emotional difficulties. With proper support and intervention, adults with ADHD can effectively manage their symptoms and lead successful, fulfilling lives.

G. Types of ADHD

Attention Deficit Hyperactivity Disorder (ADHD) is categorized into three primary types, based on the predominant symptoms an individual displays. The first type is **ADHD, Predominantly Inattentive Presentation**, where individuals struggle mainly with concentration, organization, and following instructions. They may appear forgetful, easily distracted, and often overlook details, making them seem disengaged or daydreamy. The second type is **ADHD, Predominantly Hyperactive-Impulsive Presentation**, characterized by symptoms such as excessive fidgeting, restlessness, impulsive decision-making, and difficulty remaining seated or quiet in structured settings. These individuals may interrupt others frequently or act without considering consequences. The third and most common type is **ADHD, Combined Presentation**, where symptoms of both inattention and hyperactivity-impulsivity are present and significantly impact daily life. The specific type can vary over time as symptoms change with age or circumstance, and accurate classification helps tailor treatment strategies to an individual's unique needs.

H. Comparison of ADHD Types

Type of ADHD	Key Symptoms	Behavioral Traits	Common Challenges	Often Observed In
Predominantly Inattentive Type	-Trouble focusing on tasks -Easily distracted -Frequently forgetful	-Appears disorganized -Daydreams often -Avoids tasks needing sustained effort	- Poor time management - Missed deadlines - Academic underachievement	Children and adults, especially females
Predominantly Hyperactive-Impulsive Type	- Excessive movement - Impulsive decisions - Difficulty staying still	- Interrupts frequently - Talks excessively - Acts without thinking	- Disruptive in class or meetings - Risk-taking behavior - Difficulty with self-control	More common in younger children, often males
Combined Type (Inattentive + Hyperactive)	- Symptoms of both inattention and hyperactivity & impulsivity	- Alternates between distraction and high energy - Highly impulsive	- Struggles across multiple areas (school, work, relationships)	Most commonly diagnosed type in children and teens

I. Treatment of ADHD

Treatment of Attention Deficit Hyperactivity Disorder (ADHD) typically involves a combination of approaches tailored to the individual's symptoms, age, and specific needs. The most commonly used treatment is **medication**, particularly stimulant medications like methylphenidate and amphetamines, which help regulate brain chemicals involved in attention and impulse control. Non-stimulant medications, such as atomoxetine or certain antidepressants, may be

prescribed in cases where stimulants are not suitable. Alongside medication, **behavioural therapy** plays a key role, especially for children. This includes strategies to reinforce positive behaviours, improve organizational skills, and reduce disruptive actions. **Parent training and family therapy** are also beneficial, helping caregivers manage challenging behaviours and create supportive home environments. In school settings, **academic accommodations** such as extended time on tests, seating arrangements, or individualized education plans (IEPs) can support learning. For adolescents and adults, **cognitive-behavioural therapy (CBT)** and coaching can assist with time management, goal setting, and emotional regulation. A well-rounded treatment plan often includes a collaborative effort between healthcare providers, educators, and families to ensure consistent support across all areas of life.

II. REVIEW OF LITERATURE

A. Antshel et al. (2011)

The understanding of Attention Deficit Hyperactivity Disorder (ADHD) has evolved significantly over the past decades, with recent advances highlighting its complex neurobiological underpinnings and varied treatment strategies. ADHD, once considered a childhood disorder, is now recognized as a chronic condition that often persists into adulthood, with prevalence rates estimated at 7–8% in school-age children and 4–5% in adults. Its manifestation is influenced by genetic, neurochemical, and environmental factors, and is often accompanied by psychiatric comorbidities such as mood disorders, anxiety, and substance-use disorders.

Neuroscientific research has identified key brain regions—particularly the prefrontal cortex and its interactions with the striatum, cerebellum, and parietal cortex—as critical in the pathophysiology of ADHD. Dopaminergic and noradrenergic dysregulation have emerged as central to the disorder's neurochemistry. Imaging studies suggest that affected individuals may have reduced brain volume or activity in these regions, reinforcing the biological basis of ADHD.

Treatment approaches have diversified beyond traditional stimulant medications. While stimulants like methylphenidate and amphetamine formulations remain the first-line treatment due to their proven efficacy, newer long-acting delivery systems have improved adherence and reduced abuse potential. Non-stimulant medications such as atomoxetine, guanfacine, and clonidine have also shown efficacy, especially for patients who do not respond well to stimulants or experience intolerable side effects.

In addition to pharmacological interventions, behavioural and psychosocial strategies are increasingly emphasized. Cognitive Behavioral Therapy (CBT) has gained prominence, particularly for adults, as a complementary approach that targets executive dysfunction and residual symptoms not addressed by

medication alone. Parent training and school-based interventions are recommended for children to enhance behavioural management and academic performance.

Despite these advances, the treatment of ADHD remains challenging. Many individuals continue to experience functional impairments even after symptom reduction. Comorbidity, treatment non-adherence, and variability in individual responses to therapy underscore the need for personalized and multi-modal treatment plans. Emerging research emphasizes the importance of combining pharmacological and behavioural therapies and tailoring interventions based on patient-specific characteristics.

In conclusion, while significant strides have been made in understanding and managing ADHD, ongoing research is essential to refine treatment outcomes, address executive and emotional regulation deficits, and develop strategies that integrate biological, psychological, and social dimensions of the disorder.

B. Nazarova et al. (2022)

Attention-Deficit/Hyperactivity Disorder (ADHD) is a neurodevelopmental condition that affects individuals across all age groups, with symptoms including inattention, hyperactivity, and impulsivity. Recent literature reveals a significant expansion in both pharmacological and non-pharmacological treatment approaches. Historically, stimulant medications such as methylphenidate and amphetamines have dominated ADHD treatment, supported by robust evidence of short-term efficacy. However, newer pharmacological agents—including selective noradrenaline reuptake inhibitors and alpha-2 adrenergic agonists—offer alternatives, particularly for patients who experience side effects or have contraindications to stimulants.

Notably, the majority of recent clinical trials (approximately 80%) focus on non-pharmacological treatments. These include behavioural therapies (e.g., parent training, cognitive behavioural therapy), cognitive training, and psychoeducation. Complementary and alternative therapies—such as dietary interventions, mindfulness, physical activity, and herbal supplements—have also shown promising results, though their evidence base varies in strength. Technological advancements have introduced device-based treatments, such as transcranial direct current stimulation (tDCS) and FDA-approved options like the Monarch eTNS System and EndeavorRx.

Comprehensive reviews and meta-analyses cited in the literature affirm the effectiveness of behavioural therapy and aerobic exercise in reducing core symptoms, especially when combined with medication. However, challenges remain regarding long-term efficacy, accessibility, and individualized treatment planning. Overall, the literature reflects a growing trend toward integrated, multimodal treatment frameworks and

a strong interest in expanding therapeutic options beyond traditional medication.

C. Wenxin Sun et al. (2022)

The reviewed literature indicates a growing interest in the therapeutic role of physical exercise as a non-pharmacological intervention for children with Attention Deficit Hyperactivity Disorder (ADHD). ADHD, a prevalent neurodevelopmental disorder, is characterized by symptoms such as inattention, hyperactivity, and impulsivity, often persisting into adulthood and impairing executive function, behavior, and academic performance. Traditional pharmacotherapy, though commonly prescribed, carries the burden of adverse side effects, prompting researchers to explore alternative approaches.

Several studies have reported that structured physical activity, including aerobic exercise, yoga, Tai Chi, and sports-based interventions, can positively influence cognitive and behavioural outcomes in children with ADHD. For instance, moderate to high-intensity aerobic exercises have shown potential in enhancing executive function and reducing core ADHD symptoms. Studies such as those by Barnard-Brak et al. (2011), Wigal et al. (2013), and Den Heijer et al. (2017) found exercise beneficial for attention and behavior regulation. Similarly, Chen and Cheng (2016) and Jensen and Kenny (2004) demonstrated behavioural and emotional improvements through Tai Chi and yoga, respectively.

Moreover, previous meta-analyses (e.g., Vysniauske et al., 2020; Liang et al., 2021) have emphasized the effectiveness of physical activity in improving motor coordination and executive functioning. However, inconsistencies exist regarding its influence on other symptoms such as hyperactivity, aggression, and depression. Some research (e.g., Zang, 2019) suggests broader emotional benefits, while others report limited or inconclusive effects.

Importantly, the heterogeneity in findings across studies is partly attributed to variations in exercise type, intensity, frequency, and intervention duration. This underscores the necessity for standardized protocols and higher-quality randomized controlled trials to determine optimal exercise parameters. Overall, the existing literature provides preliminary but promising support for the role of physical exercise in ADHD management, especially concerning attention, motor skills, and cognitive flexibility.

D. Peng et al. (2024)

Attention-Deficit/Hyperactivity Disorder (ADHD) is a chronic neurodevelopmental condition marked by symptoms of inattention, impulsivity, and hyperactivity, often persisting from childhood into adulthood. While psychostimulant medications are a standard treatment, their side effects and limitations have fuelled interest in non-pharmacological

alternatives. Among these, mind-body exercises (MBE)—including yoga, Tai Chi, Pilates, and dance—have emerged as promising adjunctive therapies due to their focus on controlled movement, mindfulness, and emotional regulation.

Previous research supports the use of MBE in improving attention and cognitive control. Studies have shown that yoga can enhance concentration and self-esteem, Pilates improves cognitive function, and Tai Chi aids in attention regulation. These activities require sustained focus, postural control, and coordinated breathing, all of which may promote neuroplasticity and stress reduction. Additionally, MBE may enhance brain function through mechanisms such as improved monoaminergic neurotransmission and the release of neurotrophic factors.

Despite these potential benefits, the current body of literature presents mixed findings. While MBE has consistently demonstrated improvements in attention among individuals with ADHD, its effects on other core symptoms—like executive function, emotional regulation, and hyperactivity/impulsivity—remain inconclusive. Some studies indicate minor gains, but the variability in intervention type, duration, and participant demographics contributes to inconsistent outcomes.

Earlier reviews have highlighted these gaps, pointing out the need for rigorous randomized controlled trials (RCTs) focused specifically on ADHD. Most existing studies suffer from small sample sizes, moderate risk of bias, and insufficient differentiation across age and gender, limiting generalizability. Nevertheless, the theoretical and preliminary empirical support for MBE as a beneficial, low-risk approach to managing ADHD—especially attention deficits—is growing, making it a viable complement to traditional therapies.

E. Dinu et al. (2023)

Research into ADHD treatment has increasingly considered the role of physical exercise, particularly due to the limitations of pharmacological approaches in adults. Although psychostimulants are commonly used and effective for many, they are not universally tolerated or effective and can lead to side effects or misuse. These limitations have prompted investigation into alternative interventions, such as physical exercise, which has shown potential cognitive and behavioural benefits.

Most prior studies have focused on children and adolescents, with adults being significantly underrepresented. Among children, aerobic exercise (like running or cycling) has been associated with improvements in attention and inhibition, although the magnitude of effects varies widely due to small sample sizes and methodological inconsistencies. For example, studies using Continuous Performance Tasks (CPT) or Flanker Tests suggest improvements in executive functions, but rarely

explore hyperactivity or multiple types of impulsivity. Reviews by Neudecker et al. and Christiansen et al. emphasize the need for more rigorously designed, large-scale studies with better control of exercise parameters and inclusion of broader symptom domains.

Non-aerobic or mind-body exercises—such as yoga and tai chi—have received comparatively little attention. Existing small-scale studies on these approaches, especially in adults, have produced mixed or inconclusive results. For instance, limited evidence suggests that tai chi and yoga may reduce inattention or hyperactivity, but these findings are based on studies with insufficient statistical power or inadequate control of confounding variables.

Moreover, few studies have used objective measures like actigraphy to assess changes in hyperactivity, and most have neglected the multidimensional nature of impulsivity. There's also limited understanding of how factors such as exercise duration, intensity, and individual differences (e.g., medication use) influence outcomes.

Meta-analyses suggest that benefits from exercise might not depend significantly on age, gender, or medication status, and even short durations of activity (as little as five to ten minutes) might yield cognitive improvements. Nonetheless, consistent evidence—especially from randomized controlled trials in adult ADHD populations—is lacking.

In light of these gaps, this study aims to examine the immediate effects of both aerobic (cycling) and non-aerobic (Hatha yoga) exercise on core ADHD symptoms in adults using robust, objective measures. The review underscores the urgent need for more targeted research in adult populations and with diverse forms of physical activity to better understand the therapeutic potential of exercise in managing ADHD symptoms.

F. Lindvall et al. (2023)

Attention Deficit Hyperactivity Disorder (ADHD) is a lifelong neurodevelopmental condition affecting approximately 2.5–5% of adults. Its core symptoms—namely inattention, impulsivity, and hyperactivity—are often accompanied by difficulties in executive functioning, emotional regulation, and maintaining daily structure. Adults with ADHD frequently experience a sedentary lifestyle, co-occurring mental health disorders such as depression and anxiety, and impaired quality of life. Although pharmacological treatments, especially central stimulants, are considered the first-line approach, they are not universally effective and often come with side effects. Consequently, there is growing interest in non-pharmacological alternatives.

Previous studies in children and adolescents have shown that structured physical activity can help reduce core ADHD symptoms. However, similar evidence in adult populations

remains limited. The few existing studies suggest that exercise may enhance mood, improve sleep, increase energy, and support better emotion regulation, yet systematic evaluations in adults are lacking. Likewise, while structured cognitive skills training has shown promise in helping adults with ADHD manage time, plan activities, and improve self-esteem, its effect in combination with exercise has not been thoroughly assessed.

Research indicates that physical activity may promote neuroplasticity, body awareness, and self-confidence, potentially addressing multiple challenges faced by individuals with ADHD. However, it is still unclear whether such effects extend to the adult ADHD population, particularly in terms of improving body awareness, sleep quality, or everyday functioning.

Despite preliminary findings and pilot studies indicating the feasibility of structured interventions, robust randomized controlled trials (RCTs) are needed to establish the efficacy of exercise-based or cognitive-behavioural programs. Existing studies have been limited by small sample sizes, short durations, and lack of focus on adults. Therefore, this paper justifies the need for the START intervention—an RCT exploring the combined and separate effects of physical exercise and person-centred cognitive training on ADHD symptoms and related outcomes in adults.

G. Tucker et al. (2024)

Attention Deficit Hyperactivity Disorder (ADHD) is a persistent neurodevelopmental condition that affects both children and adults, with adult prevalence estimated between 2.8% and 5%. Core symptoms include inattention, hyperactivity, and impulsivity, often impairing daily functioning. While pharmacological treatments remain a common approach, their side effects and limited long-term efficacy have increased interest in non-pharmacological interventions such as physical activity (PA) and physical exercise (PE).

Growing evidence suggests that PE may provide cognitive and emotional benefits for individuals with ADHD, including improved attention, mood, and executive functioning. However, most prior research has focused on children and adolescents—particularly males—leaving adults and underrepresented populations such as females largely unstudied. The few studies that exist for adults indicate potential improvements in motivation, energy, and mental clarity following even brief bouts of exercise. Despite these findings, more is needed to understand how adults with ADHD engage with exercise, and what factors influence their participation.

The review identifies a gap in understanding the specific determinants of exercise (DE)—such as motivation, coping strategies, social influence, and emotion regulation—that may

either promote or hinder exercise in adults with ADHD. The Theoretical Domains Framework (TDF) and Behaviour Change Wheel (BCW) have been employed in related research to categorize such determinants. Prior qualitative studies have pointed to executive dysfunction, emotional regulation difficulties, low motivation, and social factors as key barriers to exercise, while positive social interactions and perceived health benefits have emerged as facilitators. However, these studies lacked control groups and used methodologies that limited broader comparison.

Moreover, individuals with ADHD may be at increased risk for exercise dependence (ED), where exercise becomes compulsive and harmful. Research indicates that certain determinants—like emotion, motivation, and beliefs about personal capabilities—may increase vulnerability to ED, highlighting the need for a cautious and balanced approach in promoting exercise among this population.

Overall, the existing literature suggests that adults with ADHD face unique psychological and practical challenges when it comes to engaging in exercise. Identifying and understanding these challenges is essential to developing effective and safe exercise-based interventions. However, current research remains limited in both scope and methodology, underscoring the need for further empirical investigation, especially using comparative and quantitative approaches in adult populations.

H. Zhang & Li (2025)

Attention Deficit Hyperactivity Disorder (ADHD) is a neurodevelopmental disorder marked by impairments in attention, hyperactivity, and impulsivity. These core symptoms are closely associated with deficits in executive functions, particularly working memory and inhibitory control. While stimulant medications are commonly prescribed, concerns about their side effects, especially in younger populations, have led researchers to explore non-pharmacological interventions—most notably, physical exercise.

Previous literature has established that physical activity, particularly aerobic and structured forms of exercise, can yield cognitive benefits in children with ADHD. However, past studies have often lacked clarity on how different intensities of exercise affect specific executive functions. Prior meta-analyses assessed general exercise effects without differentiating between vigorous, moderate, or submaximal intensity, leading to mixed or inconclusive results.

Emerging evidence has suggested that vigorous-intensity exercise may positively impact executive function domains, including working memory and inhibition. Some studies, such as those involving high-intensity interval training (HIIT), have shown improvements in cognitive flexibility and motor coordination, while others have reported minimal or non-significant effects, highlighting inconsistencies in the literature.

These inconsistencies may arise from differences in study design, exercise protocols, participant characteristics, and evaluation methods.

The present study addresses these gaps by systematically reviewing and meta-analysing randomized controlled trials focusing specifically on vigorous-intensity exercise interventions for children with ADHD. It highlights the growing body of research that supports structured exercise as a potential means to improve cognitive functioning, especially when medication is not tolerated or sufficient. The literature review also underscores the need for clearer guidelines regarding exercise intensity and duration for effective implementation.

I. Jeyanthi, et al. (2021)

Attention Deficit Hyperactivity Disorder (ADHD) is a prevalent neurobehavioral condition among school-aged children, marked by inattention, hyperactivity, and impulsivity. Beyond cognitive symptoms, research indicates that children with ADHD often exhibit deficiencies in gross and fine motor skills and reduced physical fitness. However, these issues are under-assessed and rarely addressed through targeted interventions. Traditional management strategies such as medication and behavioural therapy offer limited or short-term relief, with a significant proportion of children experiencing side effects or poor adherence due to the high demands on time and resources.

There is a growing body of literature suggesting that physical exercise may serve as an effective adjunct therapy for ADHD, offering improvements not only in behavioural outcomes but also in physical and motor functioning. Previous studies have shown that structured physical activity—especially programs combining aerobic, resistance, and motor skill training—can enhance cardiovascular fitness, muscular strength, flexibility, and coordination in children with ADHD. Moreover, exercise may positively influence attention and behavior by increasing neurotransmitters such as dopamine and serotonin, which are often deficient in individuals with ADHD.

Despite these promising findings, most existing studies have not been conducted in school settings or failed to report critical intervention details such as dosage, duration, and progression. Furthermore, children with ADHD are often excluded from school sports due to behavioural concerns, limiting their access to the benefits of physical activity. As a result, structured exercise programs within the school environment are proposed as a feasible and inclusive solution for enhancing both physical and cognitive outcomes.

This pilot study builds on prior literature by testing a school-based structured exercise program that integrates motor skill training and attention tasks. The rationale stems from earlier evidence supporting the role of physical training in improving

focus, self-regulation, and executive function. By incorporating exercise into the school curriculum, the intervention aims to overcome access barriers and provide a practical, engaging method for managing ADHD symptoms holistically.

J. Christiansen et al. (2019)

Attention Deficit Hyperactivity Disorder (ADHD) is a neurodevelopmental disorder that significantly impairs attention, impulse control, and executive functioning in children and adolescents, with symptoms often persisting into adulthood. Traditional treatments rely heavily on pharmacological interventions, particularly stimulant medications like methylphenidate, but these are not universally effective and can lead to adverse effects. This has prompted interest in alternative approaches, including exercise-based interventions.

Recent studies suggest that both acute and long-term physical exercise can yield modest to moderate improvements in executive functions, particularly inhibitory control, working memory, cognitive flexibility, and sustained attention. Meta-analyses in population-based control (PBC) groups and children with ADHD show small but consistent positive effects from exercise, especially aerobic and cognitively engaging activities. Exercise may influence ADHD symptoms by enhancing neurocognitive functions through mechanisms like increased arousal, better monoaminergic signalling (e.g., dopamine and norepinephrine), and elevated levels of brain-derived neurotrophic factor (BDNF).

Empirical evidence from randomized controlled trials and neuroimaging studies highlights structural and functional differences in brain regions such as the prefrontal cortex, basal ganglia, and cerebellum in children with ADHD. Exercise has been shown to induce beneficial neuroplastic changes in these regions, suggesting a physiological basis for its cognitive effects. Furthermore, improvements in brain network activity, including changes in EEG theta/beta ratios and increased activation in executive control networks, support the therapeutic potential of exercise.

Although the effects vary depending on exercise type, duration, and intensity, the review concludes that both acute and long-term exercise interventions have a promising role in managing cognitive deficits associated with ADHD. However, the field suffers from methodological heterogeneity, small sample sizes, and insufficient exploration of exercise parameters. Future research should aim to standardize protocols and investigate dose-response relationships to refine recommendations for clinical use.

III. RATIONALE OF THE STUDY

Attention-Deficit/Hyperactivity Disorder (ADHD) is a neurodevelopmental condition marked by persistent

inattention, impulsivity, and hyperactivity, affecting individuals across the lifespan. While pharmacological treatments—primarily stimulant medications—remain the standard intervention and have proven efficacy in reducing core symptoms, they often do not address underlying cognitive deficits such as poor working memory, low attention span, or impaired executive functioning. Moreover, some patients experience side effects, reduced long-term adherence, or suboptimal outcomes with medication alone.

Recent advances in cognitive neuroscience and behavioural therapy have highlighted the potential of **mental exercises**, such as attention training, memory enhancement tasks, and executive function games, in strengthening neurocognitive pathways and improving behavioural control. These non-pharmacological approaches may complement medical treatment by targeting different mechanisms of impairment, offering a more holistic and sustainable form of intervention. However, the majority of existing research focuses on children or adults in isolation, and few studies have systematically examined the impact of combining mental exercises with medication across both age groups.

This study seeks to fill that gap by investigating whether integrating structured mental exercises with pharmacological therapy can produce superior outcomes in both children and adults diagnosed with ADHD. The findings may offer valuable insights into age-sensitive, integrative treatment models and support the development of more individualized ADHD management strategies.

IV. METHODOLOGY

A. Aim

This research study seeks to observe the effect of the use of K-MEPSE kit (Kamalpuria's Mental Exercise and Physical Strength Enhancer Kit) in ADHD patients (child and adult) in a span of 6 months.

B. Objectives

1. To find out improvements in scores of Conner's scale SC-4 on children caused by the use of K-MEPSE kit.
2. To find out improvements in scores of Adult ADHD Self-Report Scale (ASRS) on adults caused by the use of K-MEPSE kit.
3. To find out if K-MEPSE kit helps in keeping Blood pressure and Blood sugar levels in control.
4. To find out where the improvement stops while using the kit.

C. Research Methodology

- *Research Design:* Quantitative and qualitative study was conducted using face-to-face interviews and sessions.

- **Step 1:** Conduction of Conner's scale on children and ASRS on adults. These are paper pencil tests which give us a specific score determining the current stage of ADHD and its symptoms in the patient. This test was repeated on the same date after six months to track the progress.
- **Step 2:** Checking Blood Pressure and Blood Sugar. These tests were repeated every month on the same date with adults to track the progress for a period of six months.
- **Step 3:** The Kit exercises began after the first Conner's Scale, ASRS, BP and Blood sugar test. Kit exercises took place once a week regularly for a period of 6 months and the progress was tracked through K-MEPSE Scoring sheet along with BP and Blood Sugar test for adults.

K-MEPSE kit exercises may take up to 1 to 2 hours for conduction per person, depending upon the patient's current mental state.

D. Ethical Considerations

Given the nature of this project, there are minimal ethical considerations that need to be taken into consideration. All participants were treated with respect and courtesy. A strategy of 'informed consent' was adopted, with the aim and methods of the research being made clear to all participants. The confidentiality and anonymity of individual respondents was assured, and consent was sought for the sessions. There was a caretaker for children and a relative for adults present at all times with the participant and their consent also being taken.

E. Sample

1. **Sampling Technique:** Homogeneous Purposive Sampling technique was used in this study. The sample comprised of children with ADHD (below 18 years) and adults with ADHD (18 years and above).
2. **Sampling Size & Nature:** Total 100 participants were taken, out of which 50 participants were children and 50 participants were adults.
3. **Research Period:** 6 Months
4. **Research Instrument:** Kamalpuria's Mental Exercise and Physiological Strength Enhancer Kit (K-MEPSE Kit).

F. Sampling Criteria:

1. **Inclusion criteria for the study:**
 - Subjects falling in the age group of 3-60 years.

- Subjects only from Mumbai.
- Subjects either male or female.
- Subjects those who have diagnosed ADHD.

2. *Exclusion Criteria for the study:*

- Subjects outside the age group of 3-60 years.
- Subjects outside Mumbai.
- Subjects other than male or female.
- Subjects are those who do not have ADHD clinically diagnosed by a physician.

G. Tests/Tools

The tools used for tracking the score changes are stated below:

1. **Conners' Scale SC-4 (For children with ADHD)**

- **Authors' name:** Dr. C. Keith Conners
- **Sub-Scales:**
 - Inattention (1-9)
 - Hyperactive/Impulsive (10-18)
 - AD/HD Combined (1-18)
 - ODD (19-26)
 - Peer Conflict (27-36)
- **Total number of items:** 36
- **Scoring:** Children's parents are required to rate how affected they have been by each of the 36 items individually in the past month on a four- point Likert scale, ranging from 0 to 3. Items are then summed to provide a total severity score which ranges from 0 to 78.

0 means 'Never', 1 means 'Sometimes', 2 means 'Often', and 3 means 'Very Often'. The Conners Scale can determine a rough diagnosis in two ways:

 - **T-Scores:** Scores are converted into T-scores, which are standardized to compare an individual's results to the typical behavior of their age and gender peers.
 - **Normal Range:** T-scores under 60 are typically in the normal range, indicating the behavior is not significantly different from others of the same age and gender.
 - **Mildly Unusual (61-70):** Scores in this range suggest potential behavioural or academic issues that are somewhat unusual.
 - **Very Unusual/Severe (>70):** T-scores above 70 indicate behavioural problems that are more severe and require more significant consideration.
- **Norms:** Conners 4 scale norms compare a child's scores to those of a representative age- and gender-matched ADHD Reference Sample and the general population. Results are reported as T-scores (where <60

is average and >70 is very elevated) and percentile ranks. A professional interprets these scores, often using T-scores above 60 to indicate possible behavioural issues, within the context of the individual's overall profile and other diagnostic criteria for conditions like ADHD.

- **Reliability and Validity:** The Conners 4 scale demonstrates good to excellent reliability and validity, with strong internal consistency (median omega > .94), good test-retest reliability (median $r = .89$), and strong criterion-related validity, effectively distinguishing between clinical groups. Its structure is supported by confirmatory factor analysis, and convergent validity is shown through its moderate to strong correlations with other established assessments of related constructs.

2. ADHD Self-Report Scale ASRS (For Adults with ADHD)

- **Authors' name:** Dr. Ronald C. Kessler et al. (2005)
- **Sub-Scales:**
 - Inattention (Items 1–4 and 7–11)
 - Hyperactivity-Impulsivity (Items 5–6 and 12–18)
- **Assessment Layout:** The evaluation is divided into two distinct phases to facilitate initial screening and subsequent clinical discussion:
 - **Part A:** A six-item preliminary screener designed to pinpoint the core indicators most strongly associated with adult ADHD. Achieving a specific score in this section suggests a strong probability that the condition is present.
 - **Part B:** A twelve-item follow-up section that gathers deeper insights into symptom intensity and the specific ways these challenges disrupt daily functioning.
- **Total number of items:** 18
- **Scoring:** Sum the points for Questions 1 through 6 then evaluate the total score (out of a maximum of 24 points):
 - 0 to 13 points: Negative screen (ADHD is unlikely).
 - 14 to 24 points: Positive screen (Highly consistent with adult ADHD).

Do not add Part B scores to your Part A total. Part B does not have a formal pass/fail diagnostic cut-off score. Clinicians review these extra 12 questions individually to examine specific symptom patterns (like impulsivity vs. disorganization) and to establish a baseline for tracking treatment progress.

- **Norms:** The baseline average population score is 2.0. The tool operates with an exceptional 0.90 AUC classification accuracy, making a Part A point score of 14 or higher the standard, statistically validated norm to signify a positive clinical screen.
- **Reliability and Validity:** The Adult ADHD Self-Report Scale (ASRS v1.1) exhibits robust psychometric properties, characterized by exceptional internal consistency and strong diagnostic validity. Research across diverse clinical settings demonstrates that the tool achieves a Cronbach's alpha typically ranging from 0.63 to 0.89, confirming high internal reliability across its subscales. Test-retest reliability is similarly stable, ensuring consistent patient profiles over brief temporal gaps. In terms of validity, the instrument demonstrates powerful concurrent and criterion validity by tightly aligning with established DSM-IV and DSM-5 diagnostic frameworks, as well as clinician-administered gold standards like the Conners' Adult ADHD Rating Scales. Its screening utility is highlighted by an Area Under the Curve (AUC) metric of approximately 0.90, yielding a sensitivity profile near 90% and a specificity profile around 88% when utilizing standard Likert thresholds. This statistical balance effectively minimizes false negatives while maintaining high classification accuracy, though clinicians must interpret elevated scores carefully in populations with confounding psychiatric comorbidities, such as major depression or anxiety, where overlapping symptoms can artificially inflate scores.

H. Data Collection

1. **Primary Data:** The Primary data comprises of one to one individual sessions with ADHD patients (children and adults).
2. **Secondary Data:** The Secondary data was collected through research papers on internet and references from library.

The purpose of the study was explained and permission was taken for conducting the study. Rapport was established with the participants as well as their caregivers and relatives and the purpose of the study will be explained to them properly. They were assured about the privacy of the data and they were told that they were free to leave the study at any point of time, whenever they want. Only after getting the informed consent of all the participants and caretakers/relatives, the one to one exercise was started.

V. DATA ANALYSIS

Conner's Scale for Children and ASRS for Adults was conducted at the beginning of the trial and their MEAN SCORES were noted. Since the study focusses on patients with ADHD (Children and Adult), Patients below the age

of 18 years with ADHD were taken as sample for children and above the age of 18 years with ADHD were taken as sample for adults. Below are the Mean Scores of the sample at the beginning of the trial, as compared to the end of the trial, i.e., after 6 months.

CHILDREN

Mean Scores of Children with ADHD			
Time Period	Sub-Scales	Conner's Scale Scores	Severity Range
BEFORE	Inattention	76	High
	Hyperactive/Impulsive	70	High
	AD/HD Combined	76	High
	ODD	66	Moderate
	Peer Conflict	64	Moderate
AFTER	Inattention	70	High
	Hyperactive/Impulsive	66	Moderate
	AD/HD Combined	72	High
	ODD	64	Moderate
	Peer Conflict	60	Moderate

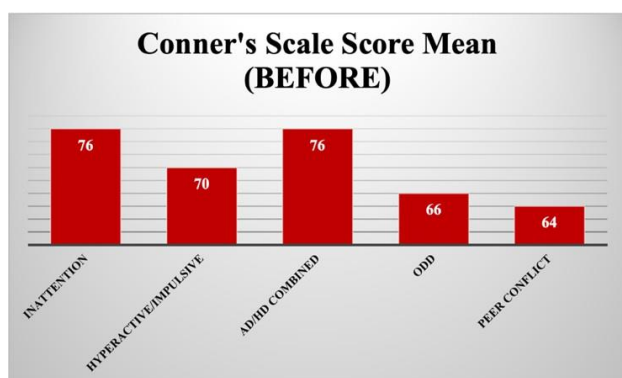


Figure 1: Graphical representation of Conner's Scale Mean Scores Before

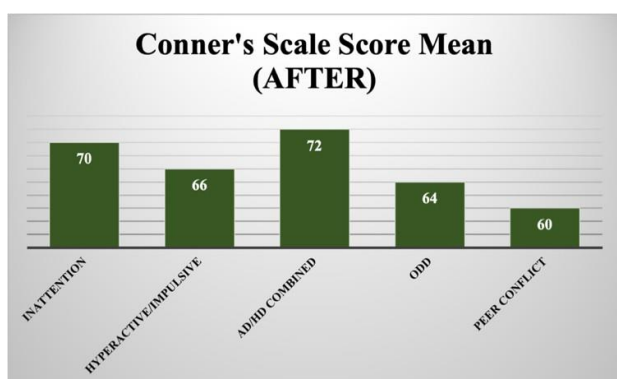


Figure 2: Graphical representation of Conner's Scale Mean Scores After

ADULT

Mean Scores of Adults with ADHD			
Time Period	Sub-Scales	ASRS Scores	Severity Range
BEFORE	Part A	20	Very High
	Part B	27	High
	Total	47	High
AFTER	Part A	16	Mild to Moderate
	Part B	22	Mild to Moderate
	Total	38	Mild to Moderate

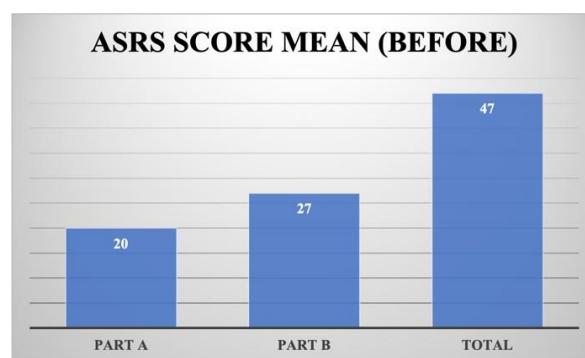


Figure 3: Graphical representation of ASRS Mean Scores Before

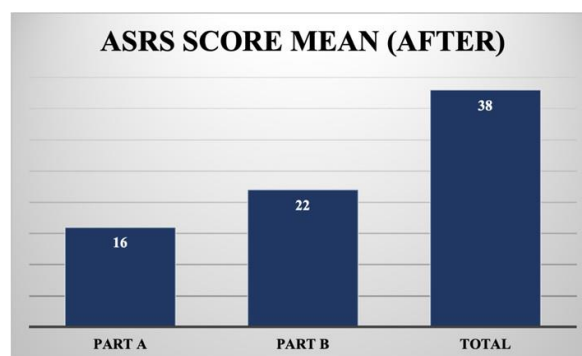


Figure 4: Graphical representation of ASRS Mean Scores After

VI. FINDINGS & OBSERVATIONS

The following observations could be made after conduction of the trial:

- The Conner's Scale score of sample group of children (50 people) showed a decrease by 6 points, i.e., from 76 to 70 in the subscale of Inattention, 4 points (70 to 66) in subscale Hyperactivity/Impulsivity, 4 points (76 to 72) in subscale ADHD Combined, 2 points (66 to 64) in subscale ODD and 4 points (64 to 60) in subscale Peer Conflict.

- The range of symptom severity remained the same in all subscales except hyperactivity/Impulsivity, which decreased from high severity to mild/moderate severity. It can be assumed that with further continuous practice, the ranges can also be changed.
- The ASRS score of sample group of adults (50 people) showed a decrease by 4 points, i.e., from 20 to 16 in Part A criterion, 5 points (27 to 22) in Part B criterion and 9 point in total.
- The range of symptom severity decreased from very high severity/high severity to mild/moderate severity in all three criterion. It can be assumed that with further continuous practice, the range can also be changed.
- With continuous conduction of K-MEPSE Exercise for 6 months, there was minimal practice effect noticed in children with ADHD, while after 3 months of continuous conduction, some practice effect was noticed in adults with ADHD. This may change if the scores keep decreasing.
- The progress/improvement did not seem to stop at any stage within a period of 6 months. It may differ once the patient's score has reached normal levels (low symptom severity), due to improvement in attention, leading to practice effect.
- The Blood Pressure (Post-meal weakly) and Blood Sugar (Post-meal monthly) levels were checked which also showed slight stability during the later stages of the trial as compared to initial fluctuations and imbalances.
- With the help of Projective depression screening tests, we were able to track symptoms of onset of depression or depressive traits in a few patients, which were immediately looked into and initiated the treatment for, by their Consultant psychiatrist.

VII. CONCLUSION

The findings of this study highlight the substantial benefits of integrating K-MEPSE kit exercises into the treatment regimen for individuals with Attention Deficit Hyperactivity Disorder (ADHD). Both children and adults who consistently engaged in structured cognitive exercises of this kit demonstrated marked improvements in attentional control and a notable reduction in the severity of core ADHD symptoms. These exercises, designed to strengthen specific executive functions such as sustained attention, working memory, and cognitive flexibility, served as a complementary tool alongside pharmacological interventions. The combined approach yielded more consistent and long-lasting outcomes than medication alone, particularly in enhancing focus and task persistence.

The results support the growing body of evidence that mental exercises are not only effective in mitigating attentional deficits but also promote adaptive changes in neural pathways involved in self-regulation and information processing. Children showed increased classroom attentiveness and reduced impulsive behaviours, while adults experienced improved concentration in daily tasks and professional settings. These findings affirm the value of non-pharmacological interventions in ADHD management and underscore the importance of developing accessible, developmentally appropriate, and engaging cognitive training programs tailored to individual needs.

Improvement by 3-5 point scores was noted in both children and adults, depressive traits were tracked and handled effectively, and the acupressure exercises were found to be effecting in stabilizing the overall physiological health of the patient. Therefore, the K-MEPSE kit can surely be used as a complete package of mental exercises and acupressure which can help in improving brain's cognitive functions significantly.

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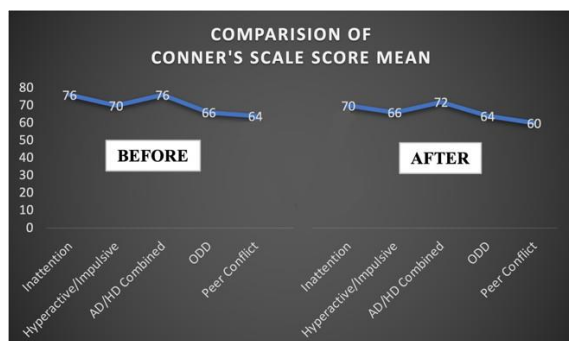


Figure 5: Comparison chart of Conner's Scale Mean Scores Before and After

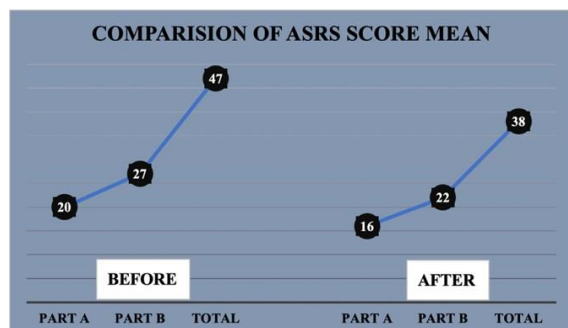


Figure 6: Comparison chart of ASRS Mean Scores Before and After

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APPENDICES

CONNERS SCALE SC-4

ADHD SYMPTOM CHECKLIST – 4(Parent)

CHILD'S NAME	DATE
NAME OF THE PERSON COMPLETING FORM	RELATIONSHIP TO CHILD

DIRECTIONS: BESIDES EACH ITEM BELOW, INDICATE THE DEGREE OF THE PROBLEM WITH A CHECKMARK(V). PLEASE RESPOND TO ALL ITEMS. EVALUATE THE CHILD'S BEHAVIOR ON THE FOLLOWING DAYS:

	NEVER	SOME-TIMES	OFTEN	VERY OFTEN	FOR OFFICE USE
CATEGORY (A)					
1) DOESN'T PAY ATTENTION TO DETAILS; CARELESS MISTAKES					
2) DIFFICULT PAYING ATTENTION					
3) DOES NOT SEEM TO LISTEN					
4) DIFFICULTY FOLLOWING INSTRUCTIONS; DOES NOT FINISH THINGS					
5) DIFFICULTY GETTING ORGANIZED					
6) AVOIDS DOING THINGS THAT REQUIRE A LOT OF MENTAL EFFORT					
7) LOSES THINGS					
8) EASILY DISTRACTED					
9) FORGETFUL					
10) FIDGETS WITH HANDS OR FEET; SQUIRMS IN SEAT					
11) DIFFICULTY REMAINING SEATED					
12) RUNS ABOUT OR CLIMBS ON THINGS					
13) DIFFICULTY PLAYING QUIETLY					
14) "ON THE GO"; ACTS AS IF "DRIVEN BY A MOTOR"					
15) TALKS EXCESSIVELY					
16) BLURTS OUT ANSWERS TO QUESTIONS					
17) DIFFICULTY AWAITING TURN					
18) INTERRUPTS OTHERS OR BUTTS INTO THEIR ACTIVITIES					

CATEGORY (B)

19) LOSES TEMPER					
20) ARGUES WITH ADULTS					
21) DEFIES OR REFUSES WHAT YOU TELL HIM/HER TO DO					
22) DOES THINGS TO DELIBERATELY ANNOY OTHERS					
23) BLAMES OTHERS FOR OWN MISBEHAVIOR OR MISTAKES					
24) IS TOUCHY OR EASILY ANNOYED BY OTHERS					
25) IS ANGRY AND RESENTFUL					
26) TAKES ANGER OUT ON OTHERS; TRIES TO GET EVEN					

CATEGORY (C)	NEVER	SOME-TIMES	OFTEN	VERY OFTEN	FOR OFFICE USE
27) GRABS THINGS FROM OTHER CHILDREN					
28) THROWS THINGS AT OTHER CHILDREN					
29) SMASHES OR DESTROYS THINGS					
30) GIVES DIRTY LOOKS OR MAKES THREATENING GESTURES TO OTHER CHILDREN					
31) CURSES AT OR TEASES OTHER CHILDREN TO PROVOKE CONFLICT					
32) DAMAGES OTHER CHILDREN'S PROPERTY					
33) HITS, PUSHES, OR TRIPS OTHER CHILDREN					
34) THREATENS TO HURT OTHER CHILDREN					
35) ENGAGES IN PHYSICAL FIGHTS WITH OTHER CHILDREN					
36) ANNOYS OTHER CHILDREN TO PROVOKE THEM					

CATEGORY (D)

37) IRRITABLE					
38) UNUSUALLY CHEERFUL OR HAPPY					
39) SAD, WEEPY, CRIES, OR UNHAPPY					
40) ANXIOUS					
41) SPACED OUT, BLANK STARES					
42) OVERLY QUIET					
43) LETHARGIC, DROWSY					
44) UNINTERESTED IN OTHERS, STAYS BY HIMSELF/HERSELF					
45) DIFFICULTY FALLING ASLEEP(parent)					
46) DECREASED APPETITE(parent)					
47) COMPLAINS ABOUT HEADACHE, UPSET STOMACH, DIZZINESS, ETC.					
48) TICS, TWITCHING, FINGER NAIL BITING, UNUSUAL ARM OR LEG MOVEMENTS					
49) UNUSUALLY TALKATIVE					
50) OTHERS(please specify)					

LIST ALL ILLNESSES (TYPE AND DATE) THAT OCCURRED ON THE SPECIFIED DAYS: _____

Adult ADHD Self-Report Scale v1.1 (ASRS)

Instructions:

Please answer the questions below, rating yourself on each of the criteria shown. As you answer each question, select the box that best describes how you have felt and conducted yourself over the past 6 months.

	Never	Rarely	Sometimes	Often	Very Often
PART A:					
1 How often do you have trouble wrapping up the final details of a project, once the challenging parts have been done?	0	0	1	1	1
2 How often do you have difficulty getting things in order when you have to do a task that requires organisation?	0	0	1	1	1
3 How often do you have problems remembering appointments or obligations?	0	0	1	1	1
4 When you have a task that requires a lot of thought, how often do you avoid or delay getting started?	0	0	0	1	1
5 How often do you fidget or squirm with your hands or feet when you have to sit down for a long time?	0	0	0	1	1
6 How often do you feel overly active and compelled to do things, like you were driven by a motor?	0	0	0	1	1
PART B:					
7 How often do you make careless mistakes when you have to work on a boring or difficult project?	0	0	0	1	1
8 How often do you have difficulty keeping your attention when you are doing boring or repetitive work?	0	0	0	1	1
9 How often do you have difficulty concentrating on what people say to you, even when they are speaking to you directly?	0	0	1	1	1
10 How often do you misplace or have difficulty finding things at home or at work?	0	0	0	1	1
11 How often are you distracted by activity or noise around you?	0	0	0	1	1
12 How often do you leave your seat in meetings or other situations in which you are expected to remain seated?	0	0	1	1	1
13 How often do you feel restless or fidgety?	0	0	0	1	1
14 How often do you have difficulty unwinding and relaxing when you have time to yourself?	0	0	0	1	1
15 How often do you find yourself talking too much when you are in social situations?	0	0	0	1	1
16 When you're in a conversation, how often do you find yourself finishing the sentences of the people you are talking to, before they can finish them themselves?	0	0	1	1	1

	Never	Rarely	Sometimes	Often	Very Often
17 How often do you have difficulty waiting your turn in situations when turn taking is required?	0	0	0	1	1
18 How often do you interrupt others when they are busy?	0	0	1	1	1

Developer Reference:

Kessler, R. C., Adler, L., Ames, M., Demler, O., Faraone, S., Hiripi, E., Howes, M. J., Jin, R., Secnik, K., Spencer, T., Ustun, T. B., & Walters, E. E. (2005). The World Health Organization Adult ADHD Self-Report Scale (ASRS): a short screening scale for use in the general population. *Psychological Medicine*, 35(2), 245–256. <https://doi.org/10.1017/s0033291704002892>