

RESEARCH ARTICLE

Recreational Activity for De-Addicting Enthusiastic Gamers Raised by Parents in High Stressed Occupation

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Abstract:

The aim is to understand the impact of recreational activity in reducing the inclination towards gaming and its subsequent addiction. When compared to youngsters who grow up under the guidance of their parents, children of severely stressed-out working parents tend to spend more time on screens. Therefore, video game addiction (internet gaming disorder) is marked by drastically diminished control over gaming behaviour, which has an adverse effect on everyday functioning, including personal, social, educational, and employment duties. According to current studies, winning video games may cause a negative dopamine release that ultimately makes the child miserable. Recreational activities will help to decrease screen time, thereby supplying a beneficial source of dopamine and enhancing overall well-being. A quasi-experimental study was conducted to examine the degree of video game addiction among children raised by parents in high stressed occupations. The standardized questionnaire designed to assess the dimensions of video game addiction. This pilot study concluded that children and their parents require understanding more about the potential negative effects of gaming addiction on their overall well-being.

Keywords: Recreational activity, gaming disorder, brain function

INTRODUCTION

In the modern world of fast-paced, high-stress jobs requiring parents' full attention, finding balance and appropriate outlets for their children especially avid gamer can be difficult. Concerns over gaming's possible detrimental effects on children's and teenagers' physical and mental health care become more widespread as the medium continues to gain her popularity. When compared to youngsters who grow up under the guidance of their parents, children of severely stressed-out working parents tend to spend more time on screens. Therefore, video game addiction (internet gaming disorder) is marked by drastically diminished control over gaming behaviour, which has negative effect on everyday functioning, including personal, social, education.

A person's confidence is derived from their sense of self-worth. It could be both high and low. Students that have high self-esteem are typically more self-aware and confident. On the other hand, low self-esteem was accompanied by low self-confidence. The foundation of a student's ability to be competent and handle life's basic challenges is their sense of self-worth. Due to their high levels of stress at work, parents who don't manage their kids' time well often end up with game addiction (Moneva et al., 2020).

HIGH STRESSED OCCUPATIONAL PARENTS

Occupational stress profoundly affects family dynamics, with IT, finance, healthcare, and education professionals often struggling to balance work and home life (Sabina et al., 2023). Parents facing long hours, deadlines, and emotional strain may experience conflicts with their children, reduced mindful parenting,

and even episodes of anger or loss of control (Mikolajczak et al., 2018; Gumarac et al., 2024). In such contexts, children often turn to gaming as an escape, which, while offering some cognitive benefits, can also lead to sedentary lifestyles, irregular sleep, and social isolation. Thus, parental guidance, healthy role modelling, and structured recreational alternatives are essential to balance gaming with positive activities that support children's well-being.

GAMING DISORDER

The concept of video game "addiction" was first proposed to describe individuals who play excessively at the expense of financial, educational, and social responsibilities (Charlton et al., 2002). During the COVID-19 pandemic, gaming also served as a coping mechanism for many facing unprecedented challenges (Pallavicini et al., 2022). The ICD-11 now recognizes gaming disorder, defined by impaired control, prioritization of gaming over other activities, and continuation despite negative outcomes (Frank et al., 2018). Contributing factors include poor mood regulation, decision-making difficulties, family or social deficits, and environmental access to games. Excessive gaming can cause significant impairment in education, occupation, and daily functioning, with neuroimaging studies showing brain changes resembling other addictive behaviors (Ranjana et al., 2023).

BRAIN FUNCTION WHILE GAMING

Internet addiction is closely linked to alterations in dopaminergic activity, the neurotransmitter system responsible for reward processing and reinforcement learning. Individuals with addiction often develop a "reward deficiency," showing reduced sensitivity to

everyday pleasures and a heightened drive for intense stimulation such as excessive internet or gaming use. Prolonged engagement leads to neuroadaptations in the mesolimbic dopamine system, prefrontal cortex, and striatum, contributing to tolerance, dependence, and withdrawal (Kuss et al., 2012). Behaviorally, this manifests as impaired attention, decision-making, and emotional regulation, often accompanied by maladaptive coping strategies like social withdrawal. Studies also suggest that children who game for more than three hours daily show altered brain activity reduced visual processing and heightened frontal cortex activity highlighting both cognitive changes and negative outcomes linked to excessive gaming.

RECREATIONAL ACTIVITY

Recreational activities provide dynamic and pleasurable experiences that stimulate the brain's reward system through dopamine release, similar to the mechanisms seen in gaming (Werbach & Hunter, 2012). These activities ranging from hobbies, creative arts, and social interactions to sports and exercise offer enjoyment, relaxation, and fulfillment outside of daily responsibilities. Dopamine release during such pursuits fosters pleasure, motivation, and a sense of accomplishment, whether through painting, gardening, or completing physical challenges like hiking or dancing. Exercise additionally triggers endorphin release, compounds known for reducing stress and enhancing mood, further amplifying emotional well-being. While gaming similarly activates dopamine during achievements and rewards, diversifying leisure activities prevents overreliance on a single source of stimulation and supports healthier coping, stress management, and balanced psychological development.

EXERCISE AND ITS DOPAMINE ACTIVITY

Exercise-induced neurochemical changes highlight its role as a powerful alternative to gaming in regulating reward pathways. During physical activity, endorphins released from the brain and pituitary gland act as natural painkillers and mood enhancers, while also interacting with dopamine to reduce stress and improve well-being (Bauer et al., 2020). Aerobic exercise, in particular, enhances dopamine release in regions such as the caudate nucleus and ventral striatum, improving reward processing, motor learning, and neural plasticity. Framing exercise as play-based physical games rather than routine "exercise" can attract children, making de-addiction strategies more engaging. Activities such as running, swimming, and resistance training stimulate dopamine and endorphins, while mind-body practices like yoga or meditation enhance relaxation and emotional regulation.

Structured recreational programs, especially sports, provide discipline, teamwork, and resilience, which counteract addictive tendencies and foster long-term health benefits (Gentile et al., 2017; Eime et al., 2013). Participation in sports and community-based activities

not only reduces sedentary behavior and health risks but also improves cognitive performance, academic achievement, and psychological well-being (Biddle et al., 2011; Tomporowski et al., 2015). Incorporating gamification features such as goals, rewards, and competition into offline activities can redirect children's motivation from digital gaming to healthier outlets (Werbach & Hunter, 2012). Adventure sports, creative arts, and mindfulness practices further provide diverse sources of dopamine release, resilience, and self-expression (Hallam, 2010; Kabat-Zinn, 2013).

In conclusion, while video games overstimulate the brain's reward system, carefully designed recreational activities can promote dopamine release in constructive ways. A holistic strategy combining physical activity, creativity, social interaction, and mindfulness offers a sustainable pathway for helping passionate gamers especially those with stressed parents achieve balance, resilience, and long-term well-being.

The study aims to understand the impact of recreational activities in reducing children's inclination toward gaming and its potential progression into addiction. Specifically, it seeks to collect data about children who engage in video gaming, particularly those whose parents work in stressful occupations, as parental stress may influence children's screen use. It also examines whether these children spend more than three hours daily on gaming, a threshold often linked with problematic use. Finally, the study evaluates how recreational activities can serve as effective alternatives, helping children who are dependent on video games to balance their habits and promote healthier lifestyle choices.

MATERIAL AND METHODS

Study design

- Quasi Experimental Study
- Study type
- Pre & Post Study Design
- Study setting
- Community setting
- Sample design
- Simple Random Sampling

Sample size

- 50

Inclusion criteria

- Normal individual both boys and girls.
- Age range of 12 to 15 years.
- Children spends more than 60 minutes per day on screen time.

Exclusion criteria

- Social gamers
- Children who do not have smart phone addiction.

- Those who are already taking treatment for game addiction.
- Psychiatric illness
- Outcome measuring tool
- The instrument used to obtain information during the study was the parents' and children together version of the Modified Gaming Addiction Scale (appendix 2), which comprises 15 items to be completed in an estimated 30 minutes. The following dimensions and variables were analysed in the study.

Tool Description

This dimension includes playing video games all day and how often you feel the need to play them (items 1 and 2), does their feel guilty or difficult if it gets longer

than their intended (item 3 and 4), does playing relieve stress or escape from reality (item 5 and 6), tried to shorten the gaming session (item 7 and 8), felt disappointed or tensed when failed play (item 9 and 10), playing distract from responsibility and kept all night awake (item 12 and 13), experienced negative effect gaming continuously (item 14), anger towards parents and relatives while gaming (item 11 and 15).

Scoring

1. Never
2. Rarely
3. Sometimes
4. Often
5. Very often.

RESULTS AND OBSERVATIONS:

A pilot study was executed to evaluate the recreational activity in avid gamers who raised by the high stressed occupational parents. The study was conducted with 50 participants who satisfies the inclusion criteria. Permission to involve the children in the study was granted from the parent who's under high stressed occupation. The children's parents will be requested to sign the informed assent letter after being fully briefed on the study's purpose. The participants were voluntary, and those unwilling to participate were excluded.

The major outcome measure of the study was a modified gaming addiction scale, which is consisted of 15 questions evaluated on 5-point scale that addressed the degree of gaming addiction and a questionnaire gathering demographic information. Before any recreational activities were implemented, pre-scores were gathered and the parents were given detailed explanation of this questionnaire. After conducting the recreational activities to the children on the given duration the modified gaming addiction questionnaire was collected and it'll be considered as post-score. The results obtained from the pre-score and post-score will be analysed. In children raised in high-stress circumstances, the study aims to provide light on how recreational activities could operate as a counterbalance to gaming addiction.



FIG-1 (Social play – touch without crossing)



FIG-2 (modified juggling)



FIG -3 (leap frog)



FIG- 4 (skipping)



FIG– 5 (Team play – kick and catch the ball)



FIG - 6 (Cat and hang)



FIG– 7 (free kick)

Statistical Analysis

Parameter	Value
Sample Mean (M)	58.8
Population Mean (M)	90
Standard Deviation (SD)	8.1
Sample Size (n)	50
t-value	-27.3
p-value	< 0.001
Cohen's D	3.9
Normality p-value	0.01286
A priori power	0.9339
Post hoc power	1
Skewness	-0.103
Excess Kurtosis	-0.9597
95% CI for Group Mean	[56.4781, 61.0819]

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The study aimed to evaluate whether engaging in recreational activities can significantly reduce the inclination towards gaming and mitigate the risks of gaming addiction. A one-sample t-test was conducted to compare the mean inclination towards gaming in a group participating in recreational activities with the population mean known for gaming inclination.

Statistical Significance and Effect Size

The sample mean for the group engaged in recreational activities was found to be 58.8, which is considerably lower than the population mean of 90. The standard deviation of the sample was 8.1, indicating a relatively tight spread of data points around the mean. The t-test yielded a t-value of -27.3 with a p-value of 2.89×10^{-31} , which is substantially below the common alpha level of 0.05. This extremely low p-value indicates a highly significant difference between the sample mean and the population mean, leading us to reject the null hypothesis that there is no difference between the two means.

The Cohen's D value of 3.9 suggests an exceptionally large effect size. In practical terms, this means that the magnitude of the difference between the group mean and the population mean is not only statistically significant but also of great practical significance. An effect size of this magnitude underscores the substantial impact that recreational activities have in reducing gaming inclination.

Confidence Interval and Power

The 95% confidence interval for the group mean was calculated to be between 56.4781 and 61.0819. This interval does not encompass the population mean of 90, further confirming the significant difference observed. Additionally, the power analysis revealed both a priori power of 0.9339 and a post hoc power of 1. These values indicate that the study had more than sufficient power to detect a significant difference, should one exist. High power values reduce the likelihood of Type II errors, where a false null hypothesis might incorrectly fail to be rejected.

Distribution Characteristics

The normality p-value of 0.01286 suggests a slight deviation from normality, but given the sufficiently large sample size ($n = 50$), this deviation does not substantially affect the validity of the t-test results. Skewness and kurtosis values were -0.103 and -0.9597, respectively, indicating that the distribution is approximately symmetrical and mesokurtic, resembling a normal distribution with normal-like tails.

CONCLUSION

Results of the one-sample t-test indicated that there is a significant large difference between Group (M = 58.8,

SD = 8.1) and the population mean (M = 90), $t(49) = 27.3$, $p < .001$, Cohen's D = 3.9.

The statistical analysis strongly supports the hypothesis that recreational activities significantly reduce the inclination towards gaming. The large effect size (Cohen's D = 3.9) indicates a meaningful and impactful reduction, suggesting that incorporating recreational activities can be a highly effective strategy in mitigating gaming addiction. These findings advocate for the promotion of recreational activities as a preventive and therapeutic measure against excessive gaming and its associated risks.

Recreational activities not only offer a healthy alternative to gaming but also contribute to overall well-being by providing physical, mental, and social benefits. As such, stakeholders, including educators, policymakers, and health professionals, should consider integrating and encouraging recreational activities within their respective domains to combat gaming addiction effectively.

Result

A total of 70 surveys were completed. Of the total survey, 50 individuals met the criteria for avid gaming, and 20 met the criteria for casual gaming. The participants meeting the avid gaming criteria were invited to participate in the experiment. There were 19 female and 31 male participants.

The impacts of recreational gaming can be divided into various categories, including emotional, social, civic, somatic, and cognitive which includes learning vision (Dekker et al., 2023). These ideas form the framework of this recreational activities like leap frog, skipping, juggling, free ball kicking and social and team play was given to the children for 12 weeks (2 days in a week) and results were collected through the questionnaire. Significant changes in social, cognitive, civics skills were noted.

Recreational activities given to children have proven to promote social behaviour, lower depressive symptoms and stress, and stimulates emotional stability, acceptance, resolving capacity and reappraisal. Play - fighting in real life helps to promote function in few parts of the brain to highly coordinate with social activity and helps to regulate emotional self, it also promotes attention and priorities, the get rid of procrastination and promotes an efficient learning period. Attention specific to certain activity helps children from ignoring & getting distracted to irrelevant thoughts & helps distinguish necessary, unnecessary information.

Recreational activity eases every day stress and helps the kids reduce anxiety & depression group activity gives children a sense of value and belonging.

Behaviour is often shaped by their interactions with our environment and relationships with other children so that they can learn to trust others and communicate effectively, which will play an important part in all of their relationships. The direct and indirect links to our mental health are extremely beneficial. Energy levels of the kids participate in the survey is improved significantly and were at high energy levels throughout the day, it also helped them sleep better.

DISCUSSION

Video game addiction is a complex phenomenon shaped by an intricate interplay of psychological, social and environment factors. An immersive virtual environment that offers a sense of accomplishment, mutual respect, and an escape from the stresses of real life is frequently what draws enthusiastic gamers into trap. These virtual settings offer instant gratification and a well-organized framework of objectives, which may be especially alluring to people who are trying to manage their stress or satisfy unfulfilled needs. Electronic and computer game development poses a serious risk to children and adults, as well as contributing to psychological disorders and depression in these populations. While children used to play with other children, these days they spend most of their time on computer games as soon as they learn how to use them and become familiar with them; nevertheless, these games are unable to foster emotional or human relationships. The National Institute of Mental Health's follow-up report and the ensuing study noted that these major effects of seeing violence on television are children may become less sensitive to the pain and suffering of others, children may be more fearful of the world around them, children may be more likely to behave in aggressive or harmful ways toward others and decreases the social interaction.

The Diagnostic and Statistical Manual of Mental Disorders, most recent edition, introduced Internet Gaming Disorder (IGD) to Section III in 2013. Additionally, gaming disorder (GD) was recently added to the Eleventh World Health Organization's categorization system (ICD-11, WHO, 2018). In fact, a number of empirical research and doctors have noted that certain young adults or teenagers exhibit signs of problematic video game usage, which are comparable to those of other well-known addiction illnesses. Moreover, a great deal of overlap has been observed between IGD and other addictive illnesses. Recent research, for instance, has demonstrated brain pathways that are similar between substance use disorder (SUD) and compulsive gambling, as well as between IGD and problematic video game playing. Moreover, IGD has been linked to numerous problematic personality traits, including impulsivity, sensation seeking, low self-esteem, and neuroticism, much like other addictive

behaviors. Two recent studies have demonstrated an association between gaming and dysfunctions in emotion regulation, following other research that has shown that emotional regulation failures are linked to SUD and pathological gambling.

These studies have revealed that regular gamers exhibit higher levels of alexithymia, express their emotions less frequently, and have greater difficulty being emotionally reactive than irregular gamers. According to the Elsevier study, emotional ambiguity and control were predictive of IGD, and impaired emotion regulation was found to be a risk factor for IGD. These interesting results raise the question of the emotional functioning of gamers presenting IGD as well as the predictive value of various emotional dimensions in this disorder. In fact, one hypothesis based on previous research could be that alexithymia (first used by Sifneos (1973) to describe a lack of emotional skills initially found in psychosomatic patients) is a factor that could explain engagement in and maintenance of video game use.

Indeed, individuals with poorly regulated emotions often engage in maladaptive behaviors, such as in addictive disorders, to escape from or downregulate their emotions. Thus, several studies have shown that the addictive behaviour relieves the emotional dysregulation associated with alexithymia (perceived as a pre-existing trait that fosters addictive disorders). Given the conceptual overlaps between alexithymia, depression and anxiety, and given gender differences in emotion regulation (males tend to regulate their emotions less, feel them with less intensity, and express them less often, it seems necessary to control these dimensions when studying the relationship between alexithymia and IGD. Furthermore, several studies have found strong associations between IGD and anxiety and depression, and most of these studies have found a higher prevalence of IGD in males. Thus, it seems interesting to investigate the relationship between IGD and alexithymia while controlling for anxiety, depression, and gender. Because of the differences in age the factor structure and psychometric properties of the most commonly used tool for testing alexithymia – quality of measurement progressively deteriorating with younger age (Bonnaire et al., 2019).

Almost 150 million individuals play video games on a regular basis, or for at least three hours a week, according to studies. The majority of parents – 71 percent – indicates that their child's use of video games has a beneficial impact on their life. The state of India gaming report from Lumikai and google states that 50 percent of Indian gamers are between the teenagers with a male to female gamers ratio of 60:40. Children from 8 to 17 years of age spend average of 1.5 to 2 hours daily playing video games. (Alanko et al., 2023).

Decades of research has framed recent advances that shed light on the ways in which games affect children's social behaviours, cognitive development, mental and physical health. The sales of video games are rising every year. Over 24.5 billion games were sold by the video game industry in 2016, an increase from 23.2 billion in 2015 and 21.4 billion in 2014. The top video games in terms of sales numbers are ranked as follows: The first one Minecraft has 300,000,000 in sales according to rank and title. Grand Theft Auto V the second position, November 18, 2011<195,000,000. And the other games followed by the sales account are Tetris (EA), Wii Sports, PUBG: Battlegrounds, Mario Kart 8 Deluxe, Red Dead Redemption 2, Super Mario Bros, Overwatch and in tenth position –

The Witcher 3: Wild hunt with sale number of 50,000,000 in May month ,2015.

The video game market in India brought in \$830 million in sales in 2023, the market is projected to achieve an impressive \$473.7 billion by 2027. The growing accessibility of gaming across several platforms, which offers gamers a variety of experiences, is responsible for its popularity. (Forbes India-2024).

The effect of video games on personality has been linked to a variety of issues, including the modification of players' behaviours for better or worse. This could open up new possibilities for learning brand-new behaviours and talents or for honing already-existing ones that were established in the way the players develop, which are still developing and it's affected by these behavioural shifts seen in the personalities of teenagers. The reaction that accompanies engaging with a particular video game differs for each player based on how the games material is presented and perceived by them. Any individual thoughts process and behaviour has a strong influence on how they behave under a certain situation. It follows that their actions in game should reflect this. Online gamers exhibit similar behaviours to those they exhibit in real-life. Several studies have examined into medical aspect and it worth mention that neurons in the human body deal with the impacts of playing video games in a similar way to how they deal with shapes in the real-word. (Muhannad et al.,2019)

Children love to learn through play, therefore (fig 3 – leap frog) is a deep dive into development of finger strength and isolation with examples of how this may be done using games. Developing the skills of finger isolation, or moving one finger at a time, is crucial for developing fine motor skills. More specifically, it helps young children in good pencil holding and a longer amount of time and force while using pencil or pen. Finger strength is helpful for doing for basic activity in simple things like zipping and opening buttons, tying shoelaces, and so on. As children develops finger strength is needed for typing on a keyboard, playing

musical instruments and various other adult daily living skills such as pegging clothes on a line or using a screwdriver. (Rachel et al.,2021)

The other games such as (fig 2-modified juggling) and other activities, may not seems to have a merely fun activity but it has many potential benefits while preforming the play. It states exercise your body and your brain while learning to play in different textures. In addition to many other benefits, juggling can help with balance, motor skills, rhythm, timing, ambidexterity, problem-solving, and eye-hand coordination. People who play juggle even seem to grow their brains according to research. In addition, social play and team will help with self-esteem, confidence, perseverance, teamwork, and communication. Children that learn best kinaesthetically will also thrive at activities. (Boston Children's Museum, 2024) .

Regular exercise will help the body by improving the cardiovascular health and decrease the risk of obesity and other health problems. Playing the ball (fig 5 and 7) is an extremely effective exercise and prepares the importance of life skills by the enhancing the sport skills such as throwing and catching. By practicing the ball catching and kicking can help the child to improve hand-eye coordination, where use the eyes to direct the attention to a task and uses the hand to execute it. This simple game can develop child's eye tracking skills, which are vital for reading books. By engaging the child to play the ball it may develops the interest in sports activities such as basketball and football (fitness kid – 2024). Games are a trigger for intense positive emotions by experiencing (fig 1- social play) helps to build relationship and it provides support for attainment and nullifies negative emotions by adding more motivation in general and social behaviour.

In the climbing world, having firm grip is essential. There are many health advantages of hanging for climbing (fig 6 - cat and hang) which can improve both general health and climbing performance. Building finger and forearm strength through hanging makes it simpler to keep a firm grip on the rock or climbing holds. Climbing is not just about strong fingers but also develops upper body strength by engaging the muscles of the shoulder, back muscle, and arms which provides the strength for various activities including pull-ups, lock-offs, and dynos.

It alleviates lower back pain by enhancing the movement by stretching the spine while climbing and also promotes the better alignment of spine.

Hanging primarily targets the upper body by engages the core muscles which gives stability during exercise and keeps the body straight and maintain the balance. These activities also enhance the flexibility that improves in better range and technique while preforming.

Beyond the physical advantages the activities provide an opportunity for mindfulness and concentration during the activity which may get tuned inside the body. (Shams et al.,2023).

In (figure -skipping) it creates the foot-to-earth connections which strengthens and stabilizes muscles in feet and ankle. It boosts stamina and promotes healthy night sleep. It even reduces the risk of anxiety and depression and reports good brain and heart health functions. (Devin et al.,2023).

The recreational activities and physical education are widely acknowledged as effective means of promoting pleasant social interactions. In order to create cohesive communities, people need to be able to work together, communicate, and support one another. These activities offer an organised setting where people may do just that. Recreational sports and physical education have some socialising benefits that are frequently more widely recognised and appreciated than any negative ones. They act as unifying forces between disparate groups, encouraging communication and collaboration.

These activities emphasis the fair play and aid in the removal of social barriers by highlighting cooperation and encourage inclusivity. Also, the values of cooperation and sportsmanship that are taught in physical education can be transferred to broader communities, making them useful tools for promoting peace and resolving disagreements. Sports group dynamics are similar to those in society in that they provide a small-scale environment where people can practise resolving disputes, compromising, and cooperating to achieve shared objectives. Therefore, engaging in recreational activity contributes to the development of harmonious and tranquil social environment in addition to improving an individual's health and fitness (Oyerinde et al.,2014).

CONCLUSION

The current study derives that recreational activity set positive impact on avid gamers. The related effects of games are determined by its features or manner of play. It's critical to consider the potential negative aspects of gaming. The majority of the advantages gained from gaming can be implemented, either directly or indirectly to real world circumstances.

It would be interesting and relevant to do follow up research on problematic gaming behaviours and promote different approaches to obtain additional understanding regarding the encouragement of safe gaming in paediatric population.

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