**Analysing the Effects of Ten Weeks of Indigenous Activities on the Psychological aspect of School Children**

**Abstract**

Anxiety, a psychological state characterized by apprehensive expectation or fear, is among the most commonly experienced psychiatric symptoms. This study aimed to investigate the effects of a ten-week Indigenous Activities (IA) training program on anxiety levels among 12 to 14-year-old children. Anxiety levels were assessed using the Manifest Anxiety Scale before and after the intervention, with 120 participants who showed high anxiety level during the pre-test were further divided equally into control and experimental groups. The study employed a randomized controlled trial design, with the experimental group undergoing a structured IA training program, while the control group received no intervention. The IA program consisted of six indigenous activities conducted four times a week for fifty to sixty minutes per session. Results revealed a significant reduction in anxiety levels among participants in the experimental group compared to the control group (p < 0.05). The effect size was moderate, indicating that approximately 53% of the variance in anxiety scores could be attributed to the IA program.The findings highlight the potential of IA as an effective strategy for managing anxiety among adolescents and emphasize the importance of integrating culturally relevant interventions into educational settings to support students' holistic well-being.

**Keywords:** Indigenous Activities, Anxiety levels, Holistic Well-being.

**Introduction**

Recent studies highlight the significant influence of physical activity (PA) on mental well-being, especially in reducing anxiety, a common issue among children (Warburton et al., 2006; Smart et al., 2015). Anxiety, a mental condition marked by anticipatory worry or dread, is one of the most frequently encountered psychological symptoms (Kocsis, R. N., 2013). Lack of physical activity and prolonged sitting, worsened by excessive use of mobile devices and gaming, can result in mental health problems like anxiety (Stonerock et al., 2015; Lee and Kim, 2019), a complex psychological condition impacting mental, emotional, and behavioral well-being (Putman, 2010; Association, 2013), and is a major contributor to global disability rates (WHO, 2019).

Cognitive-behavioural therapy (CBT) and selective serotonin reuptake inhibitors (SSRIs) are proven anxiety treatments (Barlow, 2021; Barlow et al., 2000; Butler et al., 2006; Flynn, C. A. & Chen, Y. C., 2003; Stahl et al., 2003). Nevertheless, SSRIs may not be effective for all individuals and can cause adverse effects that result in discontinuation (Baldwin et al., 2005). CBT is backed by research but may be difficult to obtain because of limited provider availability and high costs. These difficulties emphasize the importance of seeking different therapies (Pampallona et al., 2002). Exercise provides a reliable, cost-effective, and easily reachable solution for managing anxiety. Exercise differs from ordinary physical activity as it is a planned endeavor with the goal of enhancing fitness. Observational research indicates a connection between consistent physical activity and reduced levels of anxiety. Physical activity is crucial for well-rounded health, highlighting the importance of individuals taking charge of their own wellness. Health includes not only the lack of disease but also overall physical, mental, and social wellness (WHO, 1948). Exercise improves both physical and mental well-being, with well-documented advantages in lowering the chances of heart disease and other ailments (Heyward, 1991). Testing in laboratories and conceptual models both provide evidence for the positive impact on mental well-being from consistent participation in certain activities. Recent studies highlight the strong influence of physical activity (PA) on mental wellbeing, especially in reducing anxiety, a common issue in children (Warburton et al., 2006; Smart et al., 2015). Anxiety, a mental condition defined by fearful anticipation or worry, is one of the most frequently encountered signs of psychiatric disorders (Kocsis, R. N., 2013). Lack of physical activity and prolonged sitting, worsened by excessive use of mobile devices and gaming, can result in mental health problems like anxiety. This condition affects mental, psychological, and behavioral aspects and is a major global cause of disability.

Cognitive-behavioural therapy (CBT) (Barlow, 2021; Barlow et al., 2000; Butler et al., 2006) and selective serotonin reuptake inhibitors (SSRIs) (Barlow et al., 2000; Flynn, C. A. & Chen, Y. C., 2003; Stahl et al., 2003) are effective treatments for anxiety. Although SSRIs might be ineffective for some individuals and could result in side effects that prompt cessation (Baldwin et al., 2005). CBT has evidence backing it up but may be difficult to obtain because of limited provider availability and high costs. These difficulties emphasize the importance of different therapies (Pampallona et al., 2002). Exercise provides a hopeful, cost-effective, and convenient choice for managing anxiety. Exercise, unlike regular physical activity, is a planned endeavor with the goal of enhancing fitness. Studies that involve watching and recording data have indicated a connection between consistent physical activity and decreased levels of anxiety. Physical activity is essential for overall health, highlighting the importance of taking ownership of one's well-being. Health is more than just the lack of sickness; it also includes overall physical, mental, and social well-being (WHO, 1948). Engaging in physical activity improves both physical and mental well-being, and its role in decreasing the likelihood of heart disease and other illnesses is well-supported by research (Heyward, 1991). Empirical research and theoretical models both endorse the positive impacts on mental well-being from consistent practice.

**Methodology:**

***Procedure:***

A physical fitness test was conducted on 212 students of two popular boys’ school of Cooch Behar district of West Bengal, India. Only those students were chosen whose age ranged between 12 to below 14 years. By analysing the result of the fitness test, researcher included 120 student who’s score had fallen under level 3 & level 4 category as per the Fitness benchmarks developed by the Expert Committee set up by the Ministry of Youth Affairs and Sports so that students could able to perform the training. Therefore, the students could be able to attain the load of IA training programme. Further as per the Pre-Post Random Group Design the subjects were equally divided into two different groups: Control Group (N=60) and Experimental Group (N=60). The study was conducted in two phases; Pre-test and Post-test. Pre-Test data of Anxiety was collected by filling up the translated “Manifest Anxiety Scale” in the class room of selected school. This Pre-Test had been conducted for two week before their terminal examination. Only those subjects were taken into the consideration for this study who showed elevated level of anxiety. In between the pre and post-tests only the experimental group followed a Training Protocol of Indigenous Activities. Total six numbers of most popular indigenous activities were selected for the Training Protocol. To construct this training protocol the researcher had done a detailed pilot study on the subjects of similar age group. After analysing the result of the pilot study and the valuable guidance of some renowned Physical Education Expert, researcher constructed the training protocol of Indigenous Activity.

***Manifest anxiety scale***

The manifest anxiety scale was developed by Dr. Tasneem Naquvi to find out the anxiety level of the children. The scale contains 40 statements which are concerned with the subjects. Those statements are accompanied by ‘YES’ and ‘NO’ responses. The subjects need to understand those statements carefully and respond to each statement in either ‘Yes’ or ‘No’. One score is given to every ‘Yes’ response and no score is given to any ‘No’ response. One can score maximum 40 and minimum 0 (zero). This Scale had been translated in Bengali with the help of two experienced Bengali and English teacher of Jenkins school, Coochbehar. The content validity of translated scale had been checked (r= 0.84) to establish that the translated version did not loose the actual meaning of what it is there in the original version of the questionnaire.

***Ten Weeks Indigenous Activity Training Protocol Table 1***

*Total no. of Indigenous activities*= **Six.**

*Name of the activities* : **Kit-kit, Golla-Chhut, Chhi-Buri, Pakki, Edur-Biral, Rumal Churi**.

|  |  |  |  |
| --- | --- | --- | --- |
| 1st and 2nd Week | Days | Activity | Division |
| 1st day | Kit-kit, Golla-Chhut. | 5 min. warm up, 40 min. indigenous activity, 5 min cooling down. |
| 2nd day | Chhi-Buri, Pakki. | 5 min. warm up, 40 min. indigenous activity, 5 min cooling down. |
| 3rd Day | Kit-kit, Chhi-Buri, | 5 min. warm up, 40 min. indigenous activity, 5 min cooling down. |
| 4th Day | Golla-Chhut, Pakki. | 5 min. warm up, 40 min. indigenous activity, 5 min cooling down. |
| 3rd and 4th Week | 1st day | Kit-kit, Golla-Chhut | 5 min. warm up, 50 min. indigenous activity, 5 min cooling down. |
| 2nd day | Chhi-Buri, Pakki. | 5 min. warm up, 50 min. indigenous activity, 5 min cooling down |
| 3rd day | Kit-kit, Chhi-Buri, | 5 min. warm up, 50 min. indigenous activity, 5 min cooling down |
| 4th day | Golla-Chhut, Pakki. | 5 min. warm up, 50 min. indigenous activity, 5 min cooling down |
| 5th and 6th week | 1st day | Kit-kit, Golla-Chhut, Pakki. | 5 min. warm up, 50 min. indigenous activity, 5 min cooling down |
| 2nd day | Chhi-Buri, Pakki, Kit- kit. | 5 min. warm up, 50 min. indigenous activity, 5 min cooling down |
| 3rd day | Kit-kit, Golla-chhut Pakki, | 5 min. warm up, 50 min. indigenous activity, 5 min cooling down |
| 4th day | Golla-Chhut, Pakki, Chhi-Buri. | 5 min. warm up, 50 min. indigenous activity, 5 min cooling down |
| 7th & 8th week | 1st day | Kit-kit, Golla-Chhut, Pakki, Rumal Churi. | 5 min. warm up, 50 min. indigenous activity, 5 min cooling down |
| 2nd day | Chhi-Buri, Pakki, Rumal Churi, Golla-Chhut. | 5 min. warm up, 50 min. indigenous activity, 5 min cooling down. |
| 3rd day | Kit-kit, Golla-chhut Pakki, Rumal Churi. | 5 min. warm up, 50 min. indigenous activity, 5 min cooling down. |
| 4th day | Golla-Chhut, Pakki, Chhi-Buri, Kit-Kit. | 5 min. warm up, 50 min. indigenous activity, 5 min cooling down. |
| 9th & 10th Week | 1st day | Kit-kit, Golla-Chhut, Pakki, Edur-Biral, Rumal Churi. | 5 min. warm up, 50 min. indigenous activity, 5 min cooling down |
| 2nd day | Chhi-Buri, Pakki, Kit- kit, Edur-Biral, Rumal Churi. | 5 min. warm up, 50 min. indigenous activity, 5 min cooling down. |
| 3rd day | Golla-chhut Pakki, Chhi-Buri, Edur-Biral, Rumal Churi. | 5 min. warm up, 50 min. indigenous activity, 5 min cooling down. |
| 4th day | Golla-Chhut, Kit-Kit, Chhi-Buri, Edur-Biral, Rumal Churi. | 5 min. warm up, 50 min. indigenous activity, 5 min cooling down. |

**Analysis of Data:**

After the completion of ten weeks of training program anxiety level of both the groups was again measured and the collected data were analysed by using the IBM SPSS version 20. A one way analysis of covariance (ANCOVA) was conducted to compare the effects of IA on Post-test result of the Experimental (Mean=, SD=± 25.35, ±5.04) and control Groups (Mean= 24.93, SD= ±4.88) While controlling the Pre-test data as covariate. Shapiro-Wilk test and Levene’s test was conducted to meet the assumptions.

**Results:**

The mean and standard deviation of Anxiety in both groups are presented in Table 2:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Groups** | **Pre-Test** | | **Post-Test** | |
| **Mean** | **SD\*** | **Mean** | **SD** |
| **Control Group (N=60)** | 24.93 | ±4.88 | 23.27 | ±3.30 |
| **Experimental Group (N=60)** | 25.35 | ±5.04 | 16.80 | ±3.01 |

Table 2. The mean and standard deviation of Anxiety Scores

\* Standard Deviation.

There was a significant difference between Control and Experimental group [F (1,117)= 133.798, p=<.05] (Table 3). A Post hoc test showed there was a significant difference in between anxiety score of both groups. The partial Eta Squared value indicates the effect size and should be compared with the Cohen’s guideline (0.2 = Small effect, 0.5 = Moderate effect, 0.8= Large effect). According to that for both groups the effect size is moderate. The Partial Eta Squared value showed the 53.3% of variance in Anxiety scores of both groups when controlling the Pre-test Anxiety Scores.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | | | | | | |
|  | | | | | | |
|  | **Sum of Squares** | **df** | **Mean Square** | **F** | **Sig.** | **Partial Eta Squared** |
| **Contrast** | **1276.878** | **1** | **1276.878** | **133.798** | **.000** | **.533** |
| **Error** | **1116.572** | **117** | **9.543** |  |  |  |
|  | | | | | | |

Table 3 the difference between the Control and Experimental Groups.

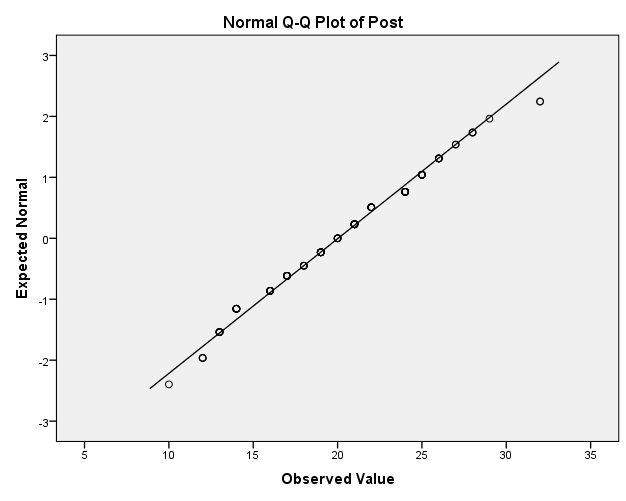
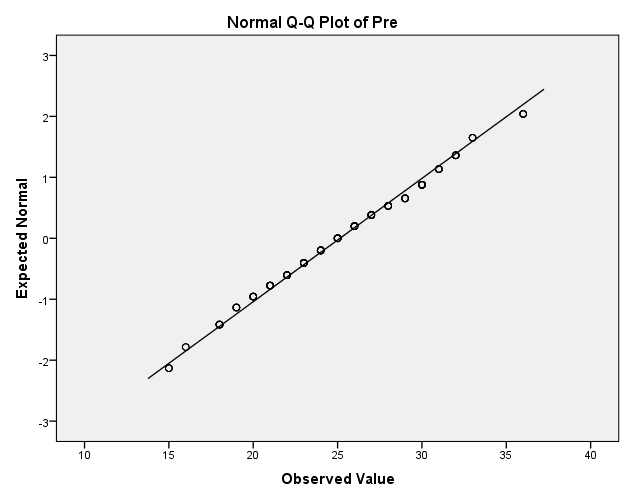
|  |  |  |  |
| --- | --- | --- | --- |
|  | | | |
|  | | | |
| F | df1 | df2 | Sig. |
| .120 | 1 | 118 | .730 |

Table 4. Levene's Test result.

Table 4 shows the results of the Levene’s Test is insignificant (p= >0.05), indicating that the group variances did not exist. Hence, the assumption of homogeneity of variances was not violated.

The normality of the data was tested by the Shapiro-wilk formal test. Table 5 shows the insignificant (p= >0.05), indicating the data were normally distributed. Also both Q-Q plot shows the same result.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Tests of Normality** | | | | | | |
|  | | | | | | |
|  | Kolmogorov-Smirnova | | | Shapiro-Wilk | | |
| Statistic | Df | Sig. | Statistic | df | Sig. |
| Pre | .070 | 120 | .200\* | .984 | 120 | .157 |
| Table 5: Result of normality testing. | | | | | | |



**Chart 1: Q-Q Plot of Pre-test score Chart 2: Q-Q Plot of Post-test score**

**Interpretations:**

The main goal of this research was to examine how anxiety levels in children aged 12 to 14 years old were impacted by a 10-week training program. The F-value of 133.798 at p=<0.05 shows a significant relationship between the IA training program and anxiety levels among the participants. An eta squared value of .53 suggests that approximately 53% of the variation in anxiety scores can be accounted for by the IA program. The study also found a notable 30% reduction in very high anxiety levels within the experimental group after they participated in IA training (Table 5).

Various studies in this field support the findings of the current research. Evidence suggests that physical activity positively affects stress and anxiety reduction in people (Anderson E, 2013). Researchers such as Robinson L, Segal J, Melinda S; Mayo; Akandere M, et. al. and Naderi S have demonstrated the efficacy of exercise in mitigating behavioral issues like stress and anxiety. These collective research efforts underscore the significance of physical activity as a means to address anxiety, aligning with our study's outcomes.

Research by Naderi S; Akandere M, et al; Akandere M, Demir B.; Nejad ZA et al; and Carek PJ et al. has illustrated the beneficial effects of aerobic exercise on reducing depression in pediatric cancer patients and alleviating anxiety symptoms (Naderi, 2019); (Akandere M A. T., 2008); (Akandere M D. B., 2011); (Nejad.Z.A, 2015); (Carek PJ, 2011).

Children may experience anxiety due to psychological pressures such as intense competition, academic stress, and low self-esteem. Moreover, various physiological and biochemical mechanisms are intricately connected to children's emotional state and mental health, potentially influencing their anxiety levels. Researchers including Crews and Landers, Åstrand, Jackson and Dishman, Rimmele et al, Salmon, Droste et al, Dunn and Dishman, Meeusen and De Meirleir, Wilson and Marsden, and Chaouloff have examined how consistent exercise leads to physiological changes, including reduced reactivity in the sympathetic nervous system and hypothalamic-pituitary-adrenal axis. Studies indicate that aerobic exercise alters hormone secretion and boosts serotonin and endorphin levels (Crews, 1987); (Åstrand, 2003); (Jackson, 2006); (Rimmele, 2007); (Salmon, 2001); (Droste, 2003); (Dunn, 1991); (Meeusen, 1995); (Wilson, 1996); (Chaouloff, 1997). Animal studies provide support for the positive impact of physical activity on anxiety-related mechanisms. Numerous studies and meta-analyses have confirmed the relationship between exercise and anxiety reduction in clinical settings, as noted by Anderson E (2013).

Naderi S, 2019; Anderson E, Shivakumar G; Alikhani H. et al; Kolehmainen MA & S, Sinha R, and Atkinson G & Davenne D discovered that physical exercise reduces anxiety through multiple mechanisms: It alters brain neurotransmitters, increasing levels of dopamine, serotonin, noradrenaline, and GABA; elevates endorphin levels; diminishes the impact of stress hormones on the hypothalamic-pituitary-adrenal axis; promotes relaxation through increased body temperature; and helps individuals redirect their focus from anxiety through activities like aerobic exercises and dance (Naderi, 2019); (Anderson E, 2013); (Alikhani H, 2015); (Kolehmainen MA, 2014); (Atkinson G, 2009). Engaging in physical activities can benefit individuals with anxiety disorders by reducing panic symptoms through lowered heart rate and sweating.

In contrast, Van Loon et al. (2023) conducted further research on skills-training programs in schools targeting adolescents with psychological needs. According to van Loon's study in December 2023, the program aimed at reducing test anxiety, also known as performance anxiety, showed limited effectiveness. The discovery that the effectiveness of the program for performance anxiety had a minor impact on lowering test anxiety aligns with past studies on teenagers (O’Driscoll, 2022); (Putwain, 2021); (Soares, 2020); (Von der Embse, 2013). According to recent research, participating in the ten-week IA training Programme leads to greater benefits, with effect sizes (0.53) that are similar to or even greater than those seen in psychotherapy and pharmacotherapy studies (Twomey, 2015); (Cipriani, 2018).

In our current research, we noticed a slow decrease in anxiety levels among the children involved in the program. Hence, we claim that participating in consistent combined IA, done four times weekly for fifty to sixty minutes each session for at least ten weeks, impacts the physiological and psychological processes of the children's bodies. This step-by-step procedure helps lower anxiety levels in the children.

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