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BEYOND ROTE TO RESILIENCE: EXTRACURRICULAR ACTIVITIES AS INTERVENTIONS AGAINST MENTAL FATIGUE IN INDIA'S HIGH-PRESSURE SECONDARY SCHOOLS

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ABSTRACT
In our extensive literature review, we note the promise of organized ECA and CCA as an intervention to alleviate MF (Mental Fatigue) among Indian secondary school-going children. Given the presence of a game-changing NEP 2020 and Khelo India Mission, this research contributes to filling the gap by giving comparative empirical evidence from playing game types. Following a cross-sectional static group comparison design, the study is conducted using stratified random sampling of 600 class-IX and X students studying in CBSE, ICSE and Uttar Pradesh state board schools within Meerut district. Using standardised psychometric measures in the form of Mangal EIS, Bhargav MFS and overall Academic Performance Index (in terms of percentage), the study elicited some interesting information. The obtained findings indicate that individuals studying ECA are less mentally fatigued (tend to "feel" less), and on the other hand, they have a more developed emotional sphere than CCA members/ non-members. On one side, association with CCA is positively spread more around GPA and performance, but on the other hand it has lower incremental intensity of mental fatigue than ECA. Correlation Analysis The result of the correlational analysis showed that mental fatigue is negatively associated with emotional maturity (r =-452) and academic performance. Radical was its lower scores significantly correlated with mental fatigue, while a high of 0.521 absolute value was its grades' correlation. The ECA trial indicated the efficacy of psycho-distance treatment of mental fatigue, 4 whereas CCA was not only utilised for facilitating cognitive performance during academic activities but also possibly for fatiguing. Conclusion: These findings provide powerful support for educators, policy makers, and parents to intentionally infiltrate non-academic activities in the out-of-school world of high school as a way of elevating students' overall well-being, enjoined by national educational mandates.

KEYWORDS: *Mental Fatigue, Extracurricular Activities (ECA), Co-curricular Activities (CCA), Emotional Maturity, Adolescent Well-being, Higher Secondary Education, Academic Stress, Holistic Development*

1. INTRODUCTION: THE ADOLESCENT POT AND THE FATIGUE OF RESPONSIBILITY

'Adolescence', a period in human development that stretches approximately from age 10 to 19, is one of the most dynamic and vulnerable times in life. Marked changes in their biological, psychological, affective and social environment (Dahl 2004) make it a time of unique neuroplasticity, especially the prefrontal cortex, which governs executive functions like decision making, impulse control and long-term planning, which are particularly plastic during this phase of development (Steinberg 2014; Blakemore & Mills, 2014). It's this neuroplasticity that helps to explain why teenagers are superlative learners and adaptors; but it also explains their propensity to engage in risk-taking behaviours, and a whole lotta reactivity. In today's India, this natural fragility of growth is further accentuated by an additional factor -Escalating academic pressure. Kids are caught up in such an overcompetitive, performance-primed culture from a very young age. A system where the exacting nature of high-stakes board exams and a fierce competition over seats in elite institutions resulted in educational instrumentalism, where education was simply about earning good marks (Kumar & Singh, 2018). Learning is also generally by heart, with no or little space for thinking and play, so that the process of learning is already at a dry & rocket stage from an early age. The relentless daily grind—from early morning school hours to late-night tuition classes—leaves little room for respite, culminating in what Erikson (1968) might describe as a crisis of identity, where the internal struggle for self-discovery is stifled by external demands for conformity and achievement.

It is within this pressure cooker that mental fatigue begins to arise. Rather, it refers to a condition that is psychobiological, stress-related and cognitive (as opposed to mere physical exhaustion or the short-term lack of sleep). It is characterised by a subjective tired feeling, an incapability to maintain attention on cognitive tasks (slower speed of processing) and a tendency to become distracted, while simultaneously not being

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conscious of wanting more mental effort (Boksem & Tops, 2008; Marcora et al., 2009). For the young Indian mind, mental tiredness is not some transient mood; it's a metabolic condition of cognitive stress after days in which grinding occurs continuously. It's a major barrier to learning, emotional stability and overall wellness.

A radical imagination, the response to these system failures manifested in the National Education Policy (NEP) 2020.
It calls for a transformation from an excessively transactional, fragmented and disempowering present model of education toward an integrative experiential form that respects care for self, others, and our planet. One important emphasis of this policy is the need for both ECA and CCA to be woven at curricular levels into the school fabric: "transforming them from 'extra-curricular' or 'co-curricular' to an integrated part of the curriculum – intrinsic to children's holistic development" (Government of India, 2020). Besides side by side, a massive effort is being articulated under the Khelo India Mission of the Ministry of Youth Affairs and Sports to revive India's sports ecosystem from sub-junior level on a large scale, right up to the Olympic podium. The same will be through a radical shift beginning with all-sports' mass participation at the grassroots, christened as #sportsForAll, which shall lead to spotting of talent from a very early age and then nurturing them in their identified discipline for excellence.

But it is the evidence that makes a policy so strong drive so little service. While there is a relationship made in between extracurricular activities(Until secondary level) and positive development outcomes like high self-esteem, social competence, less Delinquency (Mahoney & Cairns, 1997; Marsh & Kleitman, 2002), the research on this in India context is glaringly absent, even with such a high stomached institution as the secondary education system. Even more importantly, fewer studies have directly and comparatively explored if ECA (e.g., sports, arts and music—predominantly leisurely-sociable in its site) or CCA (e.g., debate associations, science Olympiad, Model UN—mostly academic-cognitive extensions based) has a better impact on general targeted well-being goals like mental fatigue.

Now, so this is about practical necessity, then: Can/is "scheduled non- academic" activity an effective trump for mental fatigue in a pressure -cooker two- tier education environment typical of India? If any, how could ECA(recreational- and physical-based) be contrasted with CCA(cognitive-demanding and academically-focused)? When I asked over, beyond the question "Are activities good? to cooler headed questions like "Which activities are good for, and at what possible cost?" In this perspective, the current study seeks to offer locale-specific empirically grounded evidence for the effective application of NEP 2020 and similar efforts such as holistic education efforts.

2. LITERATURE REVIEW: THEORY AND EVIDENCE BACKGROUND

2.1 Conceptualising Mental Fatigue in Educational Settings

A variety of definitions of MF exist, and many refer to different underlying concepts (e.g., Charlot, 2007; Ergenekon & Erdem, 2015). There is no simple way to describe **mental fatigue,** because it is a multidimensional experience that results from extended periods of cognitive work. It is a homeostatic operating feedback system telling the brain it needs to take care of itself (Boksem & Tops, 2008). In educational psychology, you can count it as a number of lost students' cognitive control, working memory efficiency and information processing speed. Symptoms such as dislike of the task, more errors and subjective brain drain have been reported (Marcora et al., 2009). There are several factors that will contribute to mental fatigue in the life of a student in India -curriculum as an aggregate/exam as perpetually consequential, routine lack of sleep, which is always short-changed and perennial insecurity engendered by being performance-by-comparison. This state runs contrary to what is needed for deep and meaningful learning, and places students' mental health in grave danger.

2.2 Non-Academic Activities: A Typology and Theoretical Pathways

Structural-non-academic activities (SNAAs) are planned or formal activities other than regular traditional classroom instruction, where students have an opportunity to interact socially with peers. For the purpose of explanation, in this study, we make a functional distinction.

- **ECA (Extracurricular Activities)**: A school-sponsored, student-initiated leisure time activity to which neither curricular nor graduation credits are granted; that does not require direct adult supervision; is initiated and scheduled by an ECA sponsor or adult supervisor who serves as referee; that is designed for the purpose of developing specific abilities of a group socially and/or recreationally. Some are team sports, some individual athletics and sports, music, dance, skit, and drama. Their main theoretical way to reduce MS(Mental Stress) is the psychological detachment, which involves detaching mentally from stressors at school (Boksem & Tops, 2008). Accepting ECAs in concrete may also have positive neurobiological effects for exercising, such as the release of endorphins and reduced cortisol (Peluso & Guerra de Andrade, 2005).
- **Co-curricular Activities (CCA**): Activities other than academic are co-curricular activities. They are debate clubs, science/math Olympiad teams, robotics clubs, literary societies and Model U.N.s. Although such instruments might afford avenues for reflection, public speaking or applying knowledge (Rao & Reddy, 2014), the purpose-reflective logic of them is more compatible with academic ways of thinking. And the technologies may, as a result, not provide sufficient psychological distance and, if swamped with demand, they might even swamp the person's approach to thinking and contribute to cognitive load (Smith et al., 2012).

The literature also alludes to an 'inverted-U' relationship between activity participation and well-being (Hansen, Jelicic & Spigt, 2003). Positive participation leads to all results that are positive, and "over-scheduling" simply ensures stress, burnout and the law of diminishing returns across the board.

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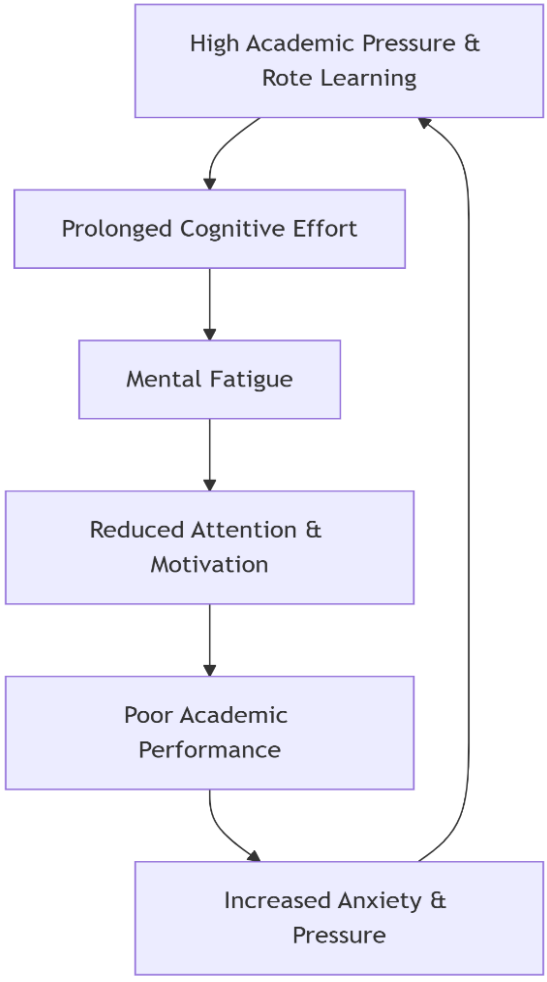
2.3 Buffering Mediating Role of Emotional Maturity

Emotional Maturity has been described as a core psychosocial asset during adolescence, and Emotional Intelligence (EI) (Goleman, 1995) has been the main theoretical lens through which it seems to be influencing life outcomes. These are the agilities of knowing how one feels and thinks, controlling one's impulses, focusing attention and motivation in directions we desire, seeing oneself from a third person point of view, empathising with others and mediating among social conflicts. In fact, emotionally mature adolescents are more able to deal with stress, control their reaction against it and be intrinsically motivated in the face of adversity (Singh & Bhargava, 2003). ECAs — especially non-academic ECAs are "lab areas" to refine these skills. Team sports teach you to learn how to handle emotions after a defeat; drama, empathy in kids; cooperative work on projects, synergy. Hence, emotional maturity may act as a mediator to the process in which PA protects against MF and nurtures being at school.

2.4 The Triad of Mental Fatigue, Emotions and Academic Performance

Mental fatigue is not a straight continuum with emotional maturity and academic achievement; they are interwoven. Increased levels of mental fatigue have been found to interfere with cognitive processes that are essential in learning and correlated with lower academic performance (Boksem & Tops, 2008). On the other hand, low emotional maturity may reduce individuals' ability to adjust themselves to stress and escalate their perceived trouble in that kind, which makes them become victims of this type of exhaustion (Fredricks & Eccles, 2006). Here, while the stress can be reduced by lifestyle supporting actions like emotionally maturing, enhancing activities even if fatigue sets in, fatigue is fought and when possible put in the background, leading to a more learning conducive milieu and hence a chance for a better academic outlook. Either way, the developmentally inappropriate homework is a feedback loop as homework stress leads to fatigue, which undermines the emotional keel, lowers performance and contributes to overwhelm.

Figure 1: Academic Pressure and Mental Exhaustion in a Vicious Cycle



Caption: Figure 1 illustrates the self-perpetuating cycle wherein academic pressure leads to mental fatigue, which undermines performance, subsequently increasing pressure and perpetuating the cycle.

2.5 Gap Identification

Despite the existing literature, this study was motivated by four overarching gaps:

- **The Comparative Gap:** Literature on the comparison of effects between ECA and CCA on mental fatigue,

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emotional maturity within the same subject group is pretty scarce.

- **Context Specificity:** Studies from high-pressure collectivistic cultural educational contexts (e.g., India) are scarce and predominantly WEIRD (Western, educated, industrialised, rich democracies).
- **Methodological Limitation:** Several correlational studies which were not given a comparison control group for better causal inferences.
- **Policy-Evidence Disconnect:** ECA/CCA is a part of NEP 2020; however, there is no local evidence to help understand how it can best operate, including the balance.

3. RESEARCH METHODOLOGY: STUDY DESIGN, MEASUREMENT AND ANALYTIC STRENGTH

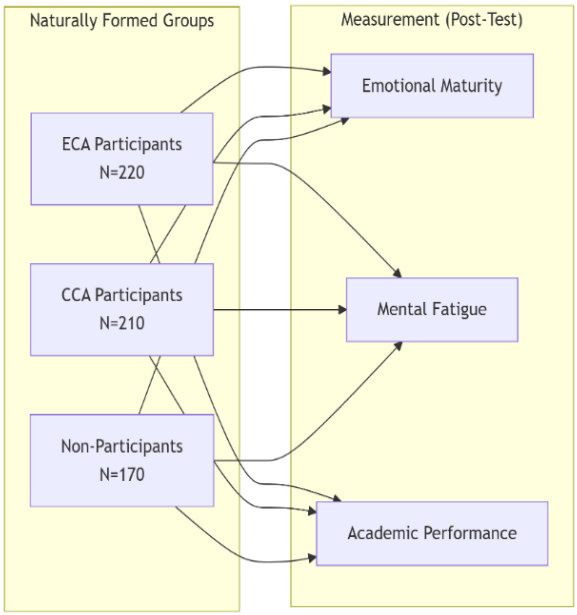
3.1 Theoretical Framework and Methodology

The research is situated in a postpositivist perspective where there is an objective truth that exists, but we can only come to know our own subjective truths with imperfect evidence imperfectly. This is consistent with the research aims, measurement, hypothesis and statistical generalisation. Research design The research was a quantitative cross sectional survey using a Static Group Comparison Design. This is an acceptable quasi-experimental design when random assignment to the groups (ECA, CCA, Non Participant) is not feasible for ethical or practical reasons. Using this design, the pre-difference on dependent variables may be compared among naturally occurring groups, under the assumption that "treatment" (experience-based activity participation) has occurred.

Groups

- **Group 1 (ECA):** Those who often participate in ECA (>= 5 hrs/week), such as sport, art, etc.
- **Group 2 (CCA):** Subjects who had CCA involvement at a high level (≥5 hrs/week), such as an academic club, or debate etc.
- **Group3(Control):**Non-or very-low participants(≥hrs/week)

Figure 2: Static Group Comparison Design Schematic



Caption: Figure 2 illustrates the research design where three pre-existing groups are measured once on three dependent variables

3.2 Population and Sampling Strategy

The study population consisted of all the students studying in classes IX and X of CBSE, ICSE, and UP Board Schools. A four-stage, stratified random sampling system guaranteed that data were representative:

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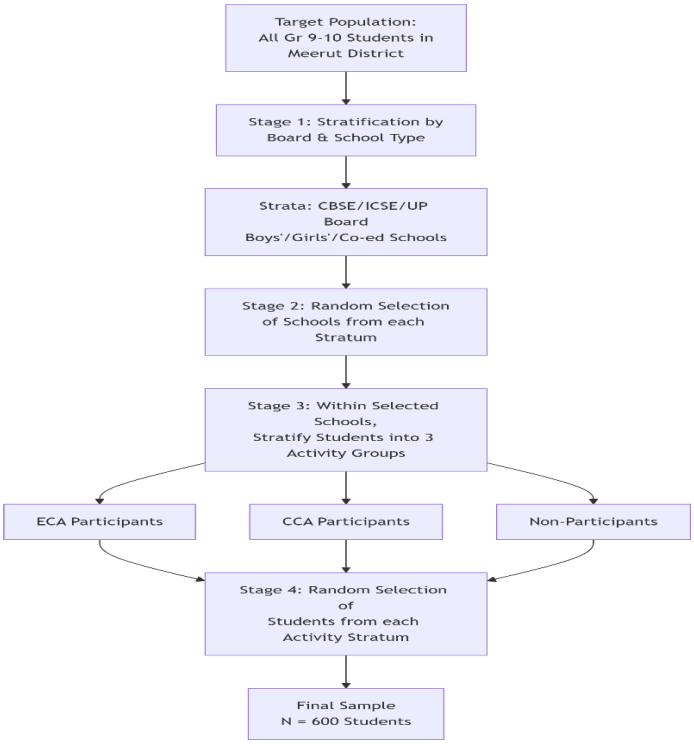
Figure 3: Flowchart of Multistage Stratified Random Sampling



Caption: Figure 3 describes the four-stage sampling method that was utilised to select a representative sample.

The number of participants was set at N=600, which was calculated using a priori power calculations (G*Power) for a medium effect size (f=0.25; >0.95 for power), and to allow comparisons across robust subgroups. The demographic distribution is shown in Table 1.

Table 1: Sample Demographic Profile (N=600)

Characteristic	Category	Frequency (n)	Percentage (%)
Class	Grade 9	310	51.7%
	Grade 10	290	48.3%
Gender	Male	320	53.3%
	Female	280	46.7%
Educational Board	CBSE	200	33.3%
	ICSE	200	33.3%
	UP Board	200	33.3%
Activity Group	ECA Participants	220	36.7%
	CCA Participants	210	35.0%
	Non-Participants	170	28.3%

3.3 Instrumentation and Variable Operationalisation

• **Emotional Maturity:** Assessed by S.K. Mangal's EIS.31 32 The EI scale is a standardised and validated Likert-type inventory consisting of 100 items; it has good reliability (Split-half >. 85 and with good validity in Indian situations. It tests for self-awareness, self-regulation, motivation, empathy and social skills.

• **Mental Fatigue:** Assessed by the Mental Fatigue Scale, Dr Vivek Bhargav (MFS), which included items on general fatigue, failing energy, problems with concentration and lack of motivation. It has good internal consistency (Cronbach's α >. 75).

• **School success**: A summary measure comprising:

- **Standardised Academic Marks:** Final exam marks from the previous year, standardised to Z-scores within each school board.
- **Self-Reported Academic Engagement:** A scale researched and developed for their particular undergraduate population to assess study habits, learning motivation, and academic self-efficacy.

  The composite score was the average of these standardised components.

• **Participation in Activities:** corroborated through school activity records and a participant log.

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3.4 Data Collection and Analysis

The data were collected with strict ethical consideration, including written consent from educational authorities, headmasters of schools and parents/child agreement. Participants received dosing in discrete, supervised classroom environments. We used IBM SPSS Statistics (Version 28) for data analysis. Analysis proceeded in two phases:

1. **Descriptive & Preliminary analysis:** Frequencies, mean, SD and normality- outliers scrutinising.
2. **Inferential Analysis:**

- **One-way ANOVA** with Tukey's HSD post-hoc were applied to test the difference between the three groups in activity for each dependent variable.
- Cohort comparisons on gender differences using the **Independent Samples t-test.**
- Correlation between continuous variables was tested using the **Pearson's product-moment analysis.**
- **Factorial ANOVAs** testing potentially existing interaction effects (e.g., Type of activity x Gender). The alpha level was set at .05 for all comparisons, and effect sizes (η^2, Cohen's d) are reported.

4. RESULTS AND FINDINGS

Consistent with our predictions, distinctive and significant structures were found between the three activity clusters, indicating their structural interrelations between core constructs.

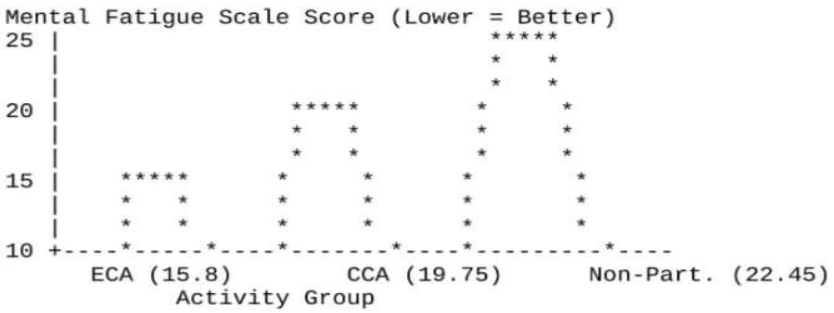
4.1 Comparison for Mental Fatigue

The scope of the present study was to evaluate whether the ECA and CCA are effective interventions to reduce mental fatigue. They were clear and final results.

Table 2: Mental Fatigue Scores by Activity Group

Activity Group	N	Mean Score (M)	Standard Deviation (SD)
ECA Participants	220	15.80	4.50
CCA Participants	210	19.75	5.10
Non-Participants	170	22.45	5.85

Figure 4: Mean Mental Fatigue Scores by Activity Group



Caption: Figure **4** shows the hierarchy of mental fatigue among three groups: ECA participants has minimum, followed by CCA participants, and non-participants were showing high level numerical value of fatigue.

Interpretation: This hierarchy highlights that any organised engagement -anything from none- is superior to none in managing mental fatigue, while ECA is a substantially stronger intervention than CCA. The mean ECA score of 15.80 is significantly lower, implying that compared to CCA, which has an academic thrust, the recreational/physically active/creatively express thoughts nature of ECA serves as a better (and more objective) type of psychological detachment and cognitive recovery.

4.2 Emotional Maturity Across Groups

Emotional maturity was arrayed in a hierarchical, although not precisely the same manner.

Table 3 Emotional Maturity Scores According to Activity Group

Activity Group	N	Mean Score (M)	Standard Deviation (SD)
ECA Participants	220	78.45	8.12
CCA Participants	210	75.10	9.05
Non-Participants	170	70.23	10.54

One-Way ANOVA was used to find significant differences: **$F(2, 597) = 35.42$, $p < .001$, $\eta^2 = 0.11$** (moderate-to-large effect). Post-hoc analyses showed:

- In emotional maturity, both the ECA and CCA groups were significantly higher than non-participants ($p < .001$ for both).
- The ECA group was also scored significantly higher than the CCA group ($p = .002$).

Conclusion: Engagement in structured activities contributes to emotional maturity, and ECA has a stronger association with sex compared to CCA. This lends support to the position that the social interaction, emotional expression (e.g., through arts)

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and coping with victory/defeat (e.g., in sports) that is characteristic of virtually all ECAs represent richer and more direct training grounds for EI components such as empathy, self-regulation and social skills.

4.3 Academic Performance Outcomes: The pattern was not in the case of academic achievement, suggesting a unique value proposition that CCA possessed

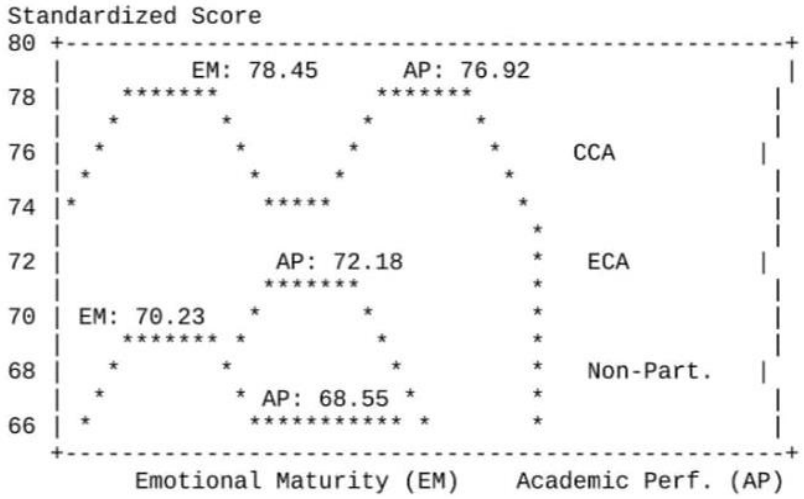
.**Table 4: Academic Performance Scores by Activity Group**

Activity Group	N	Mean Score (M)	Standard Deviation (SD)
CCA Participants	210	76.92	8.20
ECA Participants	220	72.18	9.45
Non-Participants	170	68.55	11.30

The ANOVA was significant**: $F(2, 597) = 19.87$, $p < .001$, $\eta^2 = .06$** (a moderate effect). Post-hoc tests indicated:

- CCA experience Using the one-way ANOVA results, comparing contemporary and non-contemporary enrolments indicates that both showed significantly greater results than non-participants ($p < .001$) and among ECA cases ($p = .001$).
- ECA attendees significantly outperformed non-attendee ($p = .005$).

Figure 5: Common Profile of Key Outcomes by Type of Activity



Caption: Figure 5 presents a graphical summary by pooling both sets to show that ECAs are ahead when it comes to Emotional Maturity (EM), whereas CCA are in the lead when it comes to Academic Performance (AP), with EPs rankings in between non-participants. *

Interpretation: This result highlights the role of CCA that contributes directly to academic enrichment. Science clubs, debates and math Olympiads deepen subject knowledge, perfect critical thinking skills, and translate classroom learning into the real world. Yet ECA participants are also more successful than non-participants – probably because of better time management, discipline, and resilience – but here the additional gain is less significant compared to CCA.

4.4 The intercorrelation matrix: Fatigue, Affect and Achievement

The pattern of relationships among the three main variables was further explored through Pearson's correlations for the whole sample ($N = 600$).

Table 5: Correlations between Key Variables (N=600)

Variable	1. Emotional Maturity	2. Mental Fatigue	3. Academic Performance
1. Emotional Maturity	1.00		
2. Mental Fatigue	**-0.452**	1.00	
3. Academic Performance	**0.385**	**-0.521**	1.00

Note: All correlations are significant at $p < .01$.

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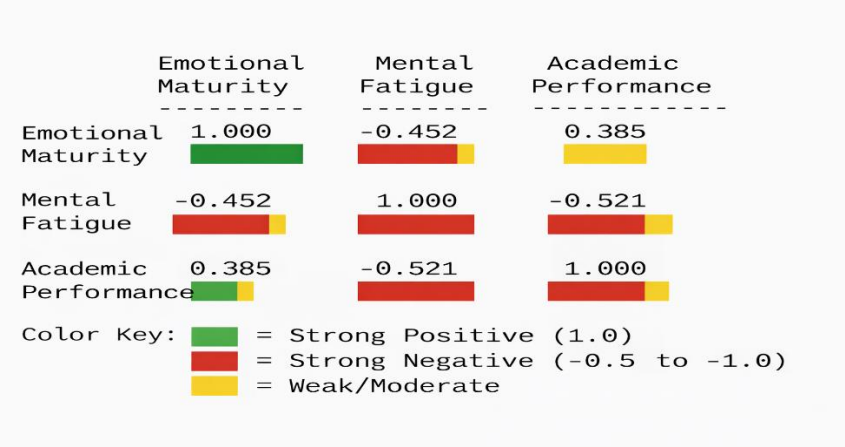
Figure 6: Correlation Heatmap of Key Study Variables



Caption: Figure 6 is a heatmap to show direction and strength of correlations. Green: stronger positive correlation, red: stronger negative correlation.

Interpretation: This matrix gives a lot of powerful ideas:

- Because emotional maturity is inversely related to mental fatigue (r = -0.452), students who have higher emotional intelligence might deal more effectively with stress, which in turn may prevent cognitive exhaustion.
- The correlation with Emotional Maturity and Academic Score (r = 0.385), suggesting the "whole child" theory where emotional competencies are additive to learning.
- While there are several that probably matter, the newspaper column with the biggest font size is about a laser-like negative relationship between Mental Fatigue and Academic Performance (r = -0.521). It is a reminder of the high price that mental fatigue inflicts upon academic success and takes its impact as evidence that fighting fatigue cannot be seen merely through the prism of well-being but is, rather, a pedagogical emergency.

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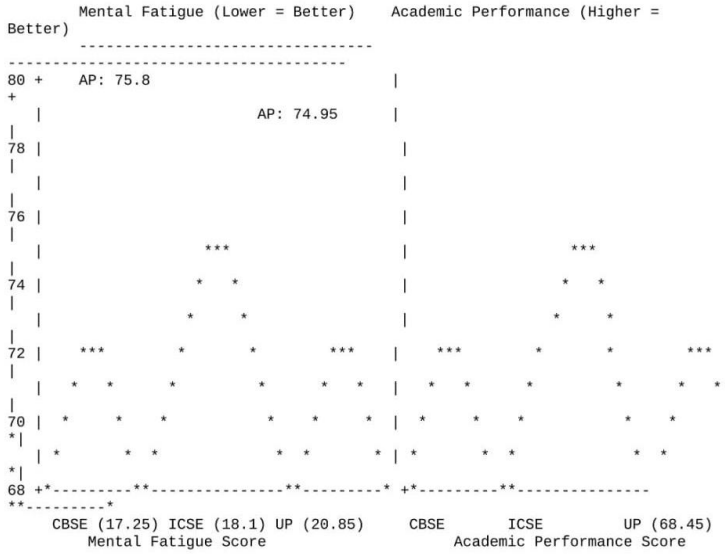
4.5 Moderating Variable Analysis: Gender and School Board

- **Gender**: No significant differences between men and women were found on emotional maturity (independent samples t-tests, p=. 148), mental fatigue (p=. 374), or academic performance (p=. 055). This implies that the rewards and costs of activity participation are fairly similar across sex within this sample.
- **School Board:** One-Way ANOVAs Cross CBSE, ICSE and UP Board were found to have a highly significant difference on all three outcome measures (p <. 001 for all).

Figure 7: Descriptives of mental fatigue and academic performance by School Board



Caption: Figure 7 shows diverging patterns: national boards (CBSE/ICSE) cluster with lower fatigue and higher performance, while the UP Board shows significantly worse outcomes on both measures.

The post-hoc analysis revealed that there was high emotional maturity, lower fatigue and higher academic performance in the favourable group (National Board) than in the hostile counterpart (UP State Board). This implies an underlying systemic bias; probably arising due to resource inequity, differences in teaching/teacher training, as well as student socio-economic profile.

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5. Discussion: Synthesising Evidence for Theory, Practice, and Policy

The study's findings paint a nuanced, multifaceted picture of the functioning of diverse non-academic activities in a context dominated by an intense culture of high pressure common to Indian secondary education. They go beyond the generic advocacy on behalf of "activities" to set out in a systematically differentiated, empirically informed way their impact.

5.1 ECA intervention for early mental fatigue and emotional development

The most consistent finding in our study is better efficiency of ECA for reducing mental fatigue and hyperactivity. There are a couple of complementary theoretical ideas about why that might be. The first one is the Psychological Detachment Model that claims that recovery from cognitive work (partly) necessitates "switching off" of work (school-)related thoughts (Boksem & Tops, 2008). ECA's focus upon recreational / physical arts gives it a physical context for this separation, while in CCA the individual remains intellectually within the academy world. "When I am shooting a basketball or painting on canvas, playing an instrument, it requires you to be in it in a way that's qualitatively different from the work of solving a math problem or developing an argument and structure for debate," Bednar says — and so more fully "disengages" the brain.

Another sports-associated aetiology for ECA is proposed by PANB. Exercise has shown to lower stress hormone levels.-yet another way that exercise can help promote skeletal muscle hypertrophy-This effect not only reduces the level of exertion felt during physical activity, but it also increases the number of capillaries in your body along with a higher amount of mitochondria increasing oxygen in the blood; therefore things become more efficient, requiring less energy and physical effort removed by toxic waste generated such as up regulating systems that may promote growth factors. These behavioural features circumvent the mechanisms underlying the pathophysiology of mental fatigue.

And last but not least, ECAs are powerful SEL Laboratories. They play team sports, or put on plays in theatres, or some sort of harmonizing group has a goal and/or is encountering people trying to meet goals where they don't get "what they wanted" (so, someone "wins out " the lead/most basketball points/fastest swim time/most blue ribbons) — kids have chances for live-action (high stakes) but often low consequence-it venues to practice self-mastery, impulse control development and conflict resolution. This is what emotional skills training (Goleman, 1995) is: the learning of how to deal with emotion, second by second, not simply becoming role appropriate in response to stress, but it means students could go with those competencies that would control their academic awakening from sleep without fatigue.

5.2 CCA as an Academic Catalyst with Fatigue Off-Loading

The results suggest that CCA is the best path for academic learning achievement and can expand our knowledge of its position regarding curricular growth and how it applies learned curriculum (Rao & Reddy, 2014). However, the most important post-test result was that participants in performers who complied with CCA experienced greater mental fatigue scores than those in ECA. What it is, in part, is an example of what we call trade off. While it might be argued that engaging in CCAs is cognitively enriching and stimulating, what we are suggesting is that this may not so much reflect a 'release' from the demands of the school as a continuation. Practising for a debate, testing an assumption in a science lab, or writing code for robot parts are all instances that can over-tax students' cognitive load and heavily contribute to it (Smith et al., 2012)—particularly when added on top of full days of study and homework. (Not that there's no quality in CCA; it just illustrates the tightrope you'd have to walk.) Schools by now should know that, a la CCA frequency 'as such' can actually result in mental fatigue, unless twinned with an offsetting dose of 'restorative during/after "the work"?

5.3 Interrelation of Well-being and Performance

The produced correlation matrix is consistent with a single model of student development. The negative relationship between AT and academic status (r = -0.521) is perhaps an empirical reminder that dead brains don't learn well. But you can't simply legislate or mandate curricular rigour, and you certainly shouldn't try if the effect of that is to crush students' cognitive vibrancy. Second, the similarity of the correlation between emotional maturity and achievement (r = 0.385) is evidence that educating ―emotion‖ is not contrary to educating ―cognition, but mutually supports each other. The four octane elements of emotional intelligence- patience, optimism, tolerance for stress and thinkability (willingness to share problem solving) are all easily recognisable skill sets that could be extended tangentially to academics. Consequently, interventions like ECA that support the advancement of emotional competence would indirectly promote school tasks by producing a more robust or tougher student.

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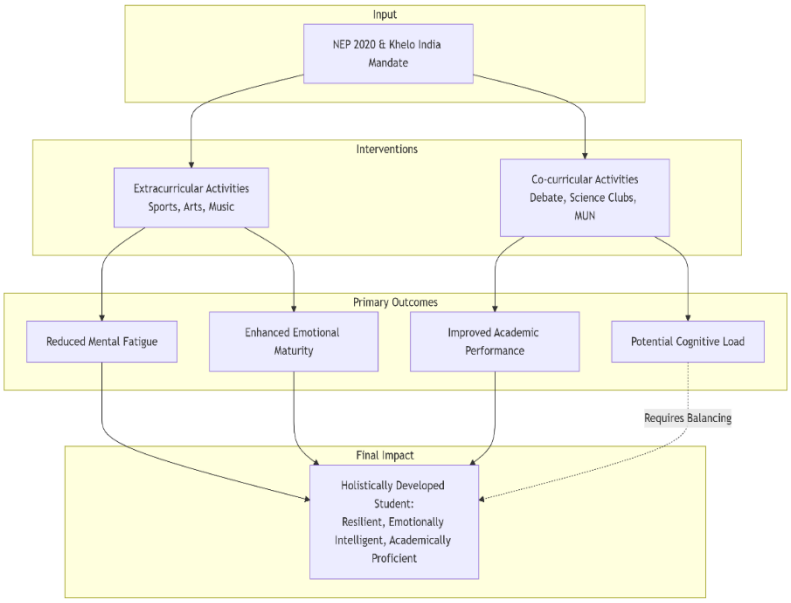
Figure 8: Conceptual model of ECA and CCA influences



Caption: Figure 8 depicts the study's findings into a conceptual framework, showing the distinct pathways and outcomes of ECA and CCA, converging toward holistic development
For all the stakeholders of the future of education in India, there is a clear map ahead that they can pull and push.

6. IMPLICATIONS AND RECOMMENDATIONS

6.1 Implications for School Leaders and Teachers

- **Create a Well-Balanced Keep-It-Sacred School Timetable:** Reserve particular periods per day or week within the formal school timetable for ECA and CCA activities, protecting these from academic competition with a religious ring-fence. Place ECA predominantly in the school mental health and well-being plan.
- **Strive to develop a differentiated didactic of the activities:** Train activity coordinators and teachers in differentiating between the goals of each activity. The goal of a sports period is not to get fit, though it's a fine side effect; the goal of afterschool science club is understanding, depth and inquiry.
- **Data Driven Advice:** Suggest concrete exercises for students that fit them best. A frustrated, bored or fed-up student may well find an ECA offering that keeps them coming back for more; a child who wants to push themselves academically in a particular area might find it through CCA.
- **Beware of Over-Enthusiasm:** Remember, while the pendulum is also set to swing too far — watch for heat burnout, especially kids with multiple CCA or High-engagement ECA on their plates. Choose "balanced engagement" over the "resume-padder."

6.2 Recommendations for Policymakers (National/State/District)

- NEP 2020 Check Box and Aim-Reach Goal-Dynamic and resource allocation-mapped task cut out for roll out of a user-friendly guideline NUANCE for ECA-Cs & CCAs to be implemented from the ground up. Go far beyond a single command to "activity period."
- Drive Investment For Equity-erected and fund-designated projects that will create sports fields, art rooms, and clubs in such schools of the State Board /governing body. Put some aside to train teachers to run non-academic programs.
- These Are the Ones to Create -The Big-Picture Progress Report Let's make sure we create and adopt a high-quality assessment system around what really matters in life, how well are students developing their emotional maturation, creativity, community engagement and resilience — just as much today as they do with their grades.
- Fit in with Khelo India: Use this ammo to fight for school-level sports infrastructure and participation, as the prime intervention for the child rather than a sink/swim talent pipeline.

6.3 Parental and Guardian Advice

- Mind Set attitudinal change to join: The mindset I needed to be in is the mindset, could no longer think that ECA is a waste of my precious time or CCA; when I have nothing else except college application. ECA and CCA We're describing two sides of the same symbiotic investment in your child's well-rounded, comprehensive education here: ECA for wellbeing and character; CCA for intellectual pursuit.
- Enable by Interest and Need, Not Just By Status: Instead of basing this on status you should enable children to choose by the interest they already have or a need (e.g., to make them less shy, let them try drama; for an active one, represented sports). You are not in the middle of a high-stress work week, so don't design your calendars and schedules as though you were.
- Schools - Emphasize diversity, affordability and inclusion. Add ASL school principals based on demonstrated need for moderation.

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7. LIMITATIONS AND FUTURE WORK

The present study also has several limitations, and the directions for further work will be pointed out by them. The study is cross-sectional, so it can't demonstrate cause and effect; longitudinal studies that follow students over time would help strengthen claims of causality. Our sample is a single district and it may not be representative. As fatigue- and academic dimensions were partly self-reported, the potential for bias cannot be excluded completely; Future research could provide additional, convergent objective measures on these constructs (e.g., teacher-rated behaviour or behavioral observation-systems, physiological stress indicators, e.g., heart rate variability). Second, a combination of structured and semi-structured in-depth interview modes could permit us not only to touch these issues from the rich side but also talk deeper about how VSE student's life in ECA/CCA, why they made their choice, and what is the subjective meaning?

8. CONCLUSIONS

India is at the cusp of NEP 2020, with a new digitised dawn of education ushering in, and this study not only presents data but also a to-do list for action. It says that the cure for mental fatigue and fulfilling our student potential isn't more "academic hours", it's incorporating a stimulating hit of play, creativity, and action into extracurricular activities and leveraging intellectual stretch from Co-curricular activities. Free them to engage in the project-based learning that we now know not only is powerful on its own account but stimulates a lot of those very skills and dispositions that matter most, so that schools could graduate these kinds of citizens — for a world where little is simple or clear cut, easily consumed or reduced down into soundbites — when it comes to questions about good and evil.

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