

Research Paper

Exercise Avoidance Motivation, Time Management and Exercise Procrastination among Obese Female Students

Varsha Mitra^{1*}, Prof. Subrata Dasgupta²

ABSTRACT

The aim of the present study is to investigate whether Exercise Avoidance Motivation, Time management and Exercise Procrastination vary in terms of varied BMI categories and exercise habits among female College and University students of Kolkata, West Bengal, India. For this study a cross-sectional survey design was adopted. Data have been collected from 227 female students from various Colleges and Universities in Kolkata following multistage stratified random sampling. The total participants were categorized as per three BMI categories i.e., Normal, Overweight and Obese consisting of 80, 72 and 75 participants respectively. Further the participants were categorized as per their exercise habit into two groups, i.e., regular exercise group and no exercise group consisting of 122 and 105 participants respectively. A total of six sub-groups were considered i.e., Normal, regular exercise group (N=45); Normal, no exercise group (N=35); Overweight, regular exercise group (N=30); Overweight, no exercise group (N=42); Obese, regular exercise group (N=30) and lastly, Obese, no exercise group (N=45). Information schedule was administered for screening as per inclusion and exclusion criteria, along with BMI measurement. Three standardized scales namely, Exercise Avoidance Motivation Scale (Vartanian and Shaprow, 2008), Time Management Competency Scale (Sansanwal and Parashar, 2007), Procrastination in Exercise Scale (Kelly and Walton, 2020) were administered. The results have shown that BMI has a significant role on Exercise Avoidance Motivation, Time management and Exercise Procrastination. The results were elaborated on the basis of earlier relevant literature, theories and cultural understanding of female students in West Bengal. These findings are crucial for developing effective interventions to combat obesity and its comorbidities and promote holistic health behavior in India.

Keywords: *Exercise Avoidance Motivation, Time Management, Exercise Procrastination*

Obesity has become a global public health issue (Abelson & Kennedy, 2004; Gregg & Shaw, 2017; Apovian & Riffenburt, 2017; Wolfenden et al., 2019; Malenfant & Batis, 2019). WHO has recognized it as an epidemic (James, 2008). Plethora of research pin points that physical inactivity acts as a gateway of several comorbid diseases like obesity, metabolic syndrome, non-alcoholic fatty liver diseases, arterial dyslipidaemia, cognitive dysfunction, certain type of cancer, depression, anxiety, hypertension,

¹Research Scholar, Department of Applied Psychology, University of Calcutta, West Bengal, India

²Professor, Department of Applied Psychology, University of Calcutta, West Bengal, India

*Corresponding Author

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cardiovascular diseases (Nystoriak & Bhatnagar, 2018), sleep apnea, type 2 diabetes, osteoarthritis, arthritis, diverticulitis, polycystic ovary syndrome (Miranda & Navío, 2013), constipation, gallbladder diseases (Reilly, Methven, McDowell, Hacking, Alexander, Stewart, & Kelnar, 2003; Bray, 2004; Ahmad, 2021) that results in lowered quality of life (Rueggsegger & Booth, 2018) and even premature death (Booth, Roberts & Laye, 2012; Hruby, Manson, Qi, Malik, Rimm, Sun, & Hu, 2016). Behavioural issue and low self-esteem occur commonly among obese population (Reilly et al., 2003).

A substantial number of students usually procrastinate that can range from 50-95% (Kim & Seo 2015; Steel 2007). Procrastination ignites feeling of distress, depression, anxiety, frustration, guilt, reduced self-esteem, self-defeating thoughts, resulting in poor performance (Chun & Choi, 2005). Numerous studies indicates that there is a link between health procrastination and wellness behavior like regular exercise, timely check-up but none of them have shed light on Exercise procrastination per se (Flett et al., 2016). Exercise procrastination is the intentional delay of planned exercise, despite the perceived negative consequences. It arises due to failure in self-regulation. The existing literature reveals that higher procrastination leads to lowered self-esteem in association with exercise habits (Yi, 2021). Task difficulty and procrastination is directly proportional (Kelly & Watson, 2020). According to the *Temporal Motivational theory* if the value associated with a goal decreases, we tend to procrastinate more (Steel, 2007; Steel et al., 2018; Gröpel & Steel, 2008; Rozental & Carlbring, 2014). Secondly, according to the *Flow Theory*, minimizing the cues of distraction allows lowering down procrastination (Konig & Kleinmann, 2006; Steel, 2007).

While everything else in this world can be changed, stored or purchased but time cannot. Time management is an art that if practiced effectively can lead to successful ventures. It includes time assessment (i.e., time estimation & analysis), behavior assessment, path formulation and monitoring (Classens et al., 2007). Britton & Tesser (1991) opined time management to be an intellectual skill that includes prioritization and completion of task before the deadline. According to the *Social cognitive theory*, exercise behavior has been predicted to be affected by scheduling self-efficacy (Rodgers et al., 2002).

Performing strenuous physical activity or following a well-defined weight management schedule is constructive but still people find it stressful to obey a consistent routine due to several psychosocial variables. Research done to find out the factors that are responsible for non-participation in exercise regime is scare, controversial and confusing per se. In the context of Exercise amotivation, *Self Determination Theory* conceptualizes that one's behavioral pattern or motivational characteristics can be regulated by either intrinsic or extrinsic motivation/goals (Rousseau & Vallerand, 2000) as regulated by our innate tendency or, causality orientation (Deci et al., 1994; Deci & Ryan, 2020; Howard et al., 2020). Individuals who are internally driven, intrinsically motivated, self-driven to perform physical activity because that would bring enjoyment, revitalization, happiness, satisfaction and feeling of competence then the chance of adherence is maximized. Contrastingly, if individuals are driven externally that is to get a perfect shape, get rewards, social approval, overcome negligence, then it might get discontinued with time.

Literature is amassed with women centric perspective and they are more inclined to appearance-oriented reasons influence exercise amotivation, that has a connection with body image, self-esteem, body satisfaction & psychological health (Strelan et al., 2003; Prichard

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& Tiggemann, 2008; Greenleaf & Rodriguez, 2021; Hesketh et al., 2004; Strauss, 2000). Studies exploring the connection between body appreciation and exercise motives is still insufficient considering both psychological and physical constructs influencing them. There is a complex interplay between motivation, self-regulatory skills and social & environmental cues that contributes to healthy physical choices, weight change and healthy or unhealthy eating behavior (Annesi-Maesano, 2018).

Regular exercise makes a person fit both mentally and physically (Rueggsegger & Booth, 2018). It improves our body's equilibrium, builds endurance and replenishes our lifestyle. Exercise is a mood lifter; a proactive drug (Vina et al., 2012). To mention a few, exercise helps to reduce physical and mental stress, induces sleep, decreases anxiety sensitivity (Broman-Fulks et al., 2004) sharpens our brain faculties responsible for memory, rational thinking and learning, improves bones and muscles strength, generates the feeling of happiness, euphoria due to the release of endorphins (Harber & Sutton, 1984; DiLorenzo et al., 1999; Wilmore & Knuttgen, 2003; Guiney & Machado, 2013). Often recommended as a means of physical rehabilitation by the mental health professionals to cope up with a depressed state (Abou Elmagd, 2016).

Even though, there are numerous benefits of being physically active, people behave in an eccentric manner in this regard and remain in oblivion by avoiding any kind of involvement in physical fitness. As a result of this ignorance, Obesity has become a global public health issue (Malenfant & Batsis, 2019). Student life is the most vulnerable stage due to their sedentary lifestyle, academic stress, financial constraints, distorted self-image, experience of hostel life, lack of purpose, lack of concern about health, that can potentially contribute to adapt unhealthy lifestyle patterns (Mendelson et al., 2000). Regular physical activity during young age may prevent or impede the development of several adult conditions thereby minimizing the mortality rate of a society (Song et al., 1995), especially female population. Thus, the present study aims to explore the whether Exercise Avoidance Motivation, Time management and Exercise Procrastination vary in terms of varied BMI categories and exercise habits among female students pursuing Higher Education of Kolkata, India. The research will also shed light on the relationship between Exercise Avoidance Motivation, Time management and Exercise Procrastination.

METHODOLOGY

Objectives:

The following were the research objectives of the present study:

- To determine whether Exercise Avoidance Motivation significantly varies in terms of Body Mass Index (Normal, Overweight, Obese) and exercise habit (regular exercise, no exercise) of College & University female students.
- To determine whether Time management and its four domains (i) Planning (ii) Organizing (iii) Leading and (iv) Evaluating, significantly vary in terms of Body Mass Index (Normal, Overweight, Obese) and exercise habit (regular exercise, no exercise) of College & University female students
- To determine whether Exercise Procrastination significantly varies in terms of Body Mass Index (Normal, Overweight, Obese) and exercise habit (regular exercise, no exercise) of College & University female students
- To find out the relationship among Exercise Avoidance Motivation, Time management and Exercise Procrastination among College & University female students.

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Hypotheses:

- **H1:** Exercise Avoidance Motivation significantly vary in terms of Body Mass Index (Normal, Overweight, Obese) among College & University female students.
- **H2:** Exercise Avoidance Motivation significantly vary in terms of exercise habit (regular exercise, no exercise) among College & University female students.
- **H3:** Exercise Avoidance Motivation significantly vary in terms of BMI and exercise habit among College & University female students.
- **H4:** Time management comprising of four domains (i) Planning (ii) Organizing (iii) Leading and (iv) Evaluating significantly vary in terms of Body Mass Index (Normal, Overweight, Obese) among College & University female students.
- **H5:** Time management comprising of four domains (i) Planning (ii) Organizing (iii) Leading and (iv) Evaluating significantly vary in terms of exercise habit (regular exercise, no exercise) among College & University female students.
- **H6:** Time management comprising of four domains (i) Planning (ii) Organizing (iii) Leading and (iv) Evaluating significantly vary in terms of BMI and exercise habit among College & University female students.
- **H7:** Exercise Procrastination significantly vary in terms of Body Mass Index (Normal, Overweight, Obese) among College & University female students.
- **H8:** Exercise Procrastination significantly vary in terms of exercise habit (regular exercise, no exercise) among College & University female students.
- **H9:** Exercise Procrastination significantly vary in terms of BMI and exercise habit among College & University female students.
- **H10:** There exists a significant relationship among Exercise Avoidance Motivation, Time management and its four domains - (i) Planning (ii) Organizing (iii) Leading and (iv) Evaluating and Exercise Procrastination among College & University female students.

Procedure

We conducted a study using cross-sectional survey design to randomly collect data from a representative sample of unmarried Bengali Hindu students currently enrolled in College and University in Kolkata between the age range of 19-25 years. The sample particularly comprises of female participants who were willing to participate in the survey. In the current study the sample were screened & categorized into three categories (Normal-18.5-22.9, Overweight-23-24.9 & Obese-25 & above) as per WHO (2004) and Consensus Statement for Asian Indians of the Metabolic and Obesity Summit (Misra et al., 2009). Further, the sample were categorized on the basis of two exercise habits i.e., No exercise group, female participants not engaged in any kind of exercise and secondly regular exercise group where female participants performing exercises of any form like aerobic, anaerobic, flexibility etc. for at least 40-60 minutes per day.

Sample

The original sample size (N) for the present study was kept 180 out of which 60 respondents will be randomly chosen against each BMI categories (Normal, Overweight and Obese) and under each BMI category, 30 participants will belong to regular exercise group and 30 belongs to no exercise group. The final sample size (N) comprised of two hundred twenty-seven female (N=227) respondents where they were categorized as per their Body Mass Index categories and exercise habit as depicted below:

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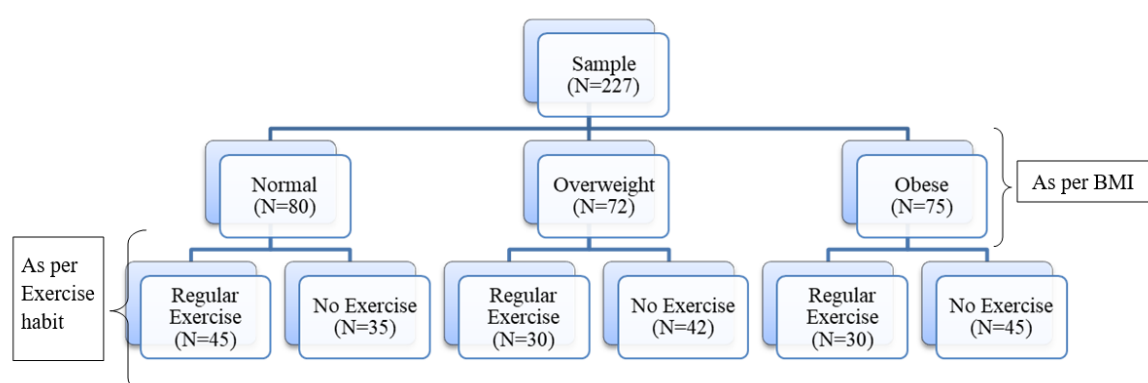


Fig 1: Representation of study sample

Sampling technique

Multistage Stratified Random Sampling was used for the present study to ensure the sample having equal representation of the Bengali female population in terms of BMI categories and exercise habit. Respondents from middle socio-economic status were selected (as per West Bengal Housing Development Board, 2024). Candidate who gave consent for data collection and met the inclusion criteria were included in the study on a random basis. For selecting 180 (60 Normal, 60 Overweight and 60 Obese under which 30 each belonging to regular and no exercise group), Kolkata was geographically stratified in 05 zones namely East, West, North, South and Central and from each zone, a list of Colleges and Universities were prepared. Three universities were selected randomly from the pool of university from all the five zone. After seeking permission from the respective authorities, any two university were considered for data collection. Similarly, 5 colleges were randomly selected from the pool for data collection from each zone. After seeking permission from the respective authorities, any 4 college were considered by random selection for data collection. A minimum of 10 data will be collected from each institute. Approximately from the pool of 220 data will be considered for final calculation.

Inclusion criteria:

The inclusion criteria of the sample are as follows:

- **Age of the subject:** 19-25 years
- **Marital status:** Unmarried
- **Gender:** Female
- **Educational qualification of the subject:** At least H.S. passed.
- **Occupation of the Subject:** Enrolled in College & University students
- **City and State:** Kolkata, West Bengal
- **Religion:** Hinduism
- **Mother tongue:** Bengali
- **Nationality:** Indian
- **Family Income:** Monthly Rs 40,001-65,000/- (Lower Middle-Income group as per West Bengal Housing Development Board, 2024)
- **Duration of exercise per day:** At least 40 minutes to 1 hour (For Regular exercise group; No exercise per day (For No exercise group) (Bhattacharya & Dasgupta, 2015)
- **Length of exercise habit:** At least 1 year (For regular exercise group); No exercise group
- **Type of exercise:** Weight reduction or weight management regime.

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- **Weight:** BMI category as Normal, Overweight and Obese (As per WHO (2004) and Consensus Statement for Asian Indians of the Metabolic and Obesity Summit (Misra et al., 2009))
- **Food Intake:** Veg and Non-Veg
- **Medication status:** Non-Steroid users.

Exclusion Criteria

- Any physical disorder of the subjects.
- Any mental disorder of the subjects.
- History of any chronic physical/mental illness of the subjects
- Distance of College/University from home: More than 5-7 km
- Food Intake: Vegan
- Weight: Underweight
- Medication status: Regular medication taken for weight related problem, hormonal disbalance, chronic diseases (like, thyroid, diabetes), participants undergone any cosmetic surgery or medical procedure to alter natural physical feature.
- Participants of either state level or national level championship competition will be excluded.

Instruments

Before administering the following measures, weight and height measurements were noted using Standard Operating Procedures and gathering general information using information schedule prepared as per inclusion-exclusion criteria:

1. **Exercise-Avoidance Motivation Scale:** This scale is developed by Vartanian and Shaprow (2008). It is a 7-point Likert scale consisting of 8 items related to weight stigma, body dissatisfaction, self-esteem and exercise motivation. Higher scores on this scale indicate greater avoidance motivation ($\alpha = .83$). Respondents were asked to answer each item by indicating the extent of their agreement on a 7-point Likert.
2. **Time Management Competency Scale:** This scale is developed by Sansanwal and Parashar in 2007. It consists of 36 items and four domains, that are, Planning (12 items), Organizing (9 items), Leading (10 items) and Evaluating (5 items). The test-retest coefficient is 0.72 and split half reliability coefficient is 0.96. The content validity of the scale is impressive. The scale consists of 18 positive and 18 negative statements. The five responses against each positive item are Always (A), Frequently (F), Sometime (ST), Rarely (R) and Never (N) and vice-versa for negative items. Scores can range from 36-180, where a score of up to 45 indicates very poor time management, 45-90 indicates poor time management, 90-135 indicates good time management and 135 & above indicates excellent time management.
3. **Procrastination in Exercise Scale:** This scale is developed by Kelly and Walton (2020). It is a 5-point Likert scale consisting of 6 items related to voluntary delaying of physical activity. Where 1 signifies 'strongly disagree', 2 means 'disagree', 3 represents 'neither agree nor disagree', 4 represents 'agree' and 5 represents 'strongly agree' Internal consistency is excellent ($\alpha = .94$). The factor loadings ranged from .80 to .91, and all were significant ($p < .001$). The item pool was developed by adapting items from multiple validated procrastination scales (e.g. Kroese et al., 2014; McCown et al., 1989; Tuckman, 1991). The scale demonstrated excellent internal consistency, Cronbach's $\alpha = .94$. Exercise procrastination was positively correlated with general procrastination ($r = .53$, $p < .001$) and negatively correlated

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with intention for physical activity ($r = -.24, p < .001$) and Moderate to Vigorous Physical Activity ($r = -.22, p < .001$) establishing impressive concurrent validity.

Statistical analysis

The data of the respondents were analyzed using the 20.0 version of Statistical Package for Social Sciences (SPSS). Descriptive statistics (Mean, SD, Skewness, Kurtosis) were computed along with analysis of variance (ANOVA), correlation matrix and post hoc analysis.

RESULTS

Table No. 1: Mean and Standard deviation were presented for the study variables across total sample (N=227) varying in terms of Body Mass Index (Normal, Overweight, Obese) and exercise habit (regular exercise, no exercise) among female College and University students.

IV 1: BMI	IV 2: Exercise Habit	Statistics	Exercise Avoidance Motivation	Time Management	TM 1: Planning	TM 2: Organizing	TM 3: Leading	TM 4: Evaluating	Exercise Procrastination
Normal (80)	Regular Exercise (45)	M	10.06	115.88	38.68	29.22	31.73	16.24	13.22
		SD	2.06	14.22	5.94	3.90	5.11	4.03	6.79
	No Exercise (35)	M	9.02	117.14	38.34	30.51	32.82	15.45	15.37
		SD	2.12	17.78	5.99	3.41	6.88	5.02	7.77
	Total (80)	M	9.61	116.44	38.53	29.78	32.21	15.90	14.16
		SD	2.13	15.78	5.92	3.73	5.93	4.48	7.27
Overweight (72)	Regular Exercise (30)	M	28.93	93.23	32.03	24.26	26.00	10.93	20.66
		SD	16.04	28.67	10.16	7.28	8.03	5.70	6.82
	No Exercise (42)	M	35.61	86.66	29.76	22.28	24.14	10.47	23.26
		SD	19.99	29.48	9.68	7.25	8.06	5.80	5.73
	Total (72)	M	32.83	89.40	30.70	23.11	24.91	10.66	22.18
		SD	18.63	29.13	9.87	7.28	8.04	5.72	6.30
Obese (75)	Regular (30) Exercise	M	26.83	106.73	35.20	26.63	30.00	14.90	19.63
		SD	17.16	24.67	7.95	6.25	7.52	5.35	7.49
	No Exercise (45)	M	17.64	119.26	39.42	30.00	32.91	16.93	17.22
		SD	10.14	13.60	5.78	3.91	5.79	3.68	7.76
	Total (75)	M	21.32	114.25	37.73	28.65	31.74	16.12	18.18
		SD	14.04	19.66	7.02	5.21	6.64	4.50	7.70

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Total	Regular Exercise (105)	M	20.24	106.80	35.79	27.06	29.60	14.34	17.18
		SD	15.32	23.94	8.31	6.04	7.11	5.38	7.76
	No Exercise (122)	M	21.36	107.43	35.78	27.49	29.86	14.28	18.77
		SD	17.14	26.07	8.56	6.40	8.05	5.61	7.82
	Total (227)	M	20.84	107.14	35.78	27.29	29.74	14.31	18.03
		SD	16.30	25.06	8.43	6.23	7.62	5.49	7.82

As per the descriptive table, it can be seen that Exercise Avoidance Motivation is very low and quite similar among normal regular exercise (M=10.06) and no-exercise group (M=9.02). There is a markedly higher exercise avoidance tendency among overweight students who belongs to no exercise group (M=35.61) as compared to regular exercise group (M=28.93). In obese group, it can be seen that obese non-exerciser group (M=17.64) shows lower exercise avoidance motivation than regular exercise group (M=26.83).

For Time Management, it can be observed that Obese, no exercise (119.26) group scored the highest followed by Normal, no exercise group (117.14) in terms of time management competencies. The lowest score is evident among overweight no exercise groups (M=86.66). Among normal group, those who do not exercise (M=117.14) have better time management competencies than those who do regular exercise (M=115.88). On the other hand, among overweight female participants, those who regularly exercises (M=93.23) have better time management scores than those who do not exercise regularly (M=86.66). Among female obese participants, those who do not exercise (M=119.26) have shown trends of better time management capabilities as compared to those who exercise regularly (M=106.73). The result table suggests that irrespective of BMI, those who do not exercise (107.43) have better time management skills. Across the four domains, it has been seen as per Normal BMI category, participants who regularly exercises are exhibiting better planning and evaluation strategies than no exercise group whereas no exercise group is relatively better at organizing and leading. Among Overweight female participants, regular exercise goers have shown better planning, organizing, leading and evaluation and the result contrasts for Obese population.

The highest procrastinators regarding exercise are those who are overweight and do not go for exercise at all (M=23.26). The lowest procrastinators are regular normal BMI group (M=13.22). As per BMI, those participants who do not exercise are the one who procrastinates the most with a mean score of M=15.37. Similarly, in overweight participants too, no exercise group, procrastinates more (M=23.26). Among obese, contrasting result is reflected where regular exercise group (M=19.63) have shown greater procrastinating tendencies as compared to its counterpart. As per exercise habit, no exercise group, irrespective of their BMI have shown greater procrastination regarding exercise (M=18.77).

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Table 2: Mean, Standard deviation, Skewness, Kurtosis were presented for the study variables across total sample (n=227)

Study variables	Mean	Std. Deviation	Skewness	Kurtosis
Exercise Avoidance Motivation	20.84	16.30	1.058	-.491
Time Management	107.14	25.06	-.718	-.629
TM 1: Planning	35.7885	8.43	-.348	-.890
TM 2: Organizing	27.2952	6.23	-.644	-.641
TM 3: Leading	29.7445	7.62	-.238	-.887
TM 4: Evaluating	14.3128	5.49	-.197	-1.131
Procrastination in Exercise	18.03	7.82	-.080	-1.326

According to Bryne (2010) and Hair et al. (2010) and, data is considered to be normal if skewness is between -2 to +2 and kurtosis is between -7 to +7. Therefore, as per table no. 2, upon considering the values of skewness and kurtosis for each research variable, indicating that the assumption of normality was reasonably satisfied for parametric analyses.

Table 3: Levene's Test of Equality of Error Variances for the studied variables

Dependent Variable	F	df1	df2	Sig.
Exercise Avoidance Motivation	92.776	5	221	.000
Time Management	21.690	5	221	.000
TM 1: Planning	.215	5	221	.643
TM 2: Organizing	.592	5	221	.443
TM 3: Leading	3.010	5	221	.084
TM 4: Evaluating	.692	5	221	.406
Procrastination in Exercise	1.487	5	221	.195

The Levene's test indicated that the assumption of homogeneity of variance was violated for Exercise Avoidance Motivation and Time Management. The significant value is greater than 0.05 level of significance for the four domains of Time management and Procrastination in Exercise. However, given the relatively balanced group sizes and the robustness of ANOVA to moderate violations of homogeneity with large samples, the factorial ANOVA was retained for analysis. The parametric statistics that have been used in the present study are 3x2 Factorial ANOVA (Analysis of Variance) and Pearson Product Moment Correlation.

Table 4: 3x2 Factorial ANOVA (Analysis of Variance) to determine the role of Body Mass Index (Normal, Overweight, Obese) and exercise habit (regular exercise, no exercise) on Exercise avoidance motivation among female College and University students.

Dependent Variable	SOURCE	df	F	Sig.
Exercise Avoidance Motivation	BMI	2	57.31	.000
	Exercise habit	1	.45	.501
	BMI* Exercise habit	2	6.63	.002

Significant at 0.05 level

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Table 5: MANOVA (Multivariate Analysis of Variance) test with Wilks' Lambda was done to determine the role of Body Mass Index (Normal, Overweight, Obese) and exercise habit (regular exercise, no exercise) on Time Management and its four domains among female College and University students.

Dependent Variable	SOURCE	df	F	Sig.
Time Management	BMI	2	31.660	.000
	Exercise habit	1	.672	.413
	BMI* Exercise habit	2	3.454	.033
TM 1: Planning	BMI	2	20.74	.000
	Exercise habit	1	.269	.604
	BMI* Exercise habit	2	3.40	.035
TM 2: Organizing	BMI	2	29.02	.000
	Exercise habit	1	1.47	.226
	BMI* Exercise habit	2	4.33	.014
TM 3: Leading	BMI	2	23.81	.000
	Exercise habit	1	0.59	.440
	BMI* Exercise habit	2	2.17	.116
TM 4: Evaluating	BMI	2	26.56	.000
	Exercise habit	1	0.15	.692
	BMI* Exercise habit	2	1.80	.167

Significant at 0.05 level

Table 6: 3x2 Factorial ANOVA (Analysis of Variance) to determine the role of Body Mass Index (Normal, Overweight, Obese) and exercise habit (regular exercise, no exercise) on Procrastination in Exercise among female College and University students.

Dependent Variable	SOURCE	df	F	Sig.
Procrastination In Exercise	BMI	2	21.873	.000
	Exercise habit	1	.665	.416
	BMI* Exercise habit	2	2.773	.065

Significant at 0.05 level

From table 4-6, following findings were revealed:

It can be inferred that BMI (main effect) and interaction effect between BMI and exercise habit is found significant has a significant role on Exercise avoidance motivation. Thus, hypothesis 1 & 3 are accepted. However, there is no significant role of exercise habit on Exercise avoidance motivation, thereby rejecting hypothesis 2.

It can be inferred that BMI (main effect) and interaction effect between BMI and exercise habit has a significant role on Time Management & its two domains (i.e., planning & organizing). However, there is a significant role of BMI only on the remaining two domains of time management (i.e., leading and evaluation). Thuse it can be said that hypotheses 3 and 5 are partially accepted, but hypothesis 5 is rejected.

It can be inferred that BMI (main effect) has a significant role on Procrastination in Exercise. Thereby suggesting hypothesis 7 is accepted and hypotheses 8 and 9 are rejected.

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Table 7: Results of least significant difference table (post hoc-LSD), Exercise avoidance motivation, Time Management & its four domains and Procrastination in Exercise as dependent variables and Body Mass Index as independent variable with three levels (BMI- Normal, Overweight, Obese)

Dependent Variable	(I) BMI	(J) BMI	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
						Lower Bound	Upper Bound
Exercise Avoidance Motivation	Normal	Overweight	-23.2208*	2.10991	.000	-27.3790	-19.0627
		Obese	-11.7075*	2.08758	.000	-15.8216	-7.5934
	Overweight	Obese	11.5133*	2.14297	.000	7.2901	15.7366
Time Management	Normal	Overweight	27.0347*	3.54009	.000	20.0581	34.0114
		Obese	2.1842	3.50263	.534	-4.7187	9.0870
	Overweight	Obese	-24.8506*	3.59555	.000	-31.9365	-17.7646
TM 1: Planning	Normal	Overweight	7.8292*	1.24216	.000	5.3812	10.2772
		Obese	.8042	1.22901	.514	-1.6179	3.2263
	Overweight	Obese	-7.0250*	1.26162	.000	-9.5113	-4.5387
TM 2: Organizing	Normal	Overweight	6.6764*	.88612	.000	4.9301	8.4227
		Obese	1.1342	.87674	.197	-.5937	2.8620
	Overweight	Obese	-5.5422*	.90000	.000	-7.3159	-3.7685
TM 3: Leading	Normal	Overweight	7.2958*	1.11558	.000	5.0973	9.4944
		Obese	.4658	1.10378	.673	-1.7094	2.6411
	Overweight	Obese	-6.8300*	1.13306	.000	-9.0630	-4.5970
TM 4: Evaluating	Normal	Overweight	5.2333*	.79783	.000	3.6610	6.8057
		Obese	-.2200	.78939	.781	-1.7757	1.3357
	Overweight	Obese	-5.4533*	.81033	.000	-7.0503	-3.8564
Procrastination In Exercise	Normal	Overweight	-8.0181*	1.14989	.000	-10.2842	-5.7519
		Obese	-4.0242*	1.13772	.000	-6.2663	-1.7820
	Overweight	Obese	3.9939*	1.16791	.001	1.6922	6.2955

Significant at 0.05 level

The post hoc table (LSD) suggests that there is a statistically significant difference between the normal, overweight and obese scores of Exercise avoidance motivation and Exercise procrastination. However, it can be observed that there is a statistically significant difference between Normal and Obese score of Time management and its four domains.

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Table 8: Correlation matrix (n=227) across domain wise study variables (Exercise avoidance motivation, Time Management and Procrastination in Exercise) among female College and University students.

	Time Management	TM 1: Planning	TM 2: Organizing	TM 3: Leading	TM 4: Evaluating	Procrastination In Exercise
Exercise Avoidance Motivation	-.753**	-.674**	-.768**	-.662**	-.612**	.618**
Time Management		.873**	.903**	.927**	.910**	-.414**
TM 1: Planning			.726**	.669**	.695**	-.438**
TM 2: Organizing				.812**	.745**	-.468**
TM 3: Leading					.893**	-.307**
TM 4: Evaluating						-.259**

***. Correlation is significant at the 0.01 level (2-tailed).*

**. Correlation is significant at the 0.05 level (2-tailed).*

As per table 8, it can be observed that for total sample (n=227) Exercise Avoidance Motivation has a significant negative correlation with Time management at 0.01 level while significantly positively correlated with Procrastination in Exercise at 0.01 level. Time management across its domains has significant negative correlation with Exercise Procrastination at 0.01 level. This implies that those students who are more prone to avoid exercise are also vulnerable towards exercise procrastination and are likely to have poorer time management competencies. Thus, hypothesis 10 is accepted.

Table 9: Correlation matrix (as per BMI) across domain wise study variables (Exercise avoidance motivation, Time Management and Procrastination in Exercise) among female College and University students.

DV	BMI	Time Management	TM 1: Planning	TM 2: Organizing	TM 3: Leading	TM 4: Evaluating	Procrastination In Exercise
Exercise Avoidance Motivation	Normal (80)	-.385**	-.288**	-.388**	-.342**	-.198	.106
	Overweight (72)	-.930**	-.881**	-.893**	-.887**	-.830**	.681**
	Obese (75)	-.454**	-.325**	-.552**	-.358**	-.308**	.617**
Time Management	Normal (80)		.715**	.720**	.859**	.839**	-.050
	Overweight (72)		.931**	.944**	.958**	.934**	-.610**
	Obese (75)		.770**	.841**	.892**	.878**	-.163
TM 1: Planning	Normal (80)			.379**	.361**	.400**	-.122
	Overweight (72)			.829**	.813**	.811**	-.628**
	Obese (75)			.537**	.443**	.531**	-.248*
TM 2: Organizing	Normal (80)				.540**	.485**	-.079
	Overweight (72)				.901**	.835**	-.643**

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DV	BMI	Time Management	TM 1: Planning	TM 2: Organizing	TM 3: Leading	TM 4: Evaluating	Procrastination In Exercise
	Obese (75)				.728**	.604**	-.296**
TM 3: Leading	Normal (80)					.771**	-.006
	Overweight (72)					.918**	-.517**
	Obese (75)					.888**	-.019
TM 4: Evaluating	Normal (80)						.058
	Overweight (72)						-.477**
	Obese (75)						.044

***. Correlation is significant at the 0.01 level (2-tailed).*

**. Correlation is significant at the 0.05 level (2-tailed).*

For BMI Normal category, it can be observed that Exercise Avoidance Motivation has a significant negative correlation with Time management at 0.01 level. For BMI Overweight category, it can be seen that Exercise Avoidance Motivation has a significant negative correlation with Time management at 0.01 level while significantly positively correlated with Procrastination in Exercise at 0.01 level. Time management across its domains has significant negative correlation with Exercise Procrastination at 0.01 level. Similarly, for Obese category Exercise Avoidance Motivation has a significant negative correlation with Time management at 0.01 level while significantly positively correlated with Procrastination in Exercise at 0.01 level. There is an inversely proportional relationship between Time management across its domains and Exercise avoidance motivation irrespective of BMI categories or exercise habits.

Table 10: Correlation matrix (as per exercise) across domain wise study variables (Exercise avoidance motivation, Time Management and Procrastination in Exercise) among female College and University students.

DV	Exercise habit	Time Management	TM 1: Planning	TM 2: Organizing	TM 3: Leading	TM 4: Evaluating	Procrastination In Exercise
Exercise Avoidance Motivation	Regular Exercise (105)	-.774**	-.679**	-.721**	-.689**	-.671**	.651**
	No Exercise (122)	-.741**	-.672**	-.807**	-.645**	-.569**	.594**
Time Management	Regular Exercise (105)		.852**	.888**	.925**	.912**	-.574**
	No Exercise (122)		.890**	.915**	.929**	.909**	-.295**
TM 1: Planning	Regular Exercise (105)			.655**	.648**	.653**	-.542**
	No Exercise (122)			.783**	.687**	.729**	-.356**
TM 2:	Regular				.795**	.766**	-.550**

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DV	Exercise habit	Time Management	TM 1: Planning	TM 2: Organizing	TM 3: Leading	TM 4: Evaluating	Procrastination In Exercise
Organizing	Exercise (105)						
	No Exercise (122)				.825**	.729**	-.413**
TM 3: Leading	Regular Exercise (105)					.900**	-.482**
	No Exercise (122)					.889**	-.182*
TM 4: Evaluating	Regular Exercise (105)						-.463**
	No Exercise (122)						-.095

***. Correlation is significant at the 0.01 level (2-tailed).*

**. Correlation is significant at the 0.05 level (2-tailed).*

On the basis of exercise habits, for both regular exercise and no exercise group, Exercise Avoidance Motivation has a significant negative correlation with Time management at 0.01 level while significantly positively correlated with Procrastination in Exercise at 0.01 level. Time management across its domains has significant negative correlation with Exercise Procrastination at 0.01 level.

DISCUSSION

The objectives of our study were to investigate whether Exercise Avoidance Motivation, Time management and Exercise Procrastination vary in terms of varied BMI categories and exercise habits among female students enrolled in college or University in Kolkata, depicting Indian context. It has been witnessed in the result section of the current study that BMI has an active role in influencing exercise avoidance motivation (Greenleaf & Rodriguez, 2021), time management (Meng et al., 2025; Pippi et al., 2022) and procrastination in exercise (Zhang et al., 2022). The study done on Chinese University students captured the relationship between physical activity and procrastination behavior, hence supporting the result of the current study (Zhang et al., 2022). Moreover, BMI and exercise habit combinedly influences Exercise avoidance motivation (Nunes Filho, 2020; Bhattacharyya & Dasgupta, 2015) and time management (Schumacher et al., 2020; Godin et al., 2008). However, in the current study there is no significant influence of exercise habit per se. The correlation table aligns with existing literature that enunciate that Exercise Avoidance Motivation has a significant negative correlation with Time management (Zhang et al., 2024) while significantly positively correlated with Procrastination in Exercise. Time management has significant negative correlation with Exercise Procrastination. This implies that those students who are more prone to avoid exercise are also vulnerable towards exercise procrastination and are likely to have poorer time management competencies (Fu & Jiang, 2025).

From the result table 1, it is evident that Exercise avoidance motivation is highest among overweight students followed by Obese and then Normal. Existing literature suggests that

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weight stigma and exercise avoidance motivation is positively associated. As overweight individuals being at the borderline of obese, they often feel themselves as an 'excess', capturing more eyes for attention and public stigma (Vartanian and Shaprow, 2008). In addition to this existing research also shows that weight stigma give rise to internalized stigma distorting their rational eyes to evaluate and appreciate oneself that often times results into social anxiety. As overweight female perceive themselves in 'transitional identity zone' making it vulnerable for external propagator to assign misleading tags. They do not restraint from the fact that they are fat or overweight nor can they fully accept their real weight, resulting in relatively more social physique anxiety and fear of judgement (Li et al., 2025). It has been seen in the research done by Greenleaf (2021) that those who pursue appearance-focused exercise activities shows more inclination towards higher avoidance motivation, mostly resulting in body dissatisfaction. Thus, overweight females are more inclined to obsessively alter their appearance and try to initiate exercise as a corrective or weight reduction process. However, existing literature indicates that a person's self-efficacy can contribute to exercise motivation apart from the influence of BMI alone (Weeks et al., 2005). As per Objectification theory, overweight female shows highest fear regarding negative evaluation of body, internalize other's perspective and display ongoing surveillance resulting in social physique anxiety fueled by the experience of social comparison pressure with ideal or normal weighted people.

In case of Time management, female students with Normal BMI are most effective in time management skill, followed by obese and lastly overweight. This finding is supported by the result of research conducted by Zick et al (2011) that time management and BMI have an association suggesting Normal BMI group showcases structured and sophisticated time management behavior. Further the result aligns with the prior research linking better time management with high self-regulation & future oriented thinking (Meng et al., 2025). Interestingly, as overweight females have poorest time management skills rather than obese females, this indicates that the former are more prone to body dissatisfaction, low self-control, greater psychological burden and unacceptability of body weight status.

It is visible from table 1 that exercise procrastination is highest among overweight followed by obese then normal BMI. Temporal motivation theory suggests that people delay tasks which seems difficult and where rewards are not assured or delayed. Ego depletion theory indicates that body image concern and stress can regulate our self-controlling behavior which is seen poorest among overweight females. This can be due to the psychological conflict zone where there is low effort, lack of initiation, low confidence and higher discomfort to arising due to higher complex internal psychological conflict occurring among the overweight females with respect to obese females. This result illuminates a deeper connection about human psychology and the motive to perform intended activity for reduction of weight.

Overweight females are an ongoing & continuous loop of never-ending battle between desirability from other and self-acceptance (Urdapilleta et al., 2019). Researchers have found that weight discrimination, workplace bullying, negative attitudes and hard comments are few normal consequences of instances that overweight women aka *fat* or, *bulky* women have to experience and handle on an everyday basis (Flint et al., 2017) thereby explaining that even though it is health related issue but it can impair someone psycho-socially as well. Body image problems, low body esteem, internalized weight stigmatization, negative bias, shame & stigma, too much dependency on medication for weight loss are few common

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repercussions (Puhl & Brownell, 2001). Existing literature establishes a prominent correlation connection between body depreciation and exercise avoidance motivation, maladaptive healthcare behavior (Greenleaf & Rodriguez, 2021). Moreover, obese women remain preoccupied with what others' think of will comment on their body size (Hilbert et al., 2013), making their body a parameter of their self-worth and thus, they are often dissatisfied and submerged into deep psychological distress. Overweight women are more likely to get mistreatment based upon their body size across different culture, especially beauty standards and skin tone determines their self-worth (Braun et al., 2022). Collectively, not only in educational sector, for a lady the vicious cycle of weight bias remains active in other socio-cultural domains like work, personal life, romantic relationship (José Granero-Molina et al., 2024).

It can be said that the current study aligns with the themes of the study conducted by Koliaki et al (2023), referring '*globesity*' as a situation which is guided by over-consumption of soft drinks & fast food by people especially to gratify their taste buds and not fill their stomach leading to overeating or binge eating, often following Western diet (Clemente-Suárez et al., 2023). Although mass media along can flip this situation by intended and proper awareness, moreover, educational institute must surveillance the importance of regular physical exercise to ensure mental growth sustenance and well-being of the student communities but the reality is far bleak. Additionally, lack of knowledge and proper ignition from family members also lead to a potential barrier to take the efforts towards physical activity (Christensen et al., 2026).

CONCLUSION

In conclusion, this study sheds light on the psychological correlates associated with exercise avoidance motivation and linking it to the struggles of female students of Kolkata, India. The study helps to extend understanding related to the relationship & interaction effect between BMI, Exercise habits across different interconnected domains to reflect on the tendency to avoid exercise. The current study aligns with the results of existing literature and decipher the quest for an in-depth analysis via interview to further pin-point the subjective determining factors behind exercise avoidance motivation. This study can be best fitted to understand the nuanced yet essential interrelationship among the study variables that usually vanishes while a female student is actively involved in academic venture, without realizing the importance of healthcare. In developing countries like India, it is alarming that although there are several schemes sponsored by the Central Government to introduce schemes that manages undernutrition, malnutrition, anemia prevention, shelter for children for treating severe acute malnutrition (Gaiha et al., 2011). However, no initiative has been taken yet by the pro-urban health planners to introduce the slow poison of obesity and unhealthy eating patterns, no exercise routine, disruptive sleep cycle and work patterns disturbing the circadian rhythm (Gouda & Prusty, 2014). Moreover, health care costs and expenditure of health insurance is skyrocketing that must be reviewed in the recent times as there is a need to re-construct the policies related to education, holistic well-being and public health. Media houses can also keep few propagandas to promote the virtue of healthy lifestyle through conscious audio-visual contents produced for mass consumption, thereby reducing psychological internal conflict amongst the overweight female population. This study would encourage exercise physiologists, physical trainers, health professional, academicians, ideologists to devise new machineries or upgrade existing strategies to facilitate regular exercise habits and optimize exercise adherence. Drop-outs cases from exercise programs can be prevented, environmental modifications can be made, widespread

notion of feminine ideal beauty standard can be altered. Customized exercise interventions plans can be tailor made for the students to maximize fitness, promote maintenance of healthy weight, and promote holistic health.

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Conflict of Interest

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