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A comparative study of status of mood, resilience, and confidence of athlete vs. non-athlete students (between 14-18 years) of higher secondary school, in Delhi NCR

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Abstract
India is the second most populous country in the world with a population of 1.236 billion. There are over 434 million children and adolescents in India which is the highest in the world. Such a huge member of the young population is an asset for the country, contributing to the nation's growth and development. Studies have demonstrated that daily activity affects the physical and mental health of humans therefore, from kindergarten to universities worldwide physical education studies or fitness events are held to improve student health and increase their learning efficiency, current evidence also suggests that sport has positive effects on child and adolescent wellbeing when maturity status and training load are managed appropriately.The study compared the status of mood, resilience, and self-confidence of Athlete and Non-athlete students of ninth and eleventh grade from Kendriya Vidyalaya Masjid Moth between the Age group of 14-18 years, the total enrolled population was 205, case matching was done to allocate the subjects in two subgroups- athlete and non-athlete group and the total sample size thus was 164 students. The tools used for the study were the Adolescent Resilience Scale, Brunel Mood Scale, and Self Confidence Inventory. Paired t-test and Wilcoxon signed rank test were computed using STATA 14.0 version (StataCorp, Texas, USA) for statistical analysis. The level of significance was set at $p \leq 0.05$.The results showed a significant statistical difference in the 'vigor' dimension of the subscale of mood and all other dimensions of the subscale of mood, resilience, and self-confidence there was no significant statistical difference between an athlete and non-athlete student.

Keywords: Athlete student, non-athlete student, mood, resilience, self-confidence

1. Introduction
Physical activity is an essential aspect of our lives to achieve optimum health and well-being for all human beings. Physical activity means the movement of the body that consumes energy. According to the World Health Organization (WHO), physical activity is any bodily movement produced by skeletal muscles that requires energy expenditure.
Participation in sports gives an extra boost to body and mind especially if initiated from school age onwards. Youth who perform physical activities and sports can promote mental and physical well-being as well as functional coping with stress however for some people competitive sports may cause anxiety and distress [1].
Mental health is one of the most important dimension of health indicators. Adolescence period is a very important and critical stage in the developmental process and physiological changes resulting from sexual maturation will lead to behavioral changes [2]. The human mind is directly affected by the physical condition of the body and mutually the mental ambience also affects the body and physical health. The previous study suggests that physical activity and exercise might improve self-image, social skills, and cognitive functioning, and reduce the symptoms of anxiety and physiological response to stressors [3]. Moods are normal, adolescents have a lot going on physically, emotionally, and socially which is why they might have mood swings more than others. Exercise positively impacts levels of serotonin and endorphins that regulate mental health. Physical activity also stimulates the neurotransmitter norepinephrine, which improves moods. Cortisol levels also go down when we do physical activity [4]. Mental toughness and mental health are seen as contradictory terms in the world of sports. While mood enhancement has been well documented, this can be dependent on the intensity of exercise undertaken.

While more moderate levels often lead to the reporting of pleasure and positive mood, more intense forms of exercise may lead to displeasure [5]. Mental health problems may be more common in those who play sports professionally, not recreationally. Professional sports can also bring pressure along with benefits to the participant's mental health [6].

1.1 Need for the study

Adolescents have fewer coping skills which makes them more vulnerable to mental health issues. This period is often marked with freedom and responsibility both of which need to be maintained in a healthy balance state. Physical inactivity has been described as one of the major public health problems of the 21st century. Reliance on technology can diminish the body's energy consumption during daily activities, increasing the incidence of sedentarism [7]. Factors associated with technological advances have increasingly distanced individuals from physical activity, given that people are performing fewer tasks, which tend to be facilitated and mediated by technological devices [8]. There is insufficient and inconsistent data regarding the association between physical activity and mood, resilience, and confidence in India especially in the adolescent age group, despite the increasing burden of common mental disorders in society, not many studies are available on the correlation between physical activity and mental health.

2. Material and Method

2.1 Participants and Study Design

A cross-sectional comparative design was chosen for the study. Two hundred and five students of the ninth and eleventh classes were enrolled who met the inclusion criteria by using purposive sampling method, students who were not willing to participate or were not between the ages of fourteen to eighteen years were excluded from the study. Athlete students and non-athlete students were identified and then case matching was done to allocate the students in the subgroups.

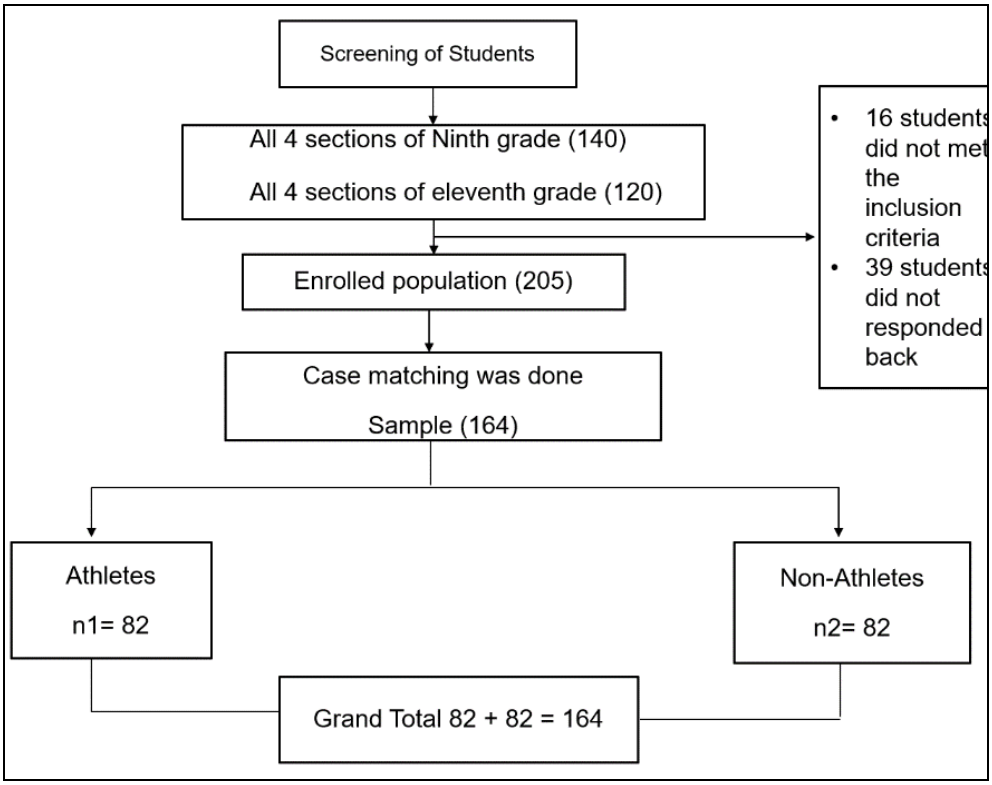

Fig 1: Consort diagram

2.2 Instruments

Data was collected through Google form on demographic variables, sports played, the status of mood, resilience, and self-confidence with the help of 4 tools, 2.2 (a) self-structured Subject data sheet for patients and Check List for Identifying games, 2.2 (b) Brunel Mood Scale a standardized questionnaire having 24 simple mood descriptors, the 24 items comprise the following six subscales: anger, confusion, depression, fatigue, tension, and vigor. 2.2 (c) Adolescent Resilience Scale a standardized self-administered questionnaire having 21 items, designed to measure the resilience of Adolescents, the scale has 3 subscales, Novelty seeking having 7 items, Emotional regulation having 9 items, Positive future orientation having 5 items, and 2.2 (d) Self Confidence Inventory a standardized self-administered questionnaire having 56 items designed to assess the level of self-confidence among adolescents and adults. Approval to conduct the study was obtained from the ethics committee, AIIMS. Permission to conduct the study was obtained from Kendriya Vidyalaya Sangathan. Permission was obtained to use the tools from the copyright authors of each of the three tools, Adolescent Resilience Scale (ARS), Brunel Mood Scale (BRUMS) and Self Confidence Inventory (SCI). Two hundred and five students gave responses to the self-administered tool through online Mood.

3. Results

3.1 The demographic characteristics of selected variables of the study participants are presented in Table 1

Table 1: Socio-demographic characteristics and selected variable of study participants n =164

Demographic variables of the participants	Frequency (%) (mean + SD)[a]	
Age (years)	14.90±1.094[a]	14-18 (Min-Max)
Weight (kgs)	52.07±10.781[a]	30-80 (Min-Max)
Height (cm)	159.81±11.622[a]	105-184 (Min-Max)
Gender		
Male	125 (76.2)	
Female	35 (23.8)	
Sports activity		
Athlete	82 (50)	
Non-Athlete	82 (50)	
	Athlete n = 82	**Non-Athlete n =82**
Age (years)	14.90±1.096[a]	14.89±1.100[a]
Weight (kgs)	52.00±10.625[a]	52.15±10.974[a]
Height (cm)	159.93±11.885[a]	159.70±11.424[a]
Gender		
Male	81 (98.8)	44 (53.7)
Female	1 (1.2)	38 (46.3)
Family type		
Extended type	18 (22)	22 (26.8)
Nuclear type	50 (61)	47 (57.3)
Single parent	14 (17.1)	13 (15.9)
Father's Occupation		
Government employee	43 (52.4)	44 (53.7)
Private job	18 (22)	15 (18.3)
Shop and market sales worker	3 (3.7)	3 (3.7)
Day labor	1 (1.2)	1 (1.2)
Army/police	8 (9.8)	8 (9.8)
Others	9 (11)	11 (13.4)
Mother's occupation		
Government employee	9 (11)	9 (11)
Private job	6 (7.3)	7 (8.5)
Housewife	65 (79.3)	64 (78)
Others	2 (2.4)	2 (2.4)
Education of HOF		
Professional or Honours	8 (9.8)	4 (4.9)
Graduation or Post Graduation	37 (45.1)	39 (47.6)
High school or intermediate or diploma	27 (32.9)	26 (31.7)
Illiterate or primary school	10 (12.2)	13 (15.9)
Occupation of HOF		
Legislators, senior officials and managers	74 (90.2)	72 (87.8)
Professionals	1 (1.2)	3 (3.7)
Technicians and associate professionals	4 (4.9)	-
Clerks	2 (2.4)	2 (2.4)
Services workers and shop and market sales workers	-	3 (3.7)
Skilled agricultural and fishery workers	-	1 (1.2)
Unemployed	1 (1.2)	-
Monthly Income		
>32050	46 (56.1)	55 (67.1)
16020-32049	16 (19.5)	12 (14.6)
12,020-16,019	13 (15.9)	7 (8.5)
8,010-12,019	5 (6.1)	4 (4.9)
4,810-8,009	1 (1.2)	3 (3.7)
< 1,60	1 (1.2)	1 (1.2)

Abbreviations: HOF = Head of the Family

As given in Table 1, the mean age of the study participants was 14.90±1.094 years with a mean height of 159.81±11.622 and a mean weight of 52.07±10.781. Out of 164 participants, 76.2% were males and 23.8% were females. The total population of the study participants was 205 out of which 164 were taken as a sample for the study, out of 164, 82 were athlete students and 82 non-athlete students were matched with athlete students. The mean age in years in the athlete group was 14.90±1.096 and in the non-athlete group was 14.89±1.100 with the mean height and weight being 52.00±10.625 and 159.93±11.885 in the athlete group and 52.15±10.974 and 159.70±11.424 in the non-athlete group. Out of 82 students in the athlete group, 62.2% were in ninth grade and 37.8% were in eleventh grade whereas in the non-athlete group, a little less than half (46.3%) were in ninth grade and the rest (53.7%) were in eleventh grade. In the athlete group, 98.8% of students were male and 1.2% were females and in the non-athlete group 53.7% of students were male and 46.3% were female. In athlete students 61% and in non-athlete students 57.3% were

from nuclear families whereas 17.1% of athletes and 15.9% of non-athletes were from single-parent families. 52.4% of student's fathers were government employees in the athlete group as compared to 53.7% in the non-athlete group. In both groups, 1.2% of student's fathers were working as day laborers. In the athlete and non-athlete groups respectively 79.3% and 78% of mothers were housewives. In athlete students, 45.1% and in non-athlete students 47.6% head of the family were either graduate or post-graduate and 12.2% in the athlete group and 15.9% in non-athlete group's head of the family were illiterate. Occupation wise 90.2% in the athlete group and 87.8% in the non-athlete group's head of the family were Legislators, senior officials and managers and only 1.2% in the athlete group's head of the family were unemployed. A little more than half (56.1%) in the athlete group and (67.1%) in the non-athlete group family were earning more than Rupees 32,050/- per month and only 1.2% family in both groups were earning less than Rupees 1,600/- per month. Only 7.3% of students in both groups were the only child in the family rest all the students had either one or more siblings.

Table 2: Comparison of mean score of status of mood of athlete and non-athlete students n =164

Status of mood	Athlete	Non athlete	p-value
Mood	**Mean±SD**	**Mean±SD**	
Anger	4.10±3.69	3.85±3.41	0.5130
Confusion	4.39±3.38	5.05±3.41	0.1996
Depression	3.80±3.4	3.05±2.90	0.1578
Fatigue	4.50±3.98	4.35±2.92	0.9944
Tension	4.41±3.41	5.5±3.67	0.8097
Vigor	9.89±3.79	8.77±4.10	0.0037*

(Wilcoxon signed rank test, p≤ 0.05)

From Table 2 it was observed that the only significant statistical difference between athlete and non-athlete students was found in the vigor component of mood at the value of p=0.0037 and there is no significant statistical difference in anger, confusion, depression, fatigue and tension component of mood between athlete and non-athlete students at p≤ 0.05.

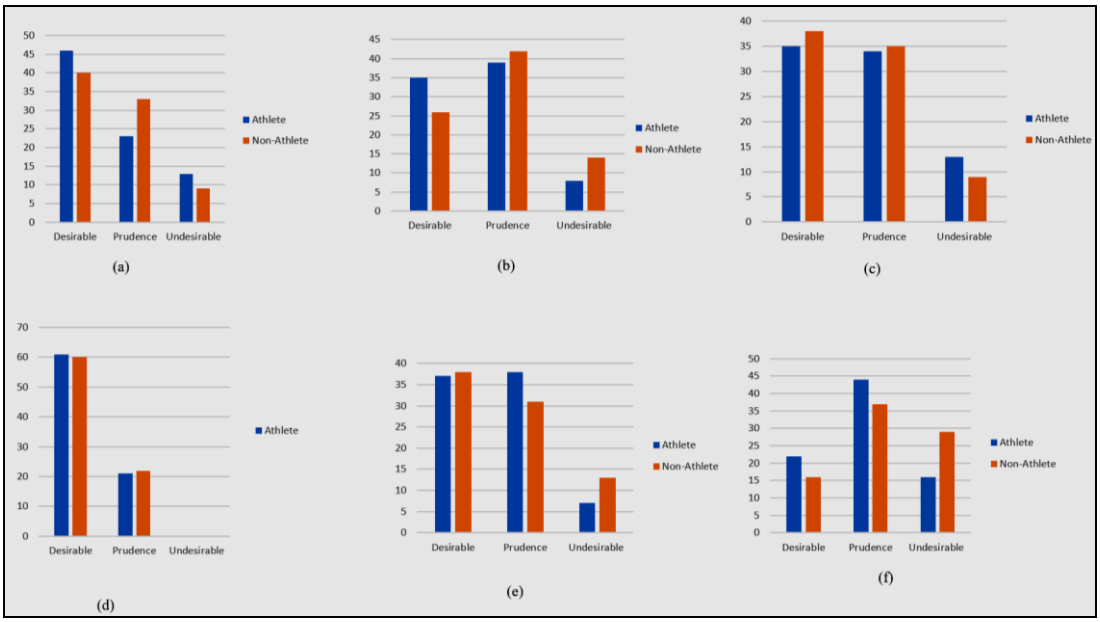

Fig 2: Graphical representation of (a) Status of anger (b) Status of confusion (c) Status of depression (d) Status of fatigue (e) Status of tension (f) Status of vigour, among Athlete and Non-athlete students

Table 3: Comparison of mean scores of the status of resilience of athlete and non-athlete students n =164

Status of resilience	Athlete	Non athlete	p-value
Resilience	**Mean±SD**	**Mean±SD**	
Novelty seeking	3.65±0.44	3.56±0.61	0.3759
Emotional regulation	3.25±0.60	3.16±0.54	0.7635
Future orientation	3.87±0.69	4.04±0.72	0.0794
Total	3.52±0.37	3.51±0.44	0.3263

(Paired t-test, p≤ 0.05)

Table 3 shows the comparison of status of resilience (measured by the Adolescent Resilience Scale) between athlete and non-athlete students and it was found that there is no statistical significance difference in the status of the resilience of athlete and non-athlete students at p≤ 0.05.

Table 4: Comparison of mean scores of status of self-confidence of athlete and non-athlete students n =164

Status of self-confidence	Athlete	Non athlete	p-value
Confidence	**Mean±SD**	**Mean±SD**	
	-0.13±0.99	-0.11± 0.98	0.9484

(Wilcoxon signed rank test, p≤ 0.05)

Table 4 shows comparison of the status of self-confidence (measured by self-confidence inventory) between athlete and non-athlete students and there was no significant statistical difference in the self-confidence level between athlete and non-athlete students at $p \leq 0.05$.

4. Discussion

The present study was conducted with the aim to assess and compare the status of mood, resilience, and self-confidence of athlete and non-athlete students (between 14-18 years) in Delhi NCR. The finding revealed that there is no significant difference between athlete and non-athlete students' mood, resilience, and self-confidence except in the vigor component of mood. This might be because the study was conducted during the COVID-19 pandemic when all the schools were closed and students were home-confined as a result of which the real data may be hidden. In the present study, vigor was higher in the athlete group of students. This result is consistent with the previous study done by, Sandro Legey *et al*. (2017) [8], Ricardo Brandt *et al*. [9], Shetav Darvishi *et al*. [10], Martin D. Hoffman [11], Pedro L. Valenzula *et al*. [12] and Peter C Terry *et al*. [13]. The present study also reported no significant difference in all other five components of mood states the result of which of consistent with Franco Noce *et al*. (2106) [7]. The athlete group in the present study had a higher level of depression may be due to home isolation and this result is consistent with the previous work done by Scott Graupensperger *et al*. (2020) [14] and Robert Stanton *et al*. (2021) [15] whose result had shown athlete students had shown higher depression symptoms during home confinement. In the present study anger among athlete students was also higher and this result was consistent with previous work of Maryam Malekashahi *et al*. [16] and Marco Aurelio Monteiro Peluso *et al*. [17] The reason of increase anger could be that athlete students have learned anger as a part of their role as reported in a study done by Vahid Ziaee *et al*. [18] and previous study done by J P Maxwell *et al*. [19] that states anger rumination and provocation were significantly associated with athlete anger behavior. Previous studies have also reported that athletes who engage in sports interpret their anger as facilitative as debilitative and their anger helps them to energize behavior and channel physical and mental resources for skillful execution [20]. The mean score of tension and fatigue were nearly equal for both the groups in the study as during lockdown students consumed increased amounts of carbohydrates, their sleep quality decreased and their sleeping patterns significantly changed, students screen times also increased for online activities.

Athletes are expected to have high resilience as they have to deal with the stress of competitions and the pressure of being the best in their respective fields and mental strength, the athlete students let themselves afloat when others sink and this is the product of their training and experience but it is also an exercise of faith and hope moreover due to their constant physiological active state, athletes are capable of generating and maintaining a helpful degree of optimism. Although in the present study, there was no significant statistical difference found in resilience among athlete and non-athlete students which is consistent with the previous study done by Khumukchum Suchitra Devi *et al*. [21] and Shahla Gharedaghi Boghrabadi *et al*. [22] the reason for this could be that any sports activity demands certain expectations of athletes affecting their resilience and this situation could be similar to the expectations in normal life. Hence, psychological factors, such as the resilience of non-athletes also can be changed and be similar to the resilience of athletes also the present study was done when athlete students were home confined, as well as training and sports competitions were withdrawn. The prolonged inactivity impact and lack of in-person interactions among teammates and coaches had negatively affected athletes. Novelty seeking and emotional regulation were reported higher in athlete students the reason could be that athlete students have hyperthymic temperaments in terms of extroversion, sociability, and activeness [23-25].

The mean score of future orientation was low in athlete students as the society we live in where sports as a profession or career is not given much importance and students are taught to focus more on academics and use sports as leisure activity also socio-environmental influences of coaches, parents, and peers affect athlete motivation, across the athletic career-span [26].

There was no significant statistical difference found in self-confidence among athlete and non-athlete students which was consistent with the study result of Iris Bjorg Birgisdottir *et al*. [27] and Seyedeh Khadijeh Asady *et al*. [28]. This could be because of the family environment, family and social support, or participation in other academic or cultural activities which may help in improving the confidence of students whether participating in sports or not. However, the study result is contraindicatory to the findings of Dr. Govindrao Sadashivrao Martale *et al*. [29] and Mingli Liu *et al*. [30], the reason could be that athlete students on a daily basis face competitiveness which improves their coping abilities which indirectly improves their confidence and a healthy sports environment provides them opportunity to discuss sensitive topics with their peer leaders and coaches, participating in sports also improves leadership skills, decision making and communication abilities of students which make them more independent and confident. As the present study was conducted during the time of the COVID-19 pandemic the results could be because of the home confinement which has affected the real information therefore comparative study can be conducted after the pandemic is over.

5. Conclusion

There were no significant differences found between athlete and non-athlete students it was noteworthy that the vigor dimension of mood was higher in athlete students. The school authorities and parents must pay attention to the fact that the inclusion of physical activities should be made mandatory at all levels. Participation in purposeful physical activities and sports activities improves control of mind, focus on any goals, and concentration to perform any job and provides an excellent opportunity to learn skills that can help them in making positive as well as effective decisions.

6. Conflict of interest

There is no conflict of interest.

7. Ethical clearance

Taken from the Institutional Ethical Committee.

8. Funding

Self-funded by the author.

9. Implications

Physical activity and physical education could be integrated into the school curriculum so that students could be active on a daily basis. There is a need to give academic recognition for participation in sports activity. In terms of marks and credits as an internal assessment, which can boost the total marks in the final mark sheets of students participating in sports activities. Through Information, Education and Communication families can be involved to encourage girls to participate in sports activities, and healthcare workers can create awareness through community programs about the benefits of participating in sports. Health professionals need to collaborate with local schools and local authorities to work together to disseminate scientific knowledge about the benefits of sports participation on the overall development of students and also discuss the mental health benefits of sports participation and dispel the myth that sports participation decreases academic performance.

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