

Survey on Participation in Sports

Group 14

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Abstract

A survey was conducted to better understand the participation of IITH students in sports. The survey asked students about the various sports they play and their previous experiences. It further asked about their involvement in clubs, impact of academics and possible reasons that might affect their participation. The survey also asked their opinion on esports.

Method

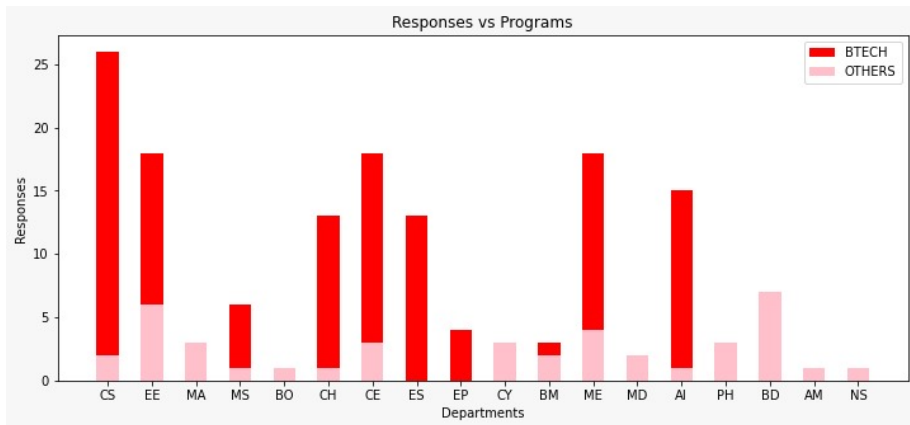
The data required for the project was collected by conducting a survey. Data collection was done in two ways :

- Surveying the students on sports ground
- Rolling out a Google form by mail to the IITH community.

We have received a total of 228 responses.

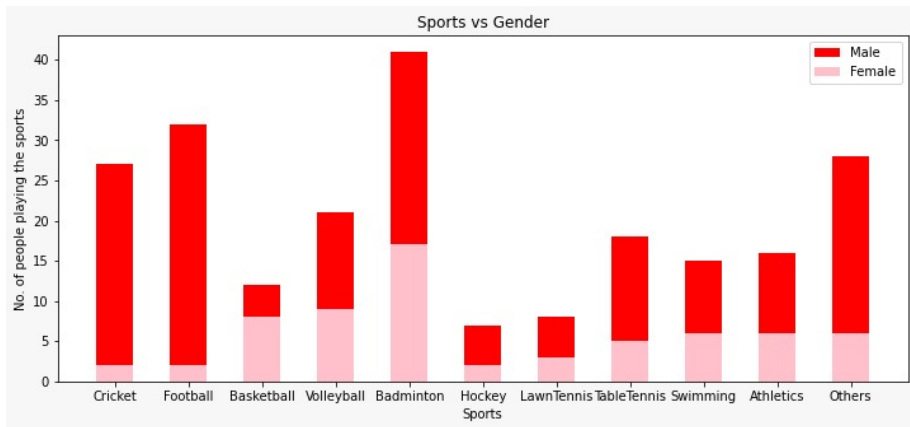
Participants Demograph

Out of the 228 responses received, 173 ($\approx 76\%$) were from males and the remaining 55 responses (24 %) were from females. The distribution of students according to their departments and programs is shown in the graph below.



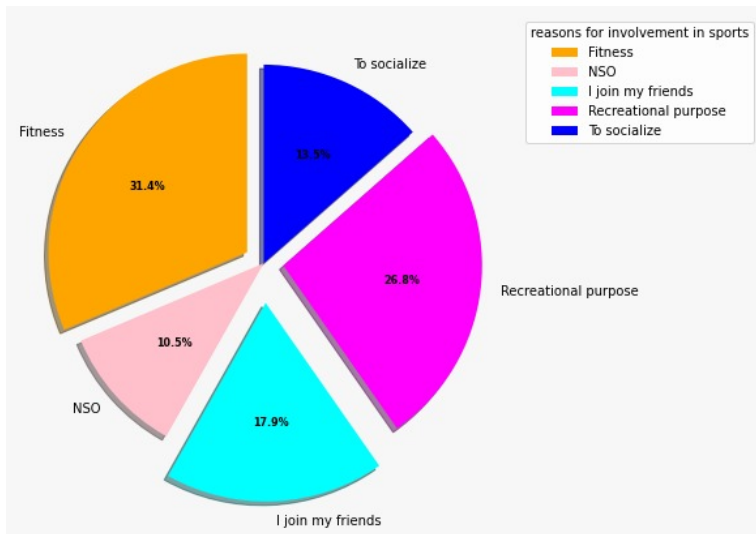
Findings

- Majority of the students ($\approx 61.1\%$) who filled out the form were not part of NSO.
- Badminton was the most played sport followed by board games and sports like cricket, football and volleyball.



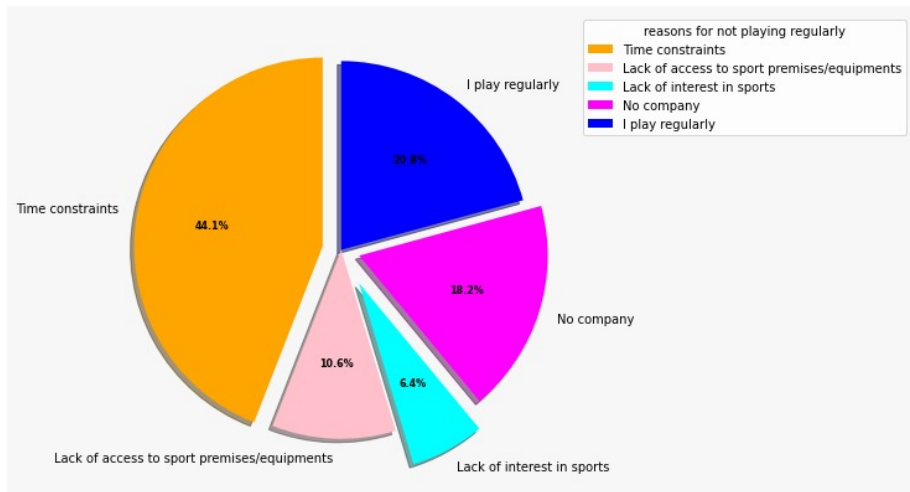
Findings Cont.

- Reasons for involvement in sports



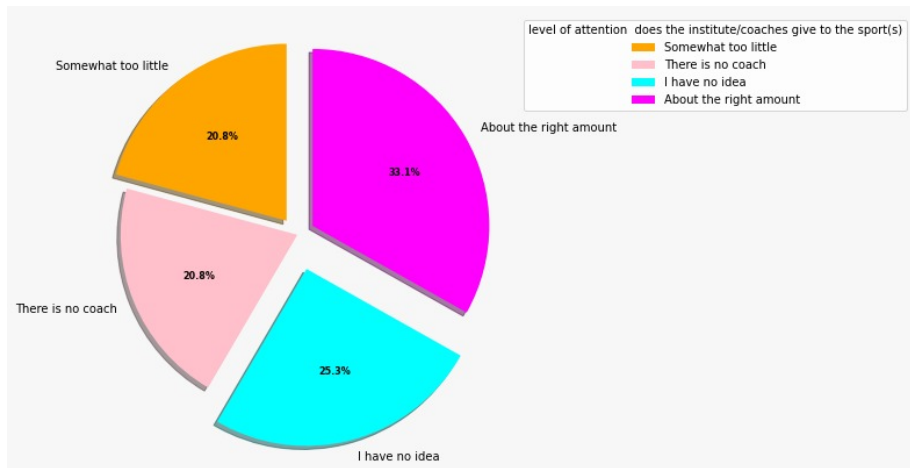
Findings Cont.

- Reasons for lack of involvement in sports



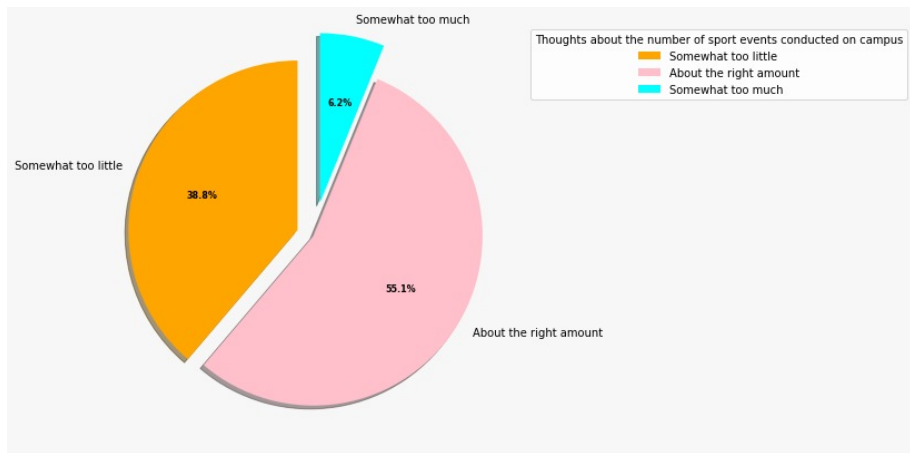
Findings Cont.

- Level of attention the institute/coaches give to the sports



Findings Cont.

- Opinion that number of sports events conducted on campus are adequate

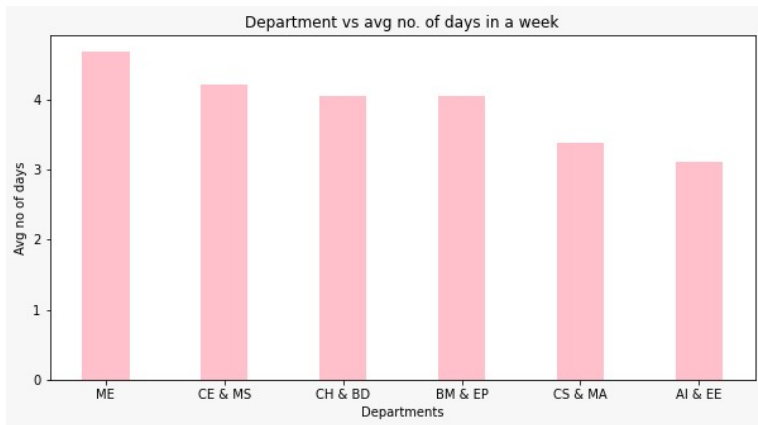


Factors affecting participation

- Majority of the students ($\approx 56.3\%$) opine that their involvement in sports is highly affected by **exams and deadlines**. Other reasons like Physical exhaustion and Internships have also been mentioned by 25.8% of the students
- Participation is also affected by club activities.

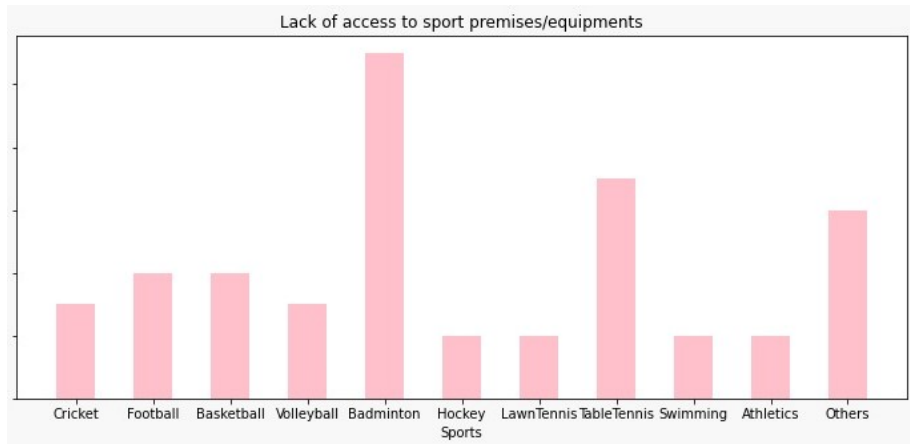
Key Findings

- It was seen that regular participation of students in sport related activities had a direct affect on their performance in inter-departmental tournaments.
- The trend in the graph below was also observed in final standings.



Findings Cont.

- We found that badminton had the highest proportion of people who wanted to play the sport, but were not able to because of lack of equipment.



Findings Cont.

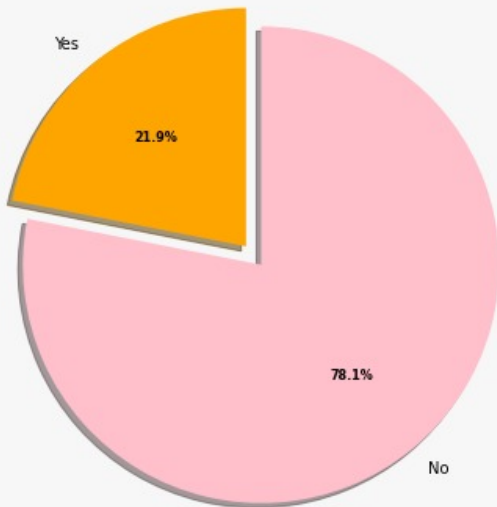
- Out of the surveyed population, 22.8% actively play videogames. Using this, we estimate, with 95% confidence, the proportion p of all IITH students that play videogames. Following the calculations shown below, we can be 95% confident that between 17.4% and 28.2% of IITH students play videogames.

$$0.228 \pm 1.96 \sqrt{\frac{0.228(1 - 0.228)}{228}}$$
$$0.228 \pm 0.0544 = (0.1736, 0.2824)$$

Do you play E-sport?

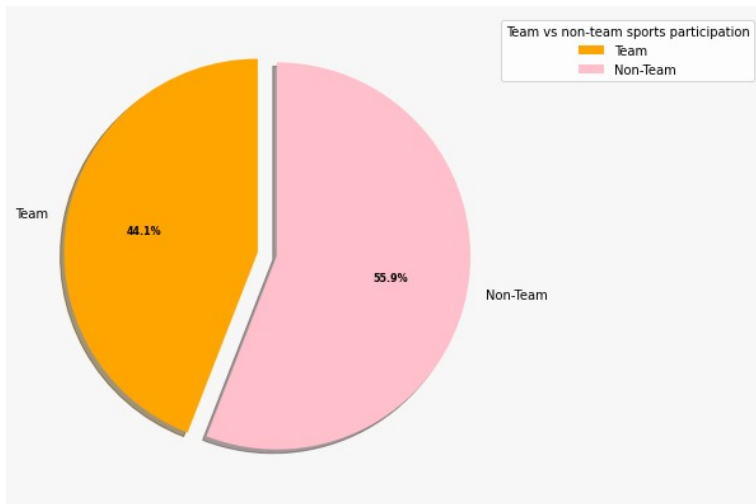
Yes

No



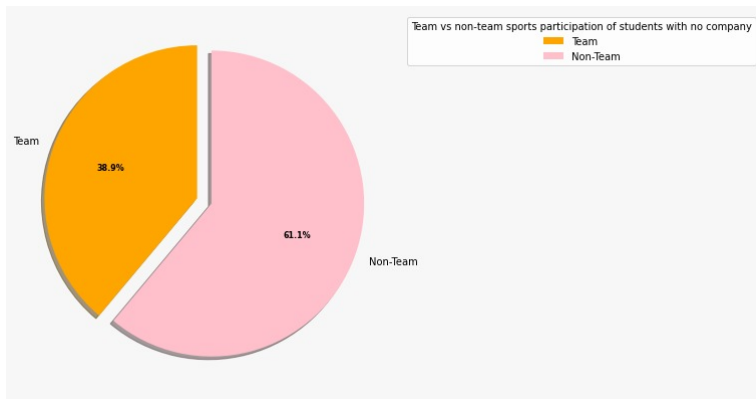
Findings Cont.

- It was also found that a larger proportion 56% of the surveyed population preferred non team sports to team sports.



Findings Cont.

- Analyzing another reason for students not playing sports regularly, we observed that, among the students who stated “No company”, the percentage of playing non-team sports is higher (around 61%) than the population.



Inferences

- The average number of days an NSO player plays, is greater than that of a non-NSO player.

Hypothesis Testing

$$H_0 : \mu_{\text{NSO}} - \mu_{\text{non-NSO}} \leq 0$$

$$H_a : \mu_{\text{NSO}} - \mu_{\text{non-NSO}} > 0$$

Given $\bar{x}_{\text{NSO}} = 4.048$, $\bar{x}_{\text{non-NSO}} = 2.92$, $S_{\text{NSO}} = 1.93$, $S_{\text{non-NSO}} = 2.24$.

Taking $\alpha = 0.05$, $n_1 = 83$ and $n_2 = 81$.

Since $\frac{1}{2} \leq \frac{S_{\text{NSO}}}{S_{\text{non-NSO}}} < 2$, $S_{\text{NSO}} \approx S_{\text{non-NSO}}$, the sample standard deviations are of a similar size, the pooled estimate of the common population standard deviation s_p is,

$$s_p = \sqrt{\frac{(n_1 - 1)S_{\text{NSO}}^2 + (n_2 - 1)S_{\text{non-NSO}}^2}{n_1 + n_2 - 2}} = 2.092$$

Test statistic t is given by :

$$t = \frac{(\bar{x}_{\text{NSO}} - \bar{x}_{\text{non-NSO}}) - 0}{s_p \sqrt{\frac{1}{n_1} + \frac{1}{n_2}}} = 3.434$$

$$t_{\alpha, n_1 + n_2 - 2} = t_{0.05, 162} = 1.6543$$

Since $t \geq t_{\alpha, n_1 + n_2 - 2}$, we can reject H_0

We can infer that NSO students are more regular relatively because students usually join NSO out of love for the game.

Inferences cont.

- The participation of girls in sports is less than that of boys. This can be proved by comparing the average number of days of play.

Hypothesis Testing

$$H_0 : \mu_b - \mu_g \leq 0$$

$$H_a : \mu_b - \mu_g > 0$$

Given $\bar{x}_b = 3.803$, $\bar{x}_g = 3.036$, $S_b = 2.24$, $S_g = 2.18$.

Taking $\alpha = 0.05$, $n_1 = 173$ and $n_2 = 55$.

Since $\frac{1}{2} \leq \frac{S_g}{S_b} < 2$ and $S_g \approx S_b$, the sample standard deviations are of a similar size, the pooled estimate of the common population standard deviation s_p is,

$$s_p = \sqrt{\frac{(n_1 - 1)S_b^2 + (n_2 - 1)S_g^2}{n_1 + n_2 - 2}} = 2.233$$

Test statistic t is given by :

$$t = \frac{(\bar{x}_b - \bar{x}_g) - 0}{s_p \sqrt{\frac{1}{n_1} + \frac{1}{n_2}}} = 2.218$$

$$t_{\alpha, n_1 + n_2 - 2} = t_{0.05, 226} = 1.6516$$

Since $t \geq t_{\alpha, n_1 + n_2 - 2}$, we can reject H_0 .

Thus, we can conclude that the average number of days of play for girls is less than that of boys. Even from our observation during the survey, we noticed that there were less number of girls in the ground.

Inferences cont.

- The average number of days of play for an NSO player is greater than 2.

Hypothesis Testing

$$H_0 : \mu \leq 2$$

$$H_a : \mu > 2$$

We have, $\bar{x} = 4.05, s = 1.937, \mu_0 = 2$.

Taking $\alpha = 0.05$ and $n = 83$.

Test statistic z is given by :

$$t = \frac{(\bar{X} - \mu_0)}{S/\sqrt{n}} = \frac{4.05 - 2}{1.9/\sqrt{83}} = 9.631$$

$$t_{\alpha} = t_{0.05} = 1.96$$

Since $t \geq t_{\alpha}$, we can reject the null hypothesis H_0 .

Since the students involved are expected to attend at least 2 NSO sessions per week, the average number of days of play can be concluded to be greater than 2.

$$\therefore \mu > 2$$

Inferences cont.

- The population variances for NSO and non-NSO players would be different, with the variance for non-NSO players being larger.

Hypothesis Testing

$$H_0 : \sigma_1^2 \geq \sigma_2^2$$

$$H_a : \sigma_1^2 < \sigma_2^2$$

Using Rejection Region Approach (one Tailed test),
Test statistic is given by:

$$F = \frac{S_{\text{NSO}}^2}{S_{\text{non-NSO}}^2}$$

Here, $S_{\text{NSO}}^2 = 3.859$ and $S_{\text{non-NSO}}^2 = 5.6722$,

$$F = 0.62$$

Now, $df_{\text{NSO}} = n_1 - 1$ and $df_{\text{non-NSO}} = n_2 - 1$, where, $n_1 = 83$ and $n_2 = 89$.

$$\alpha = 0.05$$

$$F_{(1-\alpha, df_{\text{NSO}}, df_{\text{non-NSO}})} = 1.25$$

Since we have $F \leq F_{(1-\alpha, df_{\text{NSO}}, df_{\text{non-NSO}})}$, we can reject our null hypothesis.

Since it is mandatory for the students involved in NSO to attend 2 NSO sessions per week, we can expect less variance in the number of days in the weeks they play.

Inferences cont.

- Previous experience (playing for > 5 years) in sports appears to increase the proportion of students playing it for fitness.

Hypothesis Testing

$$H_0 : \pi_1 - \pi_2 \leq 0$$

$$H_a : \pi_1 - \pi_2 > 0$$

where π_1 denote the proportion of students playing for fitness with previous experience and π_2 denote that with little or no experience. Using Rejection Region Approach (one Tailed test),

From the data,

$$\pi_1 = \frac{73}{95}$$
$$\pi_2 = \frac{88}{133}$$

The test statistic is,

$$Z = \frac{\hat{\pi}_1 - \hat{\pi}_2}{\sqrt{\frac{\hat{\pi}_1(1-\hat{\pi}_1)}{n_1} + \frac{\hat{\pi}_2(1-\hat{\pi}_2)}{n_2}}} = 1.790328$$

Since $Z(= 1.79) \geq z_{0.05}(= 1.645)$, we can reject the null hypothesis.

we conclude that previous experience (playing for > 5 years) in sports appears to increase the proportion of students playing it for fitness.

Thank you for listening!