



RAYAT SHIKSHAN SANSTHA'S

SADGURU GADAGE MAHARAJ COLLEGE, KARAD



CLASS: B.Sc. III (STATISTICS)

YEAR 2021-22

PROJECT TITLE

ANALYSIS OF SPORT STUDENTS

Submitted By

Sr. No.	Name of Student	Roll No.
1	Miss. Chavan Shital Amresh	759
2	Miss. Gharal Sayali Dattatray	764
3	Miss. Kumbhar Bharati Raghunath	780
4	Miss. Mulani Anisa Ashpak	785
5	Miss. Patil Rasika Bhagawan	793
6	Miss. Pawar vijaya sanjayrao	798

Under the Guidance of

Miss.Kadam.S.L

Department of Statistics

RAYAT SHIKSHAN SANSTHA'S

SADGURU GADAGE MAHARAJ COLLEGE, KARAD

CERTIFICATE

Department of Statistics

This is to certify that has successfully completed the project on, the study of “**Analysis of sport students**” for the partial fulfillment of Bachelor of Science degree in Statistics, under my supervision as per rules and regulations of Shivaji university, Kolhapur during the academic year **2021-2022** and submitted the same. This work represents bonafide work of these students.

Sr. No.	Name of Student	Roll No.
1	Miss. Chavan Shital Amresh	759
2	Miss. Gharal Sayali Dattatray	764
3	Miss. Kumbhar Bharati Raghunath	780
4	Miss. Mulani Anisa Ashpak	785
5	Miss. Patil Rasika Bhagawan	793
6	Miss. Pawar vijaya sanjayrao	798

Teacher in charge

Examiners

Head,

Department of statistics

(S.G.M. college, karad)

INDEX

Sr.no.	Title	Page No.
1	Introduction	4
2	Acknowledgement	5
3	Preface	6
4	Objectives	7
5	Data Collection Methods	8
6	Statistical Tools	9
7	Graphical Representation	10-15
8	Data Analysis	16-21
9	Conclusion	22
10	Reference	23
11	Questionnaire	24-26
12	Data Coding	27-30

INTRODUCTION

This survey is intended to provide information about sport students and to create awareness of impacts of some factors like overtraining, injury etc, on students life.

Sport is a topic of great interest throughout generations. For many, it is an opportunity to keep the body and mind in a fit condition and also to settle their career. In this project we find out various fractures related to sport students.

This present survey under taken during march 2022 through the questionnaire being prepared under the guidance of concerned teaches. The data of 138 sports students of S.G.M .college, karad. Has been collected using goggle forms for students. The link of goggle form is https://docs.google.com/forms/d/1McXssSEZk9Kh6xliCIVLn5il-e1gVAhuzAsgb1ls1Kg/viewform?edit_requested=true

ACKNOWLEDGEMENT

We have great pleasure in presenting this report of successful completion of our project viz. **“Analysis Of Sport Student”**.

I take this opportunity to express our deepest sense of gratitude to my guide Miss. Kadam of statistical department, S.G.M. college, karad, for granting us permission to undertake this project and for constant encouragement, guidance and inspiration without we could not have completed this task.

We would like to extend our sincere thanks to Smt. Mahajan S.V.(Head of Department of Statistics), Dr. Mrs. Patil, S.P., Smt. Jadhav S.A. and Miss. Kadam S.L. for their guidance and kind cooperation in this project.

Last but not the least friends and classmates who directly or indirectly helped us in the completion of this project also oblige us.

PREFACE

We take pleasure in introducing before you the project untitled “**Analysis Of Sport Student**”. In this project we study the factors associated with sport students. By using project sense student would know better how to apply statistical techniques in various fields.

We would like to express our sincere thanks towards Miss. Kadam S.L. and for valuable guidance and providing facilities.

We are thankful to all the teaching, post-graduate Students and non-teaching staff of department of statistics for valuable discussion during completion of project.

OBJECTIVES

- To study the proportion of males and females involving in sport.
- To find out the level at which most student's are reached.
- To analyse how does sport impact on student's studies.
- To find out which type of injury students have faced.
- To study the proportion of Gender and use of diet pills.
- To study independence of Gender and affect of overtraining on health.

Data Collection Method

This study is done on primary data. The data is taken from Abhijit Patangrao Kadam Sports Complex, S.G.M. College, Karad. with the help of Mrs. Vidya Patil madam. The total data collected from S.G.M. College, Karad. is 138.

Sampling method

We have decided to take the samples from Abhijit Patangrao Kadam Sports Complex considered normal population. We have used the simple random sampling without replacement method.

1) Sample size determination:-

$$n = \frac{n_0}{1 + \frac{(n_0 - 1)}{N}}$$

Where, $n_0 = \frac{Z^2 \alpha/2 pq}{d^2}$

$$n_0 = \frac{(1.96)^2 \times 0.5 \times 0.5}{(0.05)^2}$$

$$n_0 = 384.16$$

Now,
$$n = \frac{n_0}{1 + \frac{(n_0 - 1)}{N}}$$
$$= \frac{384.16}{1 + \frac{(384.16 - 1)}{216}}$$
$$= 138$$

Statistical Tools

1. Graphical representation:

- ❖ Pie-Chart
- ❖ Simple Bar Diagram
- ❖ Multiple Bar Diagram

2. Testing of hypothesis:

- ❖ Test of proportion of equality
- ❖ Test of independent for attribute

Statistical Software:

- MS-EXCEL
- R-Software

GRAPHICAL

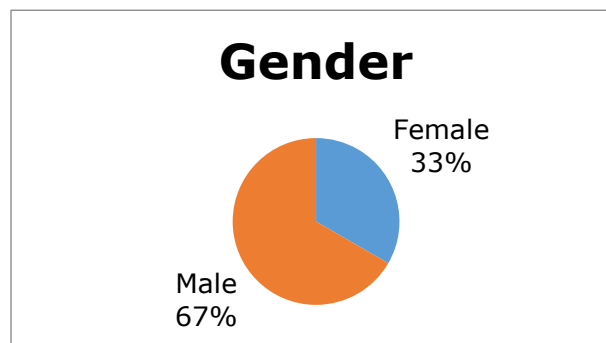
REPRESENTATION

1. Pie Chart

➤ Gender Observation Table:-

Male	Female
92	46

Diagram:-



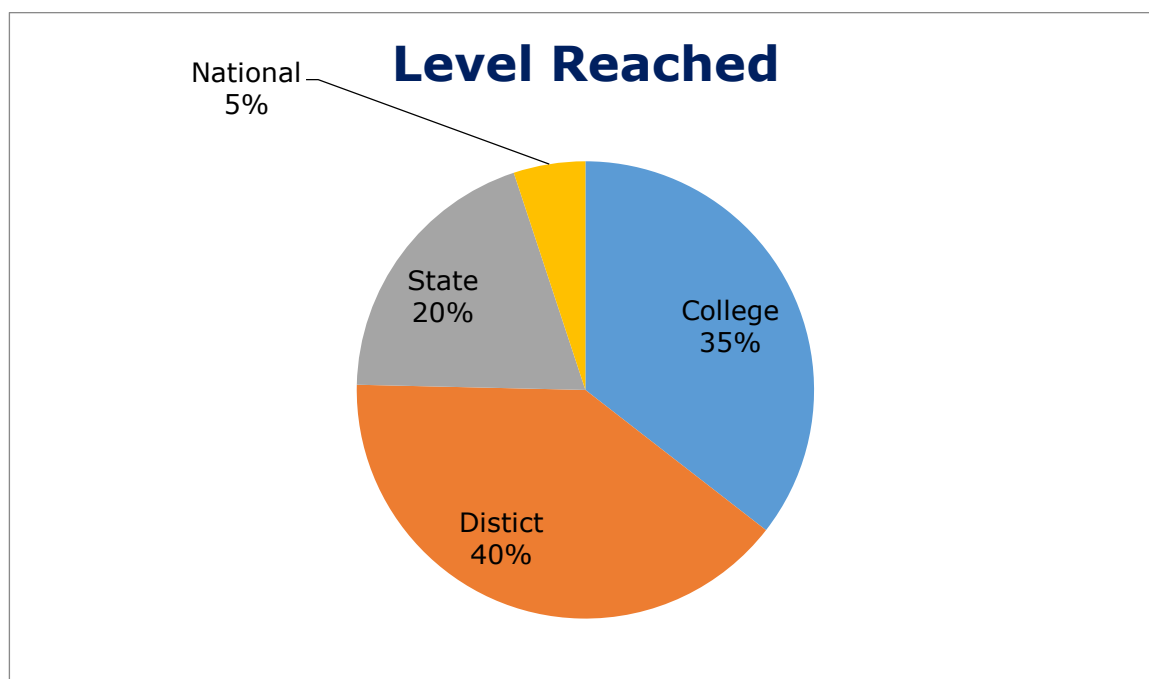
Conclusion:- There is maximum strength of male students in the sport. Hence, we observed that 67% male students and 33% female students involved in the sports.

2. Pie Chart

- Reached level of sport students
Observation Table:-

Level	College	District	State	National
No. of Students	49	55	27	7

Diagram:-



Conclusion:-

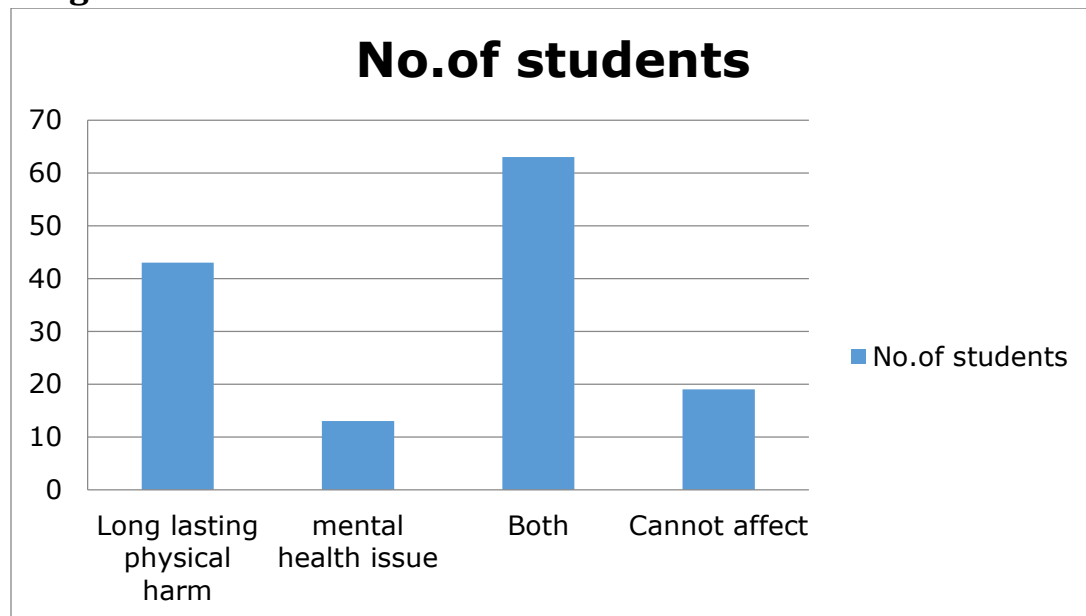
Here we observed that, 40% student have reached District level.

3.Simple bar Diagram

- **Affects of Overtraining on health:-**
Observation Table:-

Affects on health	Long lasting physical harm	Mental health issue	Both	Cannot affects
No. of students	43	13	63	19

Diagram:-



Conclusion:-

We conclude that, maximum no. of students affected by both (long lasting physical harm and mental health issues) due to overtraining.

4. Simple Bar Diagram

➤ Sport impact on studies

Observation Table:-

Impact on studies	Increase in grades	Decrease in grades	No. change in grades
No. of students	80	12	46

R-Program:-

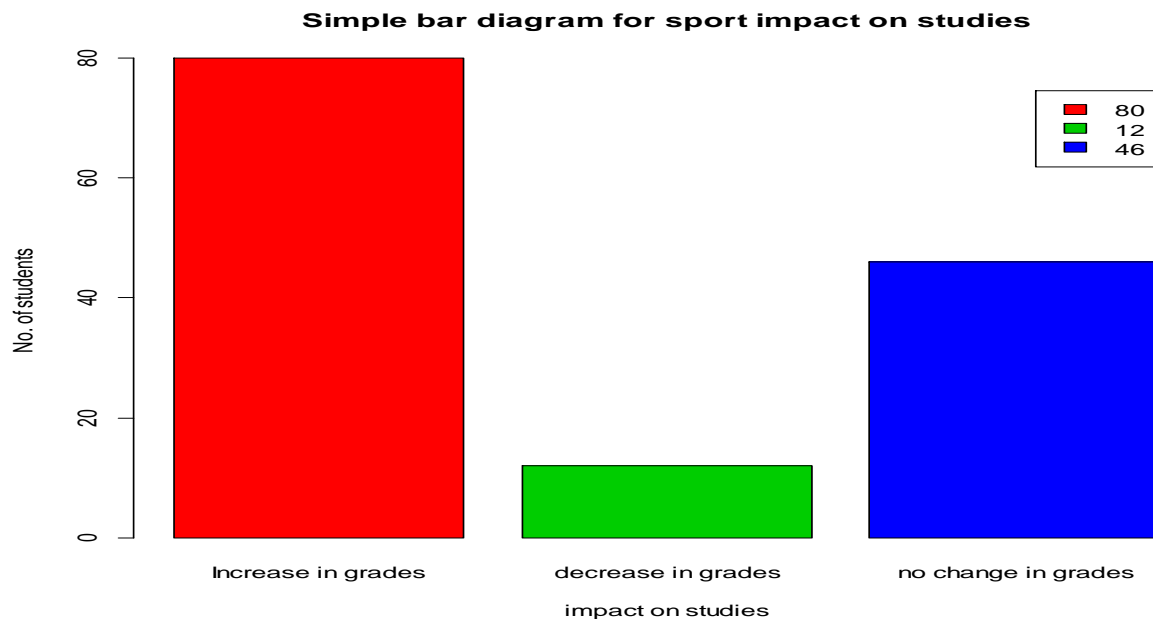
```
>x=c("Increase in grades","decrease in grades","no change in grades");x
```

```
>y=c(80,12,46);y
```

```
>s=barplot(y,xlab="impact on studies",ylab="No. of students",main="Simple bar diagram for sport impact on studies",col=1:3,names.arg=x);s
```

```
>legend(locator(1),legend=y,fill=2:4)
```

Diagram:-



Conclusion:- Here we observed that, maximum no. of students have positively impact (increase in grades) on their studies.

5. Multiple Bar Diagram

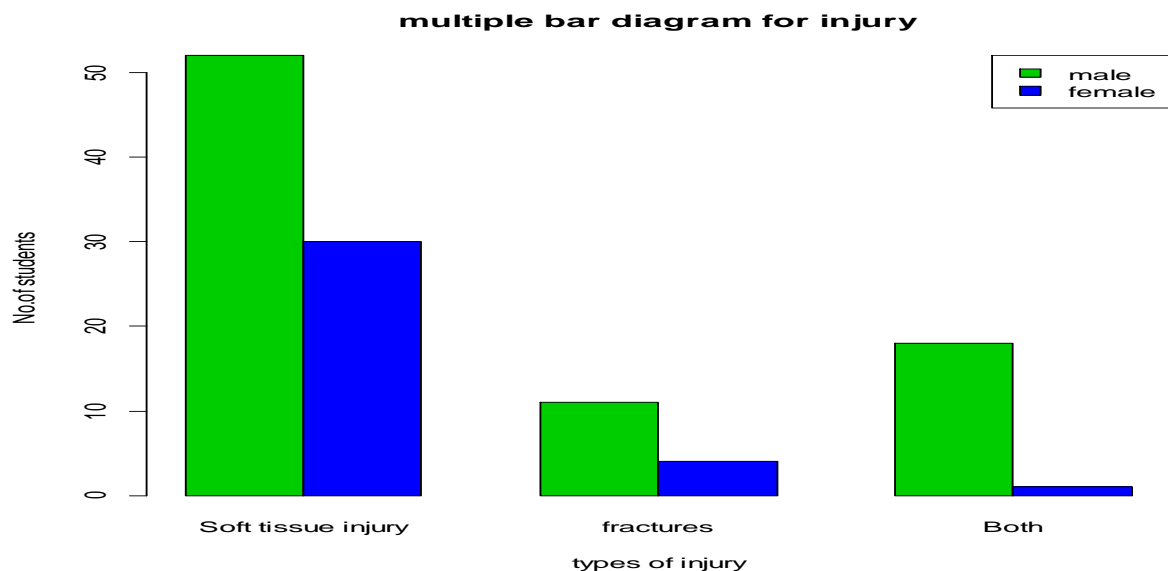
- **Distribution of injuries according to respective types:-**
Observation Table:-

Types of injuries	Soft tissue injury	Fractures	Both
Male	52	11	18
Female	30	4	1

R-diagram:-

```
>x=c("Soft tissue injury","fractures","Both");x  
>m=c(52,11,18);m  
>f=c(30,4,1);f  
>d=data.frame(m,f);d  
>d1=as.matrix(d);d1  
>s=barplot(t(d1),beside=T,col=3:4,names.arg=x,xlab="types of  
>injury",ylab="No.of students",main="multiple bar diagram for  
injury");s  
>legend("topright",legend=c("male","female"),fill=3:4)
```

Diagram:-



Conclusion:-

Here we determined that, maximum no. of students have suffered from soft tissue injury.

TESTING OF HYPOTHESIS

1. Test the proportion of equality

Aim:- To test the proportion of gender and diet pills.

Given:-

Gender	Male	Female	Total
Diet Pills	24	10	34

Hypothesis:-

Ho: There is no significance difference between Male and Female proportion who uses diet pills. i.e. $p_1 = p_2$

H1: There is significance difference between Male and Female proportion who uses diet pills. i.e. $p_1 \neq p_2$

Formulae:-

$$1) P_1 = d_1/n_1$$

$$2) P_2 = d_2/n_2$$

$$3) P = \frac{p_1 n_1 + p_2 n_2}{n_1 + n_2}$$

$$4) Z_{cal} = \frac{p_1 - p_2}{\sqrt{p(1-p)\left(\frac{1}{n_1} + \frac{1}{n_2}\right)}}$$

Where,

d_1 = No. of Males who use diet pills

n_1 = Total no. males in given data

d_2 = No. of Females who use diet pills

n_2 = Total no. of Females in given data

Calculation:-

n_1	92
n_2	46

P_1 = Proportion of males in the sample

$$P_1 = d_1/n_1$$

$$P_1=0.2606$$

P_2 =Proportion of females in the sample

$$P_2 = d_2/n_2$$

$$P_2=0.2173$$

Test statistics under H_0 is,

$$Z_{cal} = \frac{p_1 - p_2}{\sqrt{p(1-p)(\frac{1}{n_1} + \frac{1}{n_2})}}$$

Now,

$$P = \frac{p_1 n_1 + p_2 n_2}{n_1 + n_2}$$

$$P=0.2463$$

$$Z_{cal} = \frac{p_1 - p_2}{\sqrt{p(1-p)(\frac{1}{n_1} + \frac{1}{n_2})}}$$

$$|Z|_{cal}=0.5598$$

Here,

$$Z_{tab}=1.96 \quad \text{at 5\% level of significance}$$

Result:- Here, $|Z|_{cal} < Z_{tab}$ Therefore,

Therefore, we accept H_0 at 5% level of significance.

Conclusion:-

There is no significance difference between “Gender” and “Use of diet pills”.

2.To test independence of attributes:-

A:Gender

B:Affects of overtraining on health

Aim:-To test independence of “Gender” and “Affects of overtraining on health”.

Observation Table:-

Affects	Male	Female	Total
Long lasting physical harm	29	14	43
Mental health issue	10	3	13
Both	43	20	63
Cannot affect	10	9	19
Total	92	46	138

Hypothesis:-

Ho: The two attribute “Gender” and “Affects of overtraining on health” are independent.

H1: The two attribute “Gender” and “Affects of overtraining on health” are not independent.

Expected value table:-

Affect	Males	Females
Long lasting physical harm	28.6666	14.3333
Mental health issue	8.6666	4.3333

Both	42	21
Cannot affect	12.6666	6.3333

Table For $\sum(\frac{O_{ij}^2}{E_{ij}})$:-

Oij	Pulling Oij	Eij	Pulling Eij	O_{ij}^2/E_{ij}
29	29	28.6666	28.6666	29.3372
14	14	14.3333	14.3333	13.6744
10	13	8.6666	12.9999	13.000
3		4.3333		
43	43	42	42	44.023
20	20	21	21	19.0476
10	10	12.666	12.666	7.8951
9	9	6.3333	6.3333	12.79014
				139.76014

Calculation:-

$$\begin{aligned}
 \chi^2_{cal} &= \sum\left(\frac{O_{ij}^2}{E_{ij}}\right) - N \\
 &= 139.76744 - 138 \\
 &= 1.7674
 \end{aligned}$$

$$\chi^2_{tab} = \chi^2_{(m-1)(n-1)}$$

$$= \chi^2_3$$

$$= 7.8147$$

Result:-

Since, $\chi^2_{cal} < \chi^2_{tab}$ at 5% level of significance.

We Accept H_0 at 5% level of significance.

Conclusion:-

Two attributes “Gender” and “Affects of overtraining on health” are independent.

CONCLUSION

- Most of Males student's are involved in the sports than the Females student's in the college.
- We observed that,40% student's have reached District level.
- We conclude that, maximum no. of students affected by both (long lasting physical harm and mental health issues) due to overtraining.
- We conclude that, maximum no. of students have positively impact (increase in grades) on their studies.
- The maximum no. of students have suffered from soft tissue injury.
- There is no significance difference between "Gender" and "Use of diet pills".
- Two attributes "Gender" and "Affects of overtraining on health" are independent.

References

1) 100 Statistical Test

Gopal K. Kanji

2) Fundamental and mathematical Statistics

S. C. Gupta & V.K. Kapoor

3) Statistical Computing using R-Software

Vishwas R. Pawgi

Questionnaire

Analysis of Sport Student

Q.1) Gender:-

- a) Male

Q.2) Age:-

- a) Below 18 b) 18-21
- c) 21-24 d) Above24

Q.3) In which type of sport you are involved?

- a) Team sport b) Individual Sport
- c) Both

Q.4) Which sport do you represent?

- a) Volley-ball b) Kho-Kho
c) Kabaddi d) Weight lifting
e) Athletics f) Badminton
g) other

Q.5) At what age did you start your sport?

- a) Below 10 b) 10-15
- c) 15-20 d) Above 20

Q.6) At which level you have reached?

- a) College b) District
c) State d) National

Q.7) How many hours in a day you have to practice?

- a) 2-3 hours
- b) 3-4 hours
- c) More than 4 hours

Q.8) How many hours do you sleep?

- a) 5-7 hours
- b) 7-9 hours
- c) More than 9 hours

Q.9) i) Have you ever used diet pills or supplement?

- a) Yes
- b) No

ii) If you used, how it affects on your health?

- a) Improvement in health
- b) Negative impact on health

Q.10) Can physiological diseases be cured with training and sport?

- a) Yes
- b) No

Q.11) i) Have you ever had injury during practice?

- a) Yes
- b) No

ii) If yes, which type of injury you have faced?

- a) Soft tissue injuries
- b) Fractures
- c) Both

Q.12) How does overtraining affect performance?

- a) Negatively affect your performance
- b) Positively affect your performance

Q.13) How does overtraining affect your health?

- a) Long lasting physical harm
- b) Mental health issues like depression, lack of concentration etc.
- c) Both
- d) Cannot affect

Q.14) Do you agree that strong communication skill is necessary as being a sport person?(especially English)

- a) Yes
- b) No

Q.15) Do you win any competition?

- a) Yes
- b) No

Q.16) Can achievements in sports help students improve their grades?

- a) Yes
- b) No

Q.17) How does sport impact on your studies?

- a) Increase in grades
- b) Decrease in grades
- c) No change in grades

Data coding

1: Selected Option

0: Non Selected Option

Q.1	Gender	
Option	Male	Female
Frequency	92	46

Q.2	Age			
Option	Below 18	18-21	21-24	Above 24
Frequency	9	79	44	6

Q.3	In which type of sport you are involved?		
Option	Team sport	Individual sport	Both
Frequency	81	24	33

Q.4	Which sport do you represent?			
Option	Volley-ball	Kho-Kho	Kabaddi	
Frequency	22	21	26	
Option	Weight lifting	Athletics	Badminton	other

frequency	2	16	12	39
-----------	---	----	----	----

Q.5	At what age did you start your sport?			
Option	Below 10	10-15	15-20	Above 20
Frequency	24	46	62	6

Q.6	At which level you have reached?			
Option	College	District	State	National
Frequency	49	55	27	7

Q.7	How many hours in a day you have to practice?		
Option	2-3 hours	3-4 hours	More than 4 hours
Frequency	81	37	20

Q.8	How many hours do you sleep?		
Option	5-7 hours	7-9 hours	More than 9 hours
Frequency	74	57	7

Q.9 a)	Have you ever used diet pills or supplement?	
Option	Yes	No
Frequency	34	104

Q.9 b)	If you used, how it affects on your health?	
Option	Improvement in health	Negative impact on health
Frequency	33	1

Q.10	Can physiological diseases be cured with training and sport?	
Option	Yes	No
Frequency	53	85

Q.11 a)	Have you ever had injury during practice?	
Option	Yes	No
Frequency	116	22

Q.11 b)	If yes, which type of injury you have faced?		
Option	Soft tissue injuries	Fractures	Both
Frequency	82	15	19

Q.12	How does overtraining affect performance?	
Option	Negatively affect your performance	Positively affect your performance
Frequency	52	86

Q.13	How does overtraining affect your health?	
------	---	--

Option	Long lasting physical harm	Mental health issues like depression, lack of concentration etc,	Both	Cannot affect
Frequency	43	13	63	19

Q.14	Do you agree that strong communication skill is necessary as being a sport person?(especially English)		
Option	Yes	No	
Frequency	112	26	

Q.15	Do you win any competition?		
Option	Yes	No	
Frequency	120	18	

Q.16	Can achievements in sports help students improve their grades?		
Option	Yes	No	
Frequency	123	15	

Q.17	How does sport impact on your studies?		
Option	Increase in grade	Decrease in grade	No change in grade
Frequency	80	12	46