Effect of Age On the Performance of Teenage Male Cricket Players in Regional India

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ABSTRACT

The purpose of the study is to determine the effect of age on teenage male cricket players in regional India. Age is a significant predictor of outcomes in athletes. It has been previously studied in the sport of cricket, but hasn't been researched in India. The study aimed to examine the age of the teenage male cricket players and whether they are willing to go professional in the future. A Survey was conducted to collect the data related to age and desire to go professional. A chi-square test was used to compare the data at various age categories with the hypothesis that the ages 17 years -18 years will have a higher desire of playing a higher level including professional compared to their juniors. The research was based on data of male cricket players between the age of 15 years to 18 years. These age groups were chosen because they are the most promising age category the selectors look at for building a balanced team for the future.

Introduction

Many of the budding athletes have the ability and potential to achieve their goal of going pro in the future. But it is a challenge for the national governing bodies in sports to select the right talent. The Indian Government and the Board of Control for Cricket in India have tasked with analyzing, implementing, and evaluating the national talented Indian athletes to assist the next generation of the Indian cricket team. We hypothesized that the professional playing decision is highly impacted by age. We proposed a method to test which age group shows more desire to go into professional cricket. This is based on the result in Kelly at el, 2022 that was studied in the England cricket professional groups. In Kelly at el, 2022, it was concluded that there is a significant impact on the decision to obtain professional cricket in the older age group when compared with the average national norm age group. In addition, Steingröver at el, 2016 indicated that there was a clear age effect on the National Hockey League in which the older age group has a greater preference to go professional compared to the national norm. In this research paper, we used real data collected from India high school cricket players and we analyzed with rigorous statistical Chi Square method to confirm our hypothesis.

Methods

Sample and Procedure

A comprehensive survey was conducted to gain insights into various aspects of the budding teenage male cricket players. The survey was designed to cover a wide range of topics, including their age, birth month, the level at which they currently play, and if they plan to go professional in the future. The survey was distributed to teenage male cricket players, across different regions, to ensure that the findings would be

representative and valuable. For a detailed list of questions in the survey, please refer to the form link provided in the Appendix.

For collecting the data, specific targeted questions were crafted and a Google form was used to distribute and collect the data. The target audience who took the google form survey were male teenage cricket players between the age of 15 years -18 years who played at various coaching centers around the southern Indian state of Karnataka. The Google form was distributed through social media, and sharing by friends and family members. Around 120 responses were received.

Data Analysis

The method used in this research paper is the chi-square test. This test was used on the different age categories, based on their current level in cricket and if they are willing to go professional in the future. Chi-square is a statistical test used to examine the differences between categorical variables from a random sample in order to judge the goodness of fit between expected and observed results. To calculate the chi- square, we will take the square of the difference between the observed value O and expected value E values and further divide it by the expected value. Depending on the number of categories of the data, we end up with two or more values. Chi-square is the sum total of these values. The purpose of this test is to determine if a difference between observed data and expected data is due to chance, or if it is due to a relationship between the variables. In other words, it tells whether two variables are independent of one another. The result of chi-square essentially summarizes the difference between the frequencies actually observed in a bivariate table and the frequencies we would expect to see if there were no relationship between the two variables. Following Kelly's paper (Kelly, 2022), this paper extends the same topic but at a different geographic location. In particular, we wanted to find the relationship of age groups to the chances of high school cricket team players reaching the national level.

$$\chi^2 = \sum ((O - E)^2)/E$$

Results

The null hypothesis means that there is no significant difference between each category. That is, there is no desire to go professional between each age group category. We expect that players of the ages 17 years -18 years will have a higher chance of playing a higher level including professional and those of the age 15 years – 16 years might not have a high chance.

Now with the data analysis from the Table, the smaller p-value falls within the 16 years old group, then the 17 years old group and 18 years old group is next. This confirmed our hypothesis. The smaller the p-value, it indicates more preference within that group, meaning that group made more diverse decisions toward going professional. From the table, we can conclude that the smallest value of (O-E)^2/E is the highest preference within that group. And the choices are the YES category for deciding to go professional. P-value that is smaller than 0.05 indicates a significant difference within the category, and we reject the null hypothesis and conclude that there is significant difference within each category.

In the 17 years old group table, the p-value is 0.000000000000244 and in the 18 years old group, the p-value is 0.0000000000000030. These are the smallest two p-values in the group which allows us to reject the null hypothesis and conclude that there is a significant difference in the desire to go professional. This could mean that within the age group 17 and 18, these two categories have the highest desire to go professional.

Players from the "all age groups table" that planned to go professional in the future were given a prob-

ability of 1, those who did not plan to go professional were given a probability of 0, and those who were undecided to go professional in the future were given a probability of 0.5. The sum of the points gave the expected values for each age category. The p-value in the table was used as a reference. This p-value is very small suggesting that there is a significant difference between the preferences of each age group.

All the age groups, how many plan to go professional.			
Categories	**Observed**	**Expected**	**(O-E)^2/E**
15 years	20	17	0.5294117647
16 years	24	14	7.142857143
17 years	26	16	6.25
18 years	23	18	1.388888889
Chi-square		65	
p-value		0.0000000000002573496971081110000	

Within the 15 years old group, how many plan to go professional.			
Categories	**Observed**	**Expected**	**(O-E)^2/E**
Yes	12	33.3	13.62432432
No	3	33.3	27.57027027
Maybe	8	33.3	19.22192192
Chi-square		60.41651652	
p-value		0.00000000000008	

Within the 16 years old group, how many plan to go professional			
Categories	Observed	Expected	(O-E)^2/E
Yes	13	33.3	12.37507508
No	7	33.3	20.77147147
Maybe	6	33.3	22.38108108
Chi-value		55.52762763	
p-value		0.00000000000088	

Within the 17 years old group, how many plan to go professional			
Categories	Observed	Expected	(O-E)^2/E
Yes	11	33.3	14.93363363
No	7	33.3	20.77147147
Maybe	6	33.3	22.38108108
Chi-square		58.08618619	
p-value		0.000000000000244	

Within the 18 years old group, how many plan to go professional			
Categories	Observed	Expected	(O-E)^2/E
Yes	14	33.3	11.18588589
No	0	33.3	33.3
Maybe	6	33.3	22.38108108
Chi-square		66.86696697	
p-value		0.0000000000000030	

Discussion

From Steingröver's paper (Steingröver at el, 2016), there was a clear RAE (relative age effect) for the NHL(National Hockey League), but effects were not significant for the NBA (National Basketball Association) or NFL(National Football League). Moreover, there was a significant difference in matches played between birth quartiles in the NHL favoring relatively younger players. There were no significant quartiles by career length effects in the NBA or NFL. Comparing this paper's result with our result suggested that the type of sport is important to derive the relationship between age groups going to professional.

In Kelly's paper, with regards to the immediate timescale, there was a significant difference between the Regional U15 BQ(Birth Quarter) distribution when compared to the National Norms. an increased likelihood of relatively older players being selected, with the highest being BQ1 vs. BQ4. There was also an increased likelihood of relatively older players being selected, with the highest being BQ1 vs. BQ4 for both U17 and U19. In comparison, no senior cohort (i.e., England Lions, England T20, England ODI, and England Test) displayed any significant differences between BQ distributions when compared to the National Norms. Even though we do have a the data for the professional group in our study, our result matched with this study in the sense that the desire to go professional are higher within a certain age group categories (the older age group).

Limitations

The research is based on data of players between the age of 15 years to 18 years. These age groups were chosen because that is the most promising age category the selectors look at for building a balanced team for the future. There is flexibility to procure the data in this age group.The initial aim was to include data from both the male and female cricket players. But due to the lack of availability within the female age categories, conclusions could not be drawn.The response provided by the players might be subject to the personal perspective and therefore can cause some influence on the result. We have tried to minimize this by designing the questionnaire more objectively.

Conclusion

Based on this research, there appears to be a relationship between the age of the teenage male cricket player

and their desire to go professional in the future. The p-value is small within the 16 years age group, followed by the 17 and 18 years age group (smallest). The 17 years age group would have a higher desire of going professional in the future as compared to the other age categories. Future research project will be based on the data of teenage female cricket players of the same age category to help identify the promising female cricket players for the next generation.

Acknowledgments

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