# Association Between Parental Understanding of Pitch Smart Guidelines and Youth Baseball Player Injuries

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**Background:** Injuries continue to rise among youth baseball players despite extensive research into prevention and the availability of throwing guidelines such as Pitch Smart. More research is needed to understand whether adherence to the current guidelines decreases injuries.

**Purpose:** To understand the degree to which parents are aware of the Pitch Smart guidelines, whether parents adhere to the guidelines, and whether adherence results in decreased injuries in youth baseball players.

**Study Design:** Cross-sectional study.

**Methods:** An anonymous, internet-based survey consisting of 44 items was distributed to parents of adolescent baseball players affiliated with various youth baseball organizations across the midwestern United States; 15 items on the survey served as assessment questions of the Pitch Smart guidelines. Absolute and percentage correct scores were calculated and compared by use of a Student *t* test. A chi-square analysis was used to compare discrete data. A binary logistic regression analysis was conducted to determine whether showcase participation predicted player injury.

**Results:** A total of 853 parents completed the survey. The mean ± SD age of the players on whom parents reported was 11.37 ± 3.5 years (range, 6-20 years). Among the cohort, 422 players regularly pitched. Regarding Pitch Smart guidelines, the percentage of correct answers by parents was 55.44% ± 0.3% for a player with a reported injury history and 62.14% ± 0.2% for a player without an injury history ($P = .012$). The number of correct answers was 8.03 ± 4.0 for the group with an injury history and 9.17 ± 3.2 for the group with no history of injury ($P = .004$). Binary logistic regression analysis, which controlled for age, indicated that showcase participation ($P = .001$, $\beta = 1.043 \pm 0.026$, $R^2 = 0.178$) was a significant predictor of player injury.

**Conclusion:** Pitchers are at an increased risk of injury compared with nonpitchers. Parents who are knowledgeable about the Pitch Smart throwing guidelines and actively follow them are significantly less likely to have a child with an injury. Excessive showcase participation is predictive of player injury when the analysis controls for age.

**Keywords:** baseball; adolescent; overuse; risk factors

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Well over 5 million young athletes play organized baseball,[18] and in response to Major League Baseball's 2015 *Play Ball* campaign, participation increased by 7.7% in 2016.[6] Overhead throwing athletes, especially pitchers, frequently experience shoulder and elbow injuries as a result of overuse and fatigue.[3,5,10,15,17] Moreover, approximately 5% of youth pitchers endure an injury that is serious enough to require surgery or force termination from the sport.[5] With increasing participation and an increased rate of injuries,[3,4] there is a heightened need to evaluate whether current prevention strategies are effective and, if not, to implement new, creative ways to mitigate the most common injuries encountered in the sport.

In response to the growing concern about youth baseball injuries, the USA Baseball Medical & Safety Advisory Committee (USA BMSAC) released a statement in 2006 recommending pitch count limits, limited use of breaking

pitches, limited showcase participation, and at least 3 months per year of no baseball or overhead activity.[19] In 2014, Major League Baseball (MLB) and USA Baseball published the Pitch Smart guidelines.[12] These guidelines adjusted the recommended, age-specific pitch count limits published by USA BMSAC and added additional recommendations with regard to risk factors associated with throwing injuries. As of January 1, 2018, a total of 27 major youth baseball organizations were listed as fully compliant with the Pitch Smart guidelines.[12] Undoubtedly, these guidelines have resulted in greater awareness of player safety in youth baseball communities; however, it remains unclear whether adherence to these guidelines results in fewer injuries.

The current literature has focused mostly on the role of coaches and players in injury prevention and not on parents.[1,3,9] Although coaches have a significant influence on player participation, in most cases parents will have a much bigger role in a youth athlete's participation. Most notably, the frequency of showcase participation is often determined by parents rather than coaches. Showcases, or tournaments designed to attract top athletes from across the country to compete, have become an increasingly popular means to access collegiate and professional scouts. These events often consist of consecutive days of maximal effort throwing and are not factored into the Pitch Smart guidelines or usual usage metrics for youth players.

This study aimed to assess parental understanding of the Pitch Smart guidelines, determine whether parents' understanding correlated with player injuries, and evaluate which Pitch Smart recommendations resulted in fewer injuries. Additionally, we sought to determine whether a correlation existed between showcase participation, for which Pitch Smart currently has no recommendation, and player injuries. We hypothesized that adherence to the majority of the Pitch Smart recommendations and limited showcase participation would result in fewer overuse injuries among youth baseball players. We also expected children of parents with a stronger understanding of throwing guidelines to have fewer injuries.

## METHODS

We recruited 4 different youth baseball organizations located in Indiana, Illinois, and Missouri to participate in distributing information about the study and a link to an anonymous 44-question web-based questionnaire on SurveyMonkey (see the Appendix). The participating organizations were asked to share the information and the link with parents via email or by posting on their website. Because all data were collected in a deidentified manner, informed consent was not required. The study was approved through the appropriate institutional review board.

The initial 5 questions asked about child age, playing position, pitching regularity, whether the child ever experienced a baseball-related injury, and body part injured. Parents could select 8 different body part injuries, which included the shoulder, elbow, hand/wrist, hip, knee, foot/ankle, back/spine, and concussion. Additionally, parents could detail their child's age at time of injury and length of time missed.

Parents were able to select multiple playing positions and could report on up to 3 injuries. If parents had no injuries to report, they were automatically directed to later questions. Subsequent questions focused on pitch counts, pitch count limits, and the Pitch Smart throwing guideline recommendations.[12] In the questionnaire, 15 questions were designed assess the Pitch Smart recommendations. These questions included the words *should* or *recommend*, inferring to the survey taker that a correct answer was desired. Also among the questions were self-report data such as "How many showcases does your child attend per year?" Because Pitch Smart does not include a specific recommendation regarding showcases, a correct answer does not exist.

Participant responses were marked correct or incorrect based on the Pitch Smart recommendations for a player's age, and absolute and percentage correct scores were calculated for individual responses. Because the Pitch Smart recommendations are age specific, responses were grouped by Pitch Smart age brackets ($\leq$8, 9-12, 13-14, 15-18, and 19-22 years), and the data were then pooled. The question about required days rest after throwing 65 pitches did not apply to the $\leq$8 age group, and the question about playing other sports throughout the year did not apply to the 15-18 age group. The questions about innings pitched in a 12-month period and playing other sports throughout the year did not apply to the 19-22 age group. Thus, percentage correct scores for the $\leq$8 and 15-18 age groups were based on 14 questions. The 19-22 age group percentage correct score was based on 13 questions. The remaining age groups had percentage of correct scores calculated out of 15 questions.

### Statistical Analysis

A chi-square analysis was performed for each question to test for a statistically significant difference between parents of players with injuries and those without injuries. A Student $t$ test was performed on questions that were continuous variables, rather than yes or no questions, as this analysis was not redundant. Remaining self-report discrete and continuous variables were analyzed with chi-square and independent Student $t$ tests, respectively. For all statistical comparisons, $P < .05$ was considered statistically significant. Binary logistic regression analysis was performed to determine whether showcase participation, when adjusted for age, affected the odds of experiencing an injury. Parents with missing response data were excluded from analysis. All statistical tests were performed with SPSS statistical software (v 22.0; IBM Corp).

## RESULTS

A total of 853 parents of youth baseball players completed the survey. The mean ± SD age of the cohort was 11.37 ± 3.5 years (range, 6-20 years). Among the cohort, 422 players regularly pitched. The shoulder was the most commonly reported injury, with 30% of parents selecting it as an injury type. Hand/wrist injuries accounted for 22%, and elbow

TABLE 1
Demographic, Team, and Parent Characteristics for Players With or Without Reported Injury[a]

| | Reported Injury (n = 239) | No Reported Injury (n = 614) | Odds Ratio (95% CI) | *P* |
|---|---|---|---|---|
| Age, y | 13.21 ± 3.8 | 10.67 ± 3.1 | — | **<.001** |
| Position | | | | |
| Pitcher | 135 | 287 | 1.47 (1.09-1.98) | **.012** |
| Catcher | 82 | 180 | 1.27 (0.92-1.74) | .14 |
| First base | 74 | 197 | 0.96 (0.7-1.32) | .799 |
| Second base | 69 | 208 | 0.8 (0.58-1.11) | .182 |
| Third base | 78 | 220 | 0.88 (0.87-1.05) | .418 |
| Shortstop | 62 | 226 | 0.61 (0.44-0.85) | **.003** |
| Outfield | 105 | 337 | 0.66 (0.49-0.87) | **.006** |
| Team keeps a pitch count | | | | |
| Yes | 98 | 212 | 1.14 (0.62-2.1) | .67 |
| No | 17 | 42 | | |
| Team has pitch count limits | | | | |
| Yes | 71 | 173 | 0.74 (0.47-1.19) | .211 |
| No | 42 | 76 | | |
| As a parent, do you believe number of pitches thrown affects injury risk? | | | | |
| Yes | 103 | 213 | 0.92 (0.55-1.52) | .738 |
| No | 29 | 55 | | |
| Child plays another position same day as pitching | | | | |
| Yes | 103 | 233 | 0.54 (0.31-0.95) | **.029** |
| No | 27 | 33 | | |
| Consecutive days pitched | 3.82 ± 3.6 | 2.35 ± 2.6 | — | **<.001** |
| Age child began throwing breaking balls, y | 11.40 ± 3.4 | 11.70 ± 2.8 | — | .371 |
| Months of rest from all throwing activities | 2.15 ± 1.9 | 2.84 ± 1.8 | — | **.001** |
| Days of rest after throwing 65 pitches | 2.59 ± 1.6 | 3.06 ± 1.5 | — | **.006** |
| Showcases per year | 8.89 ± 11.1 | 4.31 ± 8.1 | — | **<.001** |
| Parent aware of Pitch Smart guidelines | | | | |
| Yes | 60 | 146 | 0.8 (0.49-1.32) | .378 |
| No | 37 | 72 | | |
| Parent actively follows Pitch Smart guidelines | | | | |
| Yes | 54 | 156 | 0.31 (0.18-0.54) | **<.001** |
| No | 37 | 33 | | |

[a]Data are presented as mean ± SD or No. of participants. A dash indicates no odds ratio reported, as a Student *t* test comparing means was performed. Bolded *P* values indicate statistically significant between-group difference ($P < .05$).

injuries, 17%. More than half of the parents of injured athletes reported that their athlete missed more than 1 month due to injury. Because parents could select that their child played multiple positions, there was some overlap in playing position data.

Significant differences were found between players with a reported injury and those without a reported injury in terms of age, position, playing another position the same day as pitching, consecutive days pitched, months of rest from all throwing activities, days of rest after throwing 65 pitches, number of showcases, and parental adherence to Pitch Smart guidelines ($P < .05$ in all cases) (Table 1). Most notably, parents who actively followed the Pitch Smart guidelines had much lower odds (odds ratio, 0.31; 95% CI, 0.18-0.54; $P < .001$) of having a player with an injury than parents who did not actively follow the guidelines. Binary logistic regression analysis indicated, after adjustment for age, that showcase participation ($P = .001$, $\beta = 1.043 \pm 0.026$, $R^2 = 0.178$) was a significant predictor of player injury. No significant differences were found between groups with respect to teams that kept a pitch count, teams that had pitch count limits, the age a child began throwing breaking balls, or parental awareness of Pitch Smart guidelines ($P > .05$ in all cases) (Table 1).

Among the questions assessing parental understanding of Pitch Smart guidelines, significant differences were noted between injured and noninjured groups for maximum number of pitches a child should throw per game, maximum number of innings a child should pitch in a 12-month period, consecutive days a child should pitch, whether a child should pitch with a tired arm, the amount of rest a child should get after throwing 65 pitches, whether a child should warm up before pitching, and whether it is recommended to participate in multiple sports ($P < .05$ in all cases) (Table 2). Parents of players with injuries consistently reported that children should throw more pitches, pitch more innings, and pitch more consecutive days than did parents of players without injuries. Further, parents who believed that children should pitch when they have a tired arm had greater odds (odds ratio, 2.5; 95% CI, 1.51-4.15; $P < .001$) of having a child with an injury compared with parents who disagreed. Similarly, parents who thought a child should warm up

TABLE 2
Parental Understanding of Pitch Smart Throwing Guidelines: Responses to Assessment Questions[a]

| | Reported Injury | No Reported Injury | Odds Ratio (95% CI) | *P* |
|---|---|---|---|---|
| Should a pitch count be kept? | | | | |
| Yes | 94 | 212 | 0.66 (0.41-1.07) | .089 |
| No | 37 | 55 | | |
| Should a rule limit pitches thrown per game? | | | | |
| Yes | 86 | 193 | 0.71 (0.45-1.12) | .141 |
| No | 45 | 72 | | |
| What is the maximum number of pitches your child should throw per game? | 97.38 ± 37.3 | 80.87 ± 29.5 | — | **<.001** |
| What is the maximum number of innings your child should throw in 12 months? | 177.34 ± 88.5 | 157.69 ± 83.0 | — | **.033** |
| Should your child play catcher the same day as pitching? | | | | |
| Yes | 67 | 138 | 0.97 (0.64-1.48) | .89 |
| No | 64 | 128 | | |
| How many consecutive days should your child be able to pitch? | 3.99 ± 3.7 | 2.63 ± 2.8 | — | **<.001** |
| Should your child ever pitch when he or she has a tired arm? | | | | |
| Yes | 39 | 39 | 2.5 (1.51-4.15) | **<.001** |
| No | 90 | 225 | | |
| What age should your child start throwing breaking balls? | 11.73 ± 3.5 | 12.00 ± 2.8 | — | .419 |
| How much rest each year should your child get from all throwing activities? (months) | 2.58 ± 2.1 | 2.47 ± 1.8 | — | .59 |
| How much consecutive rest each year should your child get from all throwing activities? (months) | 2.11 ± 1.9 | 1.9 ± 1.6 | — | .246 |
| How much rest should your child get after throwing 65 pitches? (days) | 2.78 ± 1.6 | 3.11 ± 1.4 | — | **.039** |
| Should your child warm up before pitching? | | | | |
| Yes | 104 | 248 | 0.27 (0.14-0.52) | **<.001** |
| No | 25 | 16 | | |
| Is it ok to play on multiple baseball teams at the same time? | | | | |
| Yes | 79 | 158 | 1.05 (0.68-1.62) | .825 |
| No | 50 | 105 | | |
| Is it ok to pitch in more than 1 game on the same day? | | | | |
| Yes | 57 | 92 | 1.48 (0.96-2.27) | .077 |
| No | 71 | 169 | | |
| Is it recommended to participate in multiple sports? | | | | |
| Yes | 112 | 251 | 0.34 (0.15-0.73) | **.004** |
| No | 16 | 12 | | |

[a]Data are presented as mean ± SD or No. of participants. A dash indicates no odds ratio reported, as a Student *t* test comparing means was performed. Bolded *P* values indicate statistically significant between-group difference ($P < .05$).

before pitching and should participate in multiple different sports were at much lower odds of having a child with an injury ($P < .005$) (Table 2). No significant difference was found between injured and noninjured groups with respect to whether a pitch count should be kept, whether pitches per game should be limited, whether a child should play catcher the same day as pitching, the age a child should start throwing breaking balls, the number of months of rest a child should get each year from throwing, whether it is appropriate to play on multiple baseball teams at the same time, or whether it is appropriate to pitch in more than 1 game on the same day ($P > .05$ in all cases) (Table 2). Parents who believed it appropriate to pitch in more than 1 game on the same day tended toward having a child with an injury, although this finding was not significant ($P = .077$).

Of the 15 assessment questions, a statistically significant difference was found between parents of an injured player and those of a noninjured player with regard to 5 questions. Parents who correctly answered how many consecutive days their child should pitch, whether their child should pitch when they have a tired arm, how much rest their child should get after throwing 65 pitches, whether their child should warm up before pitching, and whether it was recommended to participate in multiple different sports were at statistically significantly lower odds of having a player with an injury ($P <$ .05 in all cases) (Table 3). The responses to the remaining 10 questions did not show a significant relationship with risk of injury ($P > .05$ in all cases) (Table 3). The overall percentage correct score for parents of a player with a reported injury was 55.44% ± 0.3%, and the percentage correct score for parents of a player without an injury was 62.14% ± 0.2% ($P = .012$). The absolute number of questions correct for the group with a history of injury was 8.03 ± 4.0 and for the group with no history of injury was 9.17 ± 3.2 ($P = .004$).

## DISCUSSION

Despite the fact that the athletes included in this study grew up in the era of Pitch Smart guidelines, 25% to 30% of them still experienced an injury. This is alarming given all of the focus this topic has received in the past 5 to

TABLE 3
Parental Understanding of Pitch Smart Throwing Guidelines: Correct Versus Incorrect Responses[a]

| | Reported Injury | No Reported Injury | Odds Ratio (95% CI) | *P* |
|---|---|---|---|---|
| Parent correctly answered, "Should a pitch count be kept?" | | | | |
| Yes | 94 | 212 | 0.66 (0.41-1.07) | .089 |
| No | 37 | 55 | | |
| Parent correctly answered, "Should a rule limit pitches thrown per game?" | | | | |
| Yes | 86 | 193 | 0.71 (0.45-1.12) | .141 |
| No | 45 | 72 | | |
| Parent correctly answered, "What is the maximum number of pitches your child should throw per game?" | | | | |
| Yes | 71 | 169 | 0.66 (0.43-1.01) | .056 |
| No | 57 | 89 | | |
| Parent correctly answered, "What is the maximum number of innings your child should throw in 12 months?" | | | | |
| Yes | 25 | 61 | 0.91 (0.54-1.55) | .735 |
| No | 84 | 187 | | |
| Parent correctly answered, "Should your child play catcher the same day as pitching?" | | | | |
| Yes | 64 | 128 | 1.03 (0.68-1.57) | .89 |
| No | 67 | 138 | | |
| Parent correctly answered, "How many consecutive days should your child be able to pitch?" | | | | |
| Yes | 70 | 192 | 0.44 (0.28-0.68) | **<.001** |
| No | 56 | 67 | | |
| Parent correctly answered, "Should your child ever pitch when he or she has a tired arm?" | | | | |
| Yes | 90 | 225 | 0.4 (0.24-0.66) | **<.001** |
| No | 39 | 39 | | |
| Parent correctly answered, "What age should your child start throwing breaking balls?" | | | | |
| Yes | 62 | 116 | 1.14 (0.74-1.74) | .56 |
| No | 64 | 136 | | |
| Parent correctly answered, "How much rest each year should your child get from all throwing activities?" | | | | |
| Yes | 35 | 71 | 1 (0.62-1.6) | .989 |
| No | 93 | 188 | | |
| Parent correctly answered, "How much consecutive rest each year should your child get from all throwing activities?" | | | | |
| Yes | 77 | 144 | 1.18 (0.77-1.82) | .443 |
| No | 52 | 115 | | |
| Parent correctly answered, "How much rest should your child get after throwing 65 pitches?" | | | | |
| Yes | 64 | 147 | 0.55 (0.35-0.88) | **.011** |
| No | 55 | 70 | | |
| Parent correctly answered, "Should your child warm up before pitching?" | | | | |
| Yes | 104 | 248 | 0.27 (0.14-0.52) | **<.001** |
| No | 25 | 16 | | |
| Parent correctly answered, "Is it ok to play on multiple baseball teams at the same time?" | | | | |
| Yes | 50 | 105 | 0.95 (0.62-1.47) | .825 |
| No | 79 | 158 | | |
| Parent correctly answered, "Is it ok to pitch in more than 1 game on the same day?" | | | | |
| Yes | 71 | 169 | 0.68 (0.44-1.04) | .077 |
| No | 57 | 92 | | |
| Parent correctly answered, "Is it recommended to participate in multiple sports?" | | | | |
| Yes | 112 | 251 | 0.34 (0.15-0.73) | **.004** |
| No | 16 | 12 | | |
| Percentage correct | 55.44 ± 0.3 | 62.14 ± 0.2 | — | .012 |
| Number correct | 8.03 ± 4.0 | 9.17 ± 3.2 | — | **.004** |

[a]Data are presented as mean ± SD or No. of participants. A dash indicates no odds ratio reported, as a Student *t* test comparing means was performed. Bolded *P* values indicate statistically significant between-group difference ($P < .05$).

10 years. Clearly more work is required to mitigate the risks of injury in youth baseball.

Although the cause of overhead throwing injuries is multifactorial, most research has focused on overuse mechanisms.[5,10,15,16,21] For example, after conducting a survey of 754 pitchers, Yang et al[20] found that those who pitched with arm tiredness or pain had more than a 7 times greater chance of experiencing a pitching-related injury. Furthermore, playing multiple positions and on multiple teams during a single season has been implicated in throwing injuries.[4] Fazarale et al[3] found in a 2012 survey that on average, coaches answered correctly only 43% of questions on pitch counts and rest periods, although 73% of coaches reported following the recommendations, suggesting a lack of understanding, awareness, and compliance.

The principal findings of the current study are as follows: (1) Parents who actively followed the Pitch Smart guidelines had children with a significantly lower risk of injury; (2) parents who demonstrated a stronger understanding of the Pitch Smart guidelines by correctly answering assessment questions were significantly less likely to have a child with an injury; (3) pitchers were at significantly increased risk of injury compared with other positions; and (4) after adjustment for age, showcase participation was a significant predictor of injury.

The notion that pitchers are injury prone is evidenced strongly in the literature,[8,13,14] and our results support this. Although Matsuura et al[14] found that playing catcher put players at a significantly increased risk of injury, our study failed to validate that claim, which is in line with other research.[20] Our results also support prior studies that found age to be a significant risk factor for injury, especially for players older than 12 years.[2,7,8,11] Finally, our data reinforce previous research that initially indicated showcase participation as a risk factor for injury but lacked significance after controlling for other variables.[2,15] In our study, players with injuries participated in more than twice as many showcases as players without injuries, and showcase participation remained a significant predictor of player injury after controlling for player age. This provides stronger evidence than previously reported that showcase participation is a risk factor for player injury and that a formal recommendation on showcase participation is justified. Parents would benefit from a guideline describing the proper number of showcases, the proper amount of play during showcases, and the proper amount of rest following showcases. Further study is necessary to determine the appropriate guideline.

For individuals younger than 18 years, Pitch Smart recommends taking at least 4 months off pitching every year, with 2 to 3 months being continuous. The results of our study illustrate that neither players with nor those without injuries reach this mark, on average. However, players with injuries took less time off from throwing than did the players without injuries (2.15 vs 2.84 months, respectively), a result that was statistically significant. Yang et al[20] did not find pitching for more than 8 months per year to be a significant risk factor for injury; however, our data suggest that months of pitching per year may be a significant risk factor for player injury.

After MLB and USA Baseball published the Pitch Smart guidelines in 2014,[12] it remained unclear whether the recommendations effectively prevented youth baseball injuries. While the Pitch Smart recommendations are based on prior research, no study has been conducted to assess the efficacy of adherence in injury prevention. Moreover, no prior study has assessed parental knowledge of throwing guidelines and the role that parents, in addition to coaches, have in ensuring player safety. Parents without player injuries were significantly more likely to correctly answer questions about pitching consecutive days, pitching with a tired arm, days of rest after throwing 65 pitches, warming up, and playing multiple different sports. Although this may indirectly suggest that these 5 recommendations are the most important in preventing injury, undoubtedly more work in educating parents is required. Finally, the results of the current study demonstrate that parents who actively follow the Pitch Smart guidelines and parents with a greater understanding of the guidelines are significantly less likely to have a child with an injury. Thus, the Pitch Smart recommendations are effective at preventing youth baseball player injuries, and parents who have a stronger understanding of the guidelines are better equipped to protect their child from an injury.

Our study had several limitations. First, the cross-sectional design inherently raises the possibility of recall bias. Second, the survey was disseminated by multiple mechanisms, including email and web-based posting, which makes it impossible to ensure that all responses are directly from parents and not the players themselves. Third, many parents failed to answer every question of the survey, resulting in missing data for several analyses. Nonetheless, the study had enough power to draw statistically significant conclusions, as no variable had fewer than 280 responses.

## CONCLUSION

In this study, parents who were knowledgeable about the Pitch Smart throwing guidelines and actively followed them were significantly less likely to have a child with an injury. Pitching was associated with an increased risk of injury in youth baseball players. Excessive showcase participation was predictive of player injury after adjustment for age.

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## APPENDIX

### Study Questionnaire

1. What is your child's age?


2. What position(s) does your child play?

- ☐ Pitcher
- ☐ Catcher
- ☐ First base
- ☐ Second base
- ☐ Third base
- ☐ Shortstop
- ☐ Outfield

3. Does your child regularly pitch?

- ○ Yes
- ○ No

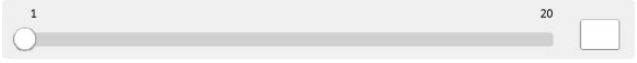
4. Has your child ever had an injury that you attribute to playing baseball?

- ○ Yes
- ○ No

5. Please provide more information on the 3 most significant injuries. What body part was injury #1?

- ○ Shoulder
- ○ Elbow
- ○ Hand/Wrist
- ○ Hip
- ○ Knee
- ○ Foot/Ankle
- ○ Back/Spine
- ○ Concussion

6. What age was your child for injury #1?




7. How long did your child miss from baseball due to injury #1?

- ○ <1 week
- ○ 1-2 weeks
- ○ 2-4 weeks
- ○ 1-2 months
- ○ 3-6 months
- ○ >6 months

8. Does your child have another injury to report?

- ○ Yes
- ○ No

9. What body part was injury #2?

- ○ Shoulder
- ○ Elbow
- ○ Hand/Wrist
- ○ Hip
- ○ Knee
- ○ Foot/Ankle
- ○ Back/Spine
- ○ Concussion

10. What age was your child for injury #2?


11. How long did your child miss from baseball due to injury #2?

- ○ <1 week
- ○ 1-2 weeks
- ○ 2-4 weeks
- ○ 1-2 months
- ○ 3-6 months
- ○ >6 months

12. Does your child have another injury to report?

- ○ Yes
- ○ No

13. What body part was injury #3?

- ○ Shoulder
- ○ Elbow
- ○ Hand/Wrist
- ○ Hip
- ○ Knee
- ○ Foot/Ankle
- ○ Back/Spine
- ○ Concussion

14. What age was your child for injury #3?

1 20

15. How long did your child miss from baseball due to injury #3?

- ○ <1 week
- ○ 1-2 weeks
- ○ 2-4 weeks
- ○ 1-2 months
- ○ 3-6 months
- ○ >6 months

16. Does the team your child plays with most frequently keep a pitch count during games?

- ○ Yes
- ○ No
- ○ I don't know

17. Does the team/league your child plays with most frequently have pitch count limits?

- ○ Yes
- ○ No
- ○ I don't know

18. Do you believe a pitch count *should* be kept at your child's level of play?

- ○ Yes
- ○ No

19. Do you believe there *should* be a rule on the number of pitches your child should be allowed to throw per game?

- ○ Yes
- ○ No

20. Do you believe the number of pitches thrown by your child affects his or her injury risk?

- ○ Yes
- ○ No

21. What is the maximum number of pitches youth baseball pitchers your child's age *should* throw per game?

20 150

22. What is the maximum number of innings your child *should* throw in a 12-month period?

50 300

23. Does your child ever play another position the same day as pitching?

- ○ Yes
- ○ No

24. *Should* your child be able to play catcher the same day as pitching?

- ○ Yes
- ○ No

25. Do you believe playing both pitcher and catcher puts your child at increased risk for an injury versus pitcher and other positions?

- ○ Yes
- ○ No

26. At most, how many consecutive days has your child pitched in a row?

0 10

27. How many consecutive days *should* your child be able to pitch?

0 10

28. *Should* your child ever pitch when he or she has a tired arm?

- ○ Yes
- ○ No

29. At what age did your child begin throwing breaking balls?

6 18

30. At what age *should* your child start throwing breaking balls?

6 18

31. How much rest each year does your child typically get from all throwing activities?

- ○ None, he or she plays year-round
- ○ 1 month
- ○ 2 months
- ○ 3 months
- ○ 4 months
- ○ 5 months
- ○ 6 months or greater

32. How much rest each year *should* your child typically get from all throwing activities?

- ○ None, year-round is ok
- ○ 1 month
- ○ 2 months
- ○ 3 months
- ○ 4 months
- ○ 5 months
- ○ 6 months

33. How much *consecutive* rest each year *should* your child typically get from all throwing activities?

- ○ None, year-round is ok
- ○ 1 month
- ○ 2 months
- ○ 3 months
- ○ 4 months
- ○ 5 months
- ○ 6 months

34. How much rest does your child typically get after pitching 65 pitches in a game?

- ○ 1 day
- ○ 1 days
- ○ 3 days
- ○ 4 days
- ○ 5 days
- ○ 6 days

35. How much rest *should* your child get after pitching 65 pitches in a game?

- ○ 1 day
- ○ 1 days
- ○ 3 days
- ○ 4 days
- ○ 5 days
- ○ 6 days

36. *Should* your child warm up before pitching?

- ○ Yes
- ○ No

37. Is it ok to play on multiple baseball teams at the same time?

- ○ Yes
- ○ No

38. Is it ok to pitch in more than 1 game on the same day?

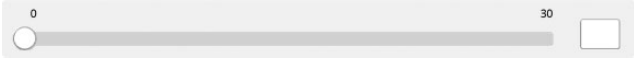
- ○ Yes
- ○ No

39. At your child's age, is it recommended to participate in multiple different sports?

- ○ Yes
- ○ No

40. How many showcases does your child attend per year?


41. How many showcases on average do you believe that players your child's age attend per year?




42. As a parent or coach, are you aware of the USA Baseball throwing guidelines (Pitch Smart) throwing guidelines?

- ○ Yes
- ○ No
- ○ Maybe—it sounds familiar

43. Who do you feel plays the largest role in preventing baseball injuries for your child?

- ○ My child
- ○ Coaches
- ○ Parents (me)
- ○ Doctors/trainers
- ○ Peers

44. If aware of the above guidelines, do you try to actively follow them?

- ○ Yes
- ○ No