Baseball is a great sport, and Little League continues to be one of the premier youth organizations. However in the mid-1990’s (when today’s Little Leaguers were born), we started to notice an alarming increase in serious injuries in adolescent pitchers. For example during the last five years of the 1990’s, 21 of the 190 “Tommy John” surgeries at our center were high school age pitchers or younger; however during the first five years of this decade, 124 of our 627 “Tommy John” surgeries were high school age pitchers or younger. This alarming trend was also happening for other types of pitching injuries.

Anecdotally it’s believed that the rise in injuries is due to increased amounts of pitching at a younger age. To determine if this was true, our American Sports Medicine Institute conducted a series of scientific studies with support and cooperation from USA Baseball, Little League Baseball, and Major League Baseball. We followed hundreds of youth baseball pitchers, and monitored arm problems and potential contributing factors including pitch counts, types of pitches, quality of mechanics, and other factors. The scientific results confirmed that the number of pitches thrown was the most significant contributor to arm problems. Another study compared our young, surgery patients with healthy adolescent pitchers and found that young pitchers who often pitched past the point of fatigue were 36 times more likely to end up on the surgery table. Another risk factor was year-round baseball without sufficient rest (the data suggested at least four months a year away from throwing). Other risk factors included participating in showcases, and throwing with high ball velocity. Of course ball velocity is valuable for all pitchers, but we believe that there is too much emphasis on ball speed instead of on quality of mechanics, speed variation, and control, in today’s “radar gun” generation. Details about these scientific studies can be found at asmi.org.

Little League Baseball has been the leader in recognizing the rise in injuries and has taken dramatic steps to make baseball safe for young players. Some issues – such as showcases and participation in independent traveling teams – may be beyond Little League’s control, but Little League has embraced the pitch count research and boldly altered their rules. We applaud Little League for their continued effort to insure that their game is as safe and enjoyable as possible for you and your children.

James R. Andrews, M.D.  Glenn S. Fleisig, Ph.D.
ASMI Medical Director  ASMI Research Director
GOAL OF THE LITTLE LEAGUE PITCH COUNT REGULATION:

PROTECTING PITCHERS’ ARMS

In 2007, Little League Baseball changed its decades-old pitching rules, making the actual number of pitches delivered the deciding factor in determining eligibility in the baseball division.

This publication, “Protecting Young Pitching Arms: The Little League Pitch Count Regulation Guide for Parents, Coaches and League Officials,” is provided at no charge via the Internet to local Little League programs worldwide. The goal of this publication is to reach as many parents and volunteers as possible, so that everyone will know the benefits and their responsibilities in making this regulation work.

Inside, you’ll find helpful questions and answers about the regulation, as well as the regular season regulation and the rule to be used in the International Tournament. It also includes great advice from respected medical professionals on the care and conditioning of the pitching arm, and the best ideas from the thousands of Little League volunteers who have successfully used “pitch counts” in their local Little Leagues in the past.

Pitchers in all divisions of Little League, from age 7 to 18, now have specific limits for each game, based on their age. The number of pitches delivered in a game will determine the amount of rest the player must have before pitching again.

“Little League has a rich history of pioneering baseball safety innovations,” said Stephen D. Keener, president and chief executive officer of Little League Baseball and Softball. “As the world’s largest organized youth sports program, Little League is proud to take a leadership position in youth sports safety.”

There are about 2.3 million players in the baseball divisions of Little League worldwide. There are nearly 400,000 female softball players, but the regulations do not apply to softball.

For all of Little League Baseball’s history, and for the history of amateur youth baseball in general, pitching regulations have used innings pitched to determine pitcher eligibility. Recently, researchers and medical professionals in the field of sports medicine have been working to determine if the actual number of pitches thrown (i.e., pitch count) is a better way to regulate pitching in youth baseball.

Most notable among those calling for pitch counts has been Dr. James R. Andrews, M.D., medical director at the American Sports Medicine Institute (ASMI) in Birmingham, Ala. Dr. Andrews is the world's foremost authority on pitching injuries and ulnar collateral ligament reconstruction, or, as it is better known, “Tommy John surgery.” The ASMI and the USA Baseball Medical and Safety Advisory Committee have worked closely with Little League to create the guidelines for the new regulation.

“This is one of the most important injury prevention steps ever initiated in youth baseball by the leader in youth baseball,” Dr. Andrews said. “It is certain to serve as the youth sports injury prevention cornerstone and the inspiration for other youth organizations to take the initiative to get serious about injury prevention in youth sports. I am proud that our American Sports Medicine Institute and USA Baseball can play a small role in this important initiative.”

Little League is the first national youth baseball organization to institute a pitch count. The Little League International Board of Directors approved the measure unanimously at a meeting on Aug. 25, 2006, two days before the conclusion of the Little League Baseball World Series.

“This is the right time to make this change,” Mr. Keener said. “We call upon all youth baseball organizations, including travel leagues, to implement their own pitch count programs in the interest of protecting young pitching arms. Our goal continues to be to educate everyone, particularly parents and coaches, on the potential injuries that can occur from throwing too many pitches.”
In 2005 and 2006, Little League conducted a Pitch Count Pilot Program to determine the feasibility of implementing a regulation limiting the number of pitches a Little Leaguer can throw in a day, and the rest required before pitching again. Fifty leagues were studied in 2005, and nearly 500 signed up for the program in 2006.

“Surveys of those leagues showed the overwhelming majority were able to implement a pitch count without any problems,” Mr. Keener said. “They also found that they were able to develop other pitchers who might not have otherwise ever taken the mound. And they found that their pitchers were stronger at the end of the season.”

Regulations for tournament play (all-stars) are similar, but with some modifications. Little League also continues to explore other pitching-related issues, such as the use of breaking pitches.

“While there is no medical evidence to support a ban on breaking pitches, it is widely speculated by medical professionals that it is ill-advised for players under 14 years old to throw breaking pitches,” Mr. Keener said. “Breaking pitches for these ages continues to be strongly discouraged by Little League, and that is an issue we are looking at as well. As with our stance on pitch counts, we will act if and when there is enough medical evidence to support a change.”

Little League International is taking part in a five-year study on breaking pitches by Little League pitchers. The study is being conducted by the University of North Carolina and is supported by the Yawkey Foundation.

The following slides come from a presentation by Dr. James Andrews for Little League the whole presentation can be found at http://www.littleleague.org/Learn_More/rules/pitchpresentation.htm
Purpose of This Presentation

- To bring emphasis and awareness to the increasingly serious injuries to the throwing arm in youth and high school baseball players

- Our goal is not to emphasize our surgical treatment, but to:
  - Bring attention to the alarming increase in injuries in this young age group
  - Understand the inherent risk factors
  - Hopefully help prevent these serious injuries

- We would like share with you our research related to youth baseball injury prevention

UCL “Tommy John” Surgeries have also increased dramatically

[Bar chart showing the increase in UCL surgeries from 1995-1998 (HS = 9), 1999-2002 (HS = 61), and 2003-2006 (HS = 148)]
Injuries in Youth Pitchers

Q: Frequent questions from parents, coaches, & doctors:
   - “How many pitches should my child be allowed to throw?”
   - “How old should my child be before learning the curve ball?”
   - “Can a pitcher’s mechanics cause or prevent injury?”

A: No one really knows!

Epidemiology

• 1996 survey for USA Baseball
  - 28 orthopaedic surgeons and baseball coaches
• 1997-1998 study
  - 200 pitchers each Spring (300 total subjects)
  - 8 – 12 year old pitchers in Birmingham
• 1999 study funded by USA Baseball
  - 500 pitchers in Spring
  - 9 – 14 year old pitchers throughout Alabama
• Current study
  - Annual follow-up of 1997-1999 pitchers
  - Investigate relationship between cumulative pitching patterns and the need for surgery
From these ASMI epidemiology studies, the USA Baseball Medical & Safety Advisory Committee has made the following recommendations and position statements on Youth Baseball Pitching Injuries

Summary of Findings

Pitch count limits

<table>
<thead>
<tr>
<th>Age</th>
<th>Max. Pitches / Game</th>
<th>Max. Pitches / Week</th>
</tr>
</thead>
<tbody>
<tr>
<td>8 - 10</td>
<td>50</td>
<td>75</td>
</tr>
<tr>
<td>11 - 12</td>
<td>75</td>
<td>100</td>
</tr>
<tr>
<td>13 - 14</td>
<td>75</td>
<td>125</td>
</tr>
<tr>
<td>15 - 16</td>
<td>90</td>
<td>2 games / week</td>
</tr>
<tr>
<td>17 - 18</td>
<td>105</td>
<td>2 games / week</td>
</tr>
</tbody>
</table>
Summary of Findings

• Ages to learn types of pitches (recommended by USA Baseball Medical & Safety Advisory Committee)
  – Fastball 8
  – Change-up 10
  – Curveball 14
  – Knuckleball 15
  – Slider 16
  – Forkball 16
  – Splitter 16
  – Screwball 17

• Safeguard recommendations
  – Breaking pitches should not be thrown in competition until bones have matured (indicated by puberty). The correct answer to give a coach or parent is “not until the player has started to shave” (Joe Chandler, team physician – Atlanta Braves)
  – Develop proper mechanics as early as possible, include more year-’round physical conditioning as the body develops
  – Pitchers should not be allowed to return to the mound in a game in which he/she has already been removed as the pitcher
Summary of Findings

- Safeguard recommendations
  - Pitchers especially should be discouraged from participating in “showcases” due to risk of injury
  - Pitchers should be discouraged from pitching for more than one team in overlapping seasons
  - Pitchers should not compete in baseball more than nine months in any given year. For at least 3 months, he/she should not participate in any throwing drills or any other stressful overhead activities (football quarterback, softball, competitive swimming, javelin throwing, etc.)
Conclusions

1. The #1 contributor to serious injury for a young pitcher is **pitching while fatigued**.

- Safeguard recommendations:
  - Limit pitch counts per game.
  - Require rest days.
  - Discourage overlapping teams.
  - Encourage at least 3 months/year away from baseball.
  - The above rules are just a framework, as kids vary. **Best recommendation: common sense!**
Conclusions

USA Baseball / ASMI Recommendations - 2004

<table>
<thead>
<tr>
<th>Age</th>
<th>Pitches/game</th>
<th>Pitches/week</th>
<th>Pitches/year</th>
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<tbody>
<tr>
<td>9-10 years old</td>
<td>50</td>
<td>75</td>
<td>2000</td>
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<tr>
<td>11-12 year olds</td>
<td>75</td>
<td>100</td>
<td>3000</td>
</tr>
<tr>
<td>13-14 year olds</td>
<td>75</td>
<td>125</td>
<td>3000</td>
</tr>
</tbody>
</table>

Little League Baseball Rules - 2007

<table>
<thead>
<tr>
<th>Age</th>
<th>Game pitches</th>
<th>Rest days</th>
</tr>
</thead>
<tbody>
<tr>
<td>9-10</td>
<td>75 pitches/day</td>
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<tr>
<td>11-12</td>
<td>85 pitches/day</td>
<td>1</td>
</tr>
<tr>
<td>13-16</td>
<td>95 pitches/day</td>
<td>2</td>
</tr>
</tbody>
</table>

Travel Team Limits - ???

Dr. James Andrews

ASMI
www.asmi.org
American Sports Medicine Institute