Arm Injury Prevention

It is the intention of Babe Ruth Calgary (BRC) to provide players, parents, and coaches with the most up to date information around arm care for all players and particularly pitchers. Implementing a quality pitching development program requires a sound injury prevention protocol to keep pitchers on the field. Much of the following information comes from the MLB Pitch Smart website. Their mandate is to provide:

"A series of practical, age-appropriate guidelines to help parents, players and coaches avoid overuse injuries and foster long, healthy careers for youth pitchers."

The following chart represents BRC's pitch count guidelines and days of rest for pitchers which will avoid overuse of arms. The league daily and 4-day cumulative maximums are *rules* and are accompanied by coach suspensions if they are not followed. These numbers were arrived at through discussions by the league technical directors and members of the BRC board of directors.

13-14 Year Olds		**15-18 Year Olds**	
# of Pitches	**# of Days of Rest**	**# of Pitches**	**# of Days of Rest**
1-20	0 Days of Rest	1-30	0 Days of Rest
21-35	1 Day of Rest	31-45	1 Day of Rest
36-50	2 Days of Rest	46-60	2 Days of Rest
51-65	3 Days of Rest	61-75	3 Days of Rest
66+	4 Day of Rest	76+	4 Days of Rest
95	A-League MAX 1-Day & 4-Day cumulative	95	AA League MAX 1-Day & 4-Day cumulative
		105	AAA League MAX 1-Day & 4-Day cumulative

*****Once a pitcher realizes maximum arm workload, it can take up to 72 hours of rest to deal with the amount of lactic acid build up and micro-destructions at the blood supply level. Days' rest should be calendar days*****

-The pitcher, once they have reached their 1-day or 4-day maximum, can finish the batter and then needs to be removed from the game

-Cumulative pitch counts over four (4) consecutive days will also be subject to the pitch count maximums for each age group:

A League: maximum 95 pitches over 4 consecutive days

AA League: maximum 95 pitches over 4 consecutive days

AAA League: maximum 105 pitches over 4 consecutive days

Additional Recommendations:

1. A pitcher should not pitch 3 consecutive days.

2. A pitcher can NOT pitch and catch in the same day.

3. Pitch counts are cumulative regardless of program (Travel teams included).

4. Pitcher cannot be removed from the mound and return to the mound later in the same game.

5. No pitcher should pitch more than the recommended maximum for his age group within 4 a 4 day period.

6. Pitchers can finish the first game of a double header and start the second game of the double header on the mound, but coaches need to be aware that the break between games should not be longer than 20-30 minutes (or the equivalent of a long offensive inning).

7. It is the head coach's responsibility to remove a pitcher from a game. Pitchers typically do not want to come out of a game and relying on a pitcher to be honest about his level of fatigue is not a reliable method for determining when to go to the bullpen. Look for signs such as:
-The ball being throw consistently up in the strike zone
-A shortened stride (indicating fatigue in the lower body)
-Alterations in delivery and mechanics
-Taking long breaks between pitches

Sports science reveals that there are different stages of development for pitchers which should be adhered to. At younger ages (9-12 yrs. Best skill development age for males) pitchers should be mainly concerned with the proper mechanics of throwing. As players get older the focus can shift to the development of secondary pitches and developing arm strength and velocity.

75 pitches is generally regarded as the average workload where fatigue sets in (obviously subject to individual variability) and lactic acid begins to build up. Coaches need to be aware, however, that a pitcher throwing a large number of pitches in 1 inning (≥ 30 pitches) can build up high amounts of lactic acid as a result of no rest between innings. This is to say that a big inning should be taken into consideration when determining at what point a pitcher should be relieved. General body fatigue should be considered when determining the appropriate time to remove a pitcher as a decrease in lower body strength will result in greater stress on the throwing arm.

Throwing in between games is also different for each pitcher. An example of a schedule which would allow a maximum loaded pitcher optimal recovery after pitching might be:

Day 1 Off

Day 2 Warm up/Some Long Toss/Non-demanding Positional Play (1B/EH)/Band work

Day 3 Warm up/Short light Bull Pen/Positional play

Day 4 Warm up/Long Toss/Positional play/Band work

Day 5 Pitch: in-game

** This schedule does not allow for players who wish to play catcher.

In order to reduce lactic acid in the player's system and improve recovery time, pitchers should follow a regimented cool down process after leaving the mound. After finishing his work in a game or bullpen, pitchers need to increase their heart rate in order to promote blood flow and "flush" out the lactic acid that builds up in their body. This is accomplished by running and more specifically *sprinting*. Remembering that pitchers are power athletes (one max effort repetition – delivering a pitch – followed by rest and then another max effort repetition), they should train like power athletes. Pitchers should NOT jog following games or bullpens, but should complete a series of sprints. It is recommended that pitchers sprint 90 feet and jog back to their starting position. They would complete 12-15 sprints of this nature. Pitchers can incorporate long, slow distance training to improve cardiovascular strength during the off-season.

After sufficient running has been completed, icing of the affected areas should be encouraged. Icing will reduce inflammation and therefore assist in recovery. Reduced swelling will allow for optimal blood flow during the recovery process. Ice should be compressed on the desired areas rather than just laid on the surface. Elbows should be iced for 10 minutes on and 10 minutes off for 40 minutes. Shoulders can be done for 20 minutes on and 20 minutes off for the same time period. The more pitches thrown the longer the icing period should be.

Sound mechanics are essential in providing reduced chance of injury. Pitchers most employ their entire body to throw. Lower body and core muscles must work synergistically with the upper body in order to experience less fatigue and have greater accuracy. The teaching of skill development must include proper pitching mechanics on a regular basis.

As well as regular skill development during the season, off-season development should also be made available for those players who want it. Weekly sessions in a controlled environment with knowledgeable instructors are currently available and have proven to be very effective.