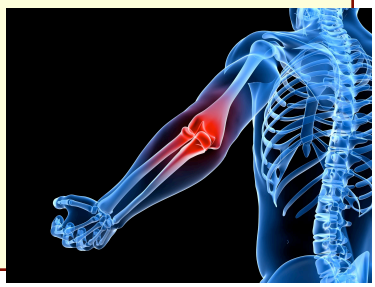
NEWSLETTER

Youth Baseball Arm Injuries

Arm fatigue and number of pitches shown to be leading risk factors

Signs & Symptoms of Injury

- Arm pain with throwing
- Decreased throwing speed
- Decreased ability to locate pitches
- Shoulder or elbow pain
- Arm fatigue or soreness that does not subside with rest



PROBLEM:

Baseball is a sport with a high number of youth participants. Overall injury rates for baseball are low[1], however, as leagues outside of traditional school and other large organizations have increased, so have the numbers of injuries. Traumatic injuries happen in any sport, and complaints of mild pain or soreness are common, but of concern are the overuse injuries that occur especially with pitchers. Risk of shoulder or elbow injury to pitchers is 2.6 times greater than the risk for a position player[1]. Almost 15% of youth pitching appearances result in elbow or shoulder pain[2].

Fleisig et al[3] conducted a study in which 481 youth pitchers (age 9-14) were followed for 10 years to determine the cumulative incidence of serious injury resulting from pitching in youth and adolescent baseball. Serious injury was considered elbow surgery, shoulder surgery or retirement from baseball due to throwing injury. The authors of this study determined that 5% or 1 in 20 players sustained a serious injury. This study did not report data on more minor injuries that may have required medical attention but did not result in surgery or retirement, therefore it is suspected that the incidence of injury is significantly higher. Key points from this study are:

- Pitching more than 100 innings per year increases the risk of injury 3.5x
- Inconclusive results regarding the relationship between age that an athlete begins throwing breaking pitches and injury.
- Playing catcher appeared to double or triple a pitcher's risk for injury, but the data was inconclusive

Olsen et al[4] conducted a similar study where pitching practices were compared between non-injured pitchers and pitchers who had undergone shoulder or elbow surgery (avg. age 18 years old). The most striking data from this study indicates that athletes that pitch often with arm fatigue are **36 times** more likely to be injured! Additionally, the authors reported:

- Injury risk goes up 5x for pitching more than 8 months/yr
- Injury risk goes up 4x for pitching more than 80 pitches per game
- Players with fastball speed >85MPH increases injury risk 2.6 times
- Injured pitchers tend to participate in an average of 4 showcases per year; uninjured pitchers participate in an average of only 1.

PREVENTION

Injury prevention of the overhead athlete requires recognizing warning signs of injury. This allows for adequate rest or treatment as needed. Some guidelines to consider to prevent injuries include a proper warm-up by stretching, running, and easy, gradual throwing, along with incorporating a general body conditioning program and core strengthening off the field.

Coaches and parents should closely monitor pitch count per game and pitch count per year, as number of pitches is one of the strongest risk factors for injury.

- Pitching log here: http://www.littleleague.org/Assets/forms_pubs/Pitching_Log.pdf
- Pitch count limit and rest requirements here: http://www.stopsportsinjuries.org/baseball-injury-prevention.aspx

Adequate rest following each outing should be allowed prior to the next start. The quality of throwing mechanics should also be taken into account, as proper pitching mechanics may begin to deteriorate with fatigue over the course of the game or season[5]. Arm fatigue dramatically increases the likelihood of injury[6].

Finally, at the conclusion of the season, the overhead athlete should have at least 3 months of rest from throwing and overhead activities to allow adequate rest and recovery before the next season[5,7]. Pitchers that do not allow for the 3 months of recommended rest are more likely to sustain a shoulder or elbow injury[6]. 09ww}.

REHABILITATION

Treatment of an injured shoulder or elbow in the youth baseball player requires adequate rest and avoiding painful activity[5]. Guided rehabilitation by a physical therapist may involve stretching, strengthening of the muscles around the shoulder and shoulder blade and hands-on treatment depending on each athlete's limitations. In order to return to sport, the athlete should be involved in an interval throwing program and demonstrate pain-free throwing prior to competition (http://1.usa.gov/13dKjoV). Working together with a physical therapist and coach to correct muscle imbalances, improve shoulder mobility and restore normal pitching mechanics will give the youth athlete the best chance to safely participate in games over the course of the season.

10 Injury Prevention Tips

1. Follow pitch count limits and rest period recommendations
2. Refrain from throwing activities at least 3 months per year
3. Do not play catcher after being removed from game as pitcher.
4. Do not play for more than one team with overlapping seasons
5. Use caution with "long toss" or maximum distance throwing
6. Watch and respond to signs of fatigue. If a youth pitcher complains of fatigue or looks fatigued, let him or her rest from pitching and other throwing.
7. Do not pitch competitively in more than 8 months in any 12-month period.
8. Learn good throwing mechanics as soon as possible. The first steps should be to learn, in order: 1) basic throwing, 2) fastball pitching, and 3) changeup pitching.
9. Avoid using radar guns.
10. Inspire youth pitchers to have fun playing baseball and other sports. Participation and enjoyment of various physical activities will increase the youth's athleticism and interest in sports.

/WaldronsPeakPT

@WaldronsPeakPT

If your athlete complains of pain in the shoulder or elbow, **schedule an evaluation** with the sports medicine experts at Waldron's Peak Physical Therapy, PC.

References

1. Shanley E, Rauh MJ, Michener LA, Ellenbecker TS, Garrison JC, Thigpen CA. Shoulder range of motion measures as risk factors for shoulder and elbow injuries in high school softball and baseball players. The American Journal of Sports Medicine. 2011;39(9):1997–2006. doi:10.1177/0363546511408876.

2. Lyman S, Fleisig GS, Waterbor JW, et al. Longitudinal study of elbow and shoulder pain in youth baseball pitchers. Medicine & Science in Sports & Exercise. 2001;33(11):1803–1810.

3. Fleisig GS, Andrews JR, Cutter GR, et al. Risk of Serious Injury for Young Baseball Pitchers: A 10-Year Prospective Study. American Journal of Sports Medicine. 2011;39(2):253–257. doi:10.1177/0363546510384224.

4. Olsen SJ. Risk Factors for Shoulder and Elbow Injuries in Adolescent Baseball Pitchers. American Journal of Sports Medicine. 2006;34(6):905–912. doi:10.1177/0363546505284188.

5. Ray TR. Youth baseball injuries: recognition, treatment, and prevention. Curr Sports Med Rep. 2010;9(5):294–298. doi: 10.1249/JSR.0b013e3181f27403.

6. Fleisig GS, Weber A, Hassell N, Andrews JR. Prevention of elbow injuries in youth baseball pitchers. Curr Sports Med Rep. 2009;8(5):250.

7. Zaremski JL, Krabak BJ. Shoulder Injuries in the Skeletally Immature Baseball Pitcher and Recommendations for the Prevention of Injury. PMRJ. 2012;4(7):509–516. doi:10.1016/j.pmrj.2012.04.005.