

GOAL

- To promote long term enjoyment regardless of skill level without pain or risk of injury while teaching good fundamentals



STATISTICS

- Survey of youth kids and coaches concerning injury
- 90% of kids stated they had injuries related to sports
- 54% stated they played injured



STATISTICS

- 42% stated they did not tell a coach due to fear of upsetting a coach or fear of not playing
- 27% of youth coaches reported they were unaware that a kid hide or downplayed an injury
- 40% of all reported injuries were kids between the ages of 13-15 yrs old



BASEBALL SPECIFIC STATISTICS

- 5-7 fold increase in throwing arm injuries since 2000 in youth baseball
- 30 - 50% of all youth arm injuries are due to overuse
- Take home message
- ASMI states if a youth pitcher throws with arm fatigue, he/she has a 36 to 1 times risk of injury



BASEBALL SPECIFIC STATISTICS

- 70% of all kids playing in youth sports drop out by age 13
- specialization
- professionalism
- pressure from coaches and parents



RISK FACTORS ASSOCIATED WITH OVERUSE IN YOUTH BASEBALL

- Year round baseball
- Seasonal and event overuse
- Playing in more than one league at a time
- Showcases
- The radar gun
- Early introduction of breaking pitches
- Poor mechanics



**YOUTH ARE PARTICULARLY AT RISK
DUE TO**

- Improper technique
- Ill fitting equipment
- Training errors
- Coach/parental pressure
- Failure of early injury recognition
- Shift to single sport specialization
- Inherent musculoskeletal imbalance



**These Problems are Magnified
Because the Younger the Athlete
the More Vulnerable They are to
Injury!**



ANATOMY / ASSESSMENT / MECHANICS

50% of a throwers velocity comes from core strength and proper lower extremity mobility

Core musculature

- Abdominals
- Low and mid Back
- Hip musculature
- Pelvic floor



ANATOMY / ASSESSMENT / MECHANICS

Stabilizers

- Rotator cuff
- Middle and lower trapezius
- Rhomboids
- Latissimus
- Serratus Anterior



Mobility requirements

- Hips
- Ankles
- Spinal (lumbar and thoracic)
- Shoulder and scapula mobility and rhythm



ASSESSING STRENGTH TO DETERMINE READINESS

Single leg stance and hold

- Glut medius
- Importance of testing bilaterally

Single leg squat and hold

- 70 degree bend and hold
- Hip and ankle mobility restrictions
- Hamstring mobility



ASSESSING STRENGTH TO DETERMINE READINESS

Static plank

- Scapula stability
- Core stability
- Rotational stability



CONSEQUENCES OF NOT BEING ABLE TO PERFORM

- Inability to throw with proper mechanics consistently
- Greatly increases risk of injury
- Have to address prior to progressing with volume or distance



TEACHING MECHANICS OF THROWING

Ages 12 and under - Keep it Simple/Stupid

- Glove position
- Symmetrical opening of shoulders and arms
- Hand placement on top of ball prior to acceleration
- Closed front shoulder and front foot



TEACHING MECHANICS OF THROWING

• Ages 12 and under - Keep it Simple/Stupid

- Push off and follow through while maintaining still head position
- Back shoulder replaces front shoulder
- Focus on reverse ball spin



SIMPLE YOUTH DRILLS

- Static standing with weight shift toss drill
- Symmetrical shoulder opening with lateral hop
- Half kneel throwing to emphasize trunk rotation
- Single leg stance hold with toss



AGES 12 AND UP

Begin training 5 phase program - average wind up to completion time is 2 seconds

Wind Up

- 1.5 seconds on average
- lower extremity loading of power

Cocking phase

- Early and late phase
- Heavy demand on concentric posterior shoulder musculature



AGES 12 AND UP

Cocking phase

- Early and late phase
- Heavy demand on concentric posterior shoulder musculature

Acceleration phase

- Forward arm acceleration to release
- Heavy concentric demand of anterior shoulder musculature
- Can exceed speed of 7000+ degrees/second



AGES 12 AND UP

Deceleration phase - the most vulnerable phase to injury

- Heavy eccentric demand of posterior musculature to slow down the humeral head

Follow through

- The completion of movement
- Core and lower extremity strength required to achieve proper balance



Strengthening



AGES 9-12

Considerations

- Level of fitness of each kid
- Open growth plates makes this age susceptible to overuse injury.
- Should avoid "gym" type workouts
- Easily fatigued with activity



AGES 9-12

Exercise recommendations- emphasize proper form, control with minimal dosage

Cross Training

- Play multiple sports of any kind and any level



AGES 9-12

Agility Training

- structured Ladder drills
- foot work drills
- Speed and endurance activity
 - Begin instruction with running form
 - Begin instruction with jumping form
 - Begin instruction with proper change of direction and cutting form



AGES 9-12

Core strengthening

- Planks - static and dynamic
- Quadraped activity - hands and knees
- Rotational stability
- Hip mobility
- J bands for scapula and shoulder stability
- Pushup, sit ups, squats and calisthenics



AGES 12 - 15

Considerations

- Awkward or clumsy with movement due to growth spurt
- Muscle imbalances develop
- Poor posture affects mechanics



AGES 12 - 15

Exercise recommendations - emphasize form and proper mechanics

- Continue core strengthening both static and dynamic
- Implement eccentric integrated off season strengthening program
- Continues J band stabilization program in season
- Introduction to compound power lifts - squats, deadlifts, bench press, power cleans
- Minimal weight and only perform if proper form is achieved



AGES 15-20

Considerations

- Increase injury risk due to muscle hypertrophy while sacrificing mobility and stability
- Football affect at high school level
- Appearance vs. functional
- Increase importance of off season vs. in season training
- Increase importance of dosing and periodization training

Exercise recommendations

- Continue J band stabilization, integrated eccentric program, core training
- Sport specific training with the multi sport athlete



AGES 15-20

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AGES 15-20

Practice recommendations

- Make time to train! 20-25 min at the start of practice
- Provide J bands and instruct with use
- Warm up with running not throwing or static stretching
- Teach and train agility work at every practice
- Strength train all ages at practice
- Teach dynamic stretching instead of static stretching



PITCH COUNTS FOR BOYS

<u>Age</u>	<u>Pitches/Game</u>
7-8	50
9-10	75
11-12	85
13-16	95
17-18	105

Age recommended for learning various pitches

▪ fastball	8 +/- 2
▪ change up	10 +/- 3
▪ slider	16 +/- 2
▪ curveball	14 +/- 2
▪	



SIGNS AND SYMPTOM OF KIDS WITH PAIN WITH THROWING AND WITH SPORT ACTIVITY

- Kid verbalizes pain to coach or parent
- Avoiding putting weight on a certain body part (ankle, wrist, hip) or favoring one side of the body over the other
- Appearing to be in pain when using a particular body part
- Inability to sleep or complains of broken sleep
- Complains of stiffness in the joints or muscles
- Inability to feel the fingers or toes



SIGNS AND SYMPTOM OF KIDS WITH PAIN WITH THROWING AND WITH SPORT ACTIVITY

- Experiences unusual weakness
- Irritated skin/and or blisters
- Irritability of behavior
- Small to drastic changes in mechanics
- Request to sit out without cause
- Changes in hitting mechanics



ROLES OF PARENTS/COACHES

- Have your child receive a pre-participation physical annually
- Stress the importance of a proper warm up
- Gradual increase in heart rate
- Dynamic stretching prior to activity
- Stress the importance of a proper cool down
- Proper hydration



ROLES OF PARENTS/COACHES

- Light static stretching
- Make sure we educate ourselves and our kids on proper training
- Consider level of fitness and the effects of training
- Get help if athlete is unable to perform techniques properly
- Increase training gradually
- Ten percent rule – don't increase activity greater than 10% weekly



ROLES OF PARENTS/COACHES

- Wear proper fitting equipment
- Consider weekly equipment checks
- Hydration and nutrition
- Day of event is to late
- Encourage rest and taking breaks
- Multiple sports of work different muscle groups
- Discourage a win at all cost attitude
- Reinforce the process and not results
- Preach fundamentals

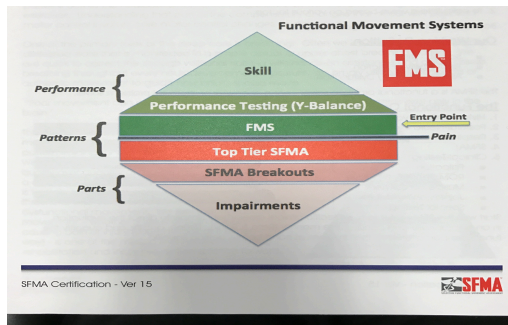


MY APPROACH

- Where does the athlete/patient fit into the model
- Entry points based on each individual athlete
- Movement pattern based vs joint specific evaluation

Functional Movement screen Vs. Selective Functional Movement Assessment





Functional Movement Screen

- No pain
- Works on performance
- Focused on skills

Selective Functional Movement Assessment

- Pain is present
- Isolated into parts
- Focusing on impairments



CONCLUSIONS/PREVENTION

Overuse injuries are preventable!!!

**Tips to keep our youth in the game throughout there
lifetime:**

- Warm up properly
- Rotate positons besides pitching and catching
- Concentrate on age-appropriate pitching
- Adhere to pitch counts
- Avoid pitching on multiple teams
- Do not throw with pain



CONCLUSIONS/PREVENTION

- Do not pitch on consecutive days
- Do not play year round
- Develop skills and strength that are age appropriate
- Emphasize control, accuracy and good mechanics
- Master the fastball ball first and change up second, before considering breaking pitches
- Speak with a professional if you have any concerns about injuries or prevention strategies