BIO PITCH
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SPORTS MEDICINE PROFILE

AMERICAN SPORTS MEDICINE INSTITUTE INSIGHTS

AECCA9C6-0B32-4650-A6ED-ADAD75D81DDD | 6'0" | 225 POUNDS | FEBRUARY 09, 2024

The American Sport Medicine Institute (ASMI) has reviewed your biomechanical data based upon three categories; ATHLETIC CAPABILITY, PITCHER POTENTIAL, and PITCHING COORDINATION. Insights provided from ASMI in this report will identify your strengths and weakness and guide you on a path to improving your pitching performance.

The athlete's unique results are available below...

ATHLETIC CAPABILITY

The athletic capability of a pitcher is determined by screening functional movements and comparing to normative ranges. This allows a better understanding of his overall athletic performance and joint level limitations.

READINESS

Status: **Excellent**
Your body is moving just how it was designed. Work to maintain your current athletic capability.

PITCHER POTENTIAL

The pitcher potential is determined by comparing the athletic capability and the specific positioning during the throwing motion. From this information, ASMI can determine how best the pitcher can optimize his performance through increased flexibility, increased strength, or correcting mechanical flaws.

CORRECT POSITIONING

Status: **Excellent**
Pitcher achieved excellent scores in all key areas that can greatly limit performance.

PITCHING COORDINATION

Pitching coordination is determined by looking at the timing, sequencing, and magnitudes of joint motions. In order to optimize performance, a pitcher must sequentially rotate his body segments and efficiently transfer energy up his body and to the baseball.

SEQUENCING

Status: **Excellent**
The athlete is producing high rotational velocities.

FOCUS ON: PITCHING COORDINATION

Focus on PITCHING COORDINATION to improve the athlete's overall pitching performance. Review the athlete's rotational velocity results to better understand how to improve in more detail.

ASMI

For a further explanation, contact ASMI directly to review with a biomechanical pitching expert.

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ATHLETIC CAPABILITY

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READINESS - 86%

LOW — HIGH

Status: **Excellent**
Your body is moving just how it was designed. Work to maintain your current athletic capability.

QUALITY - 73%

LOW — HIGH

Quality assesses the movement patterns for all movements completed. To improve focus on the following movement(s):
– Shoulder Abduction
– Shoulder Flexion/Extension
– Right 5 Hop

PERFORMANCE - 99%

LOW — HIGH

Performance assesses squat depth and jump heights for movements completed. To improve focus on the following movement(s):
– Bodyweight Squat

Focus & Priority rank your most vulnerable areas. Reviewing the areas of interest and the movement data will give clear insight for functional improvement.

FOCUS & PRIORITY

1 - RIGHT SHOULDER ALIGNMENT
2 - LEFT SHOULDER ALIGNMENT
3 - RIGHT KNEE KINETICS

LOWER BODY

BILATERAL SQUAT

VARIABLE	VALUE
Squat Depth	23.5"
Total ROM R	293°
Total ROM L	295°
Max Weight Shift	6%

VERTICAL JUMP

VARIABLE	VALUE
Jump Height	28.1"
Peak GRF	3504 N
Net Impulse	320 Ns
Peak RFD	10688 N/s

DEPTH JUMP

VARIABLE	VALUE
Depth Jump	27.6"
Peak GRF	3809 N
Net Impulse	346 Ns
Stance Time	0.63 s

UNILATERAL SQUATS

VARIABLE	LEFT	RIGHT
Squat Depth	16.0"	15.5"
Hip Flexion	129°	116°
Knee Flexion	110°	108°
Ankle Flexion	25°	32°

UNILATERAL JUMPS

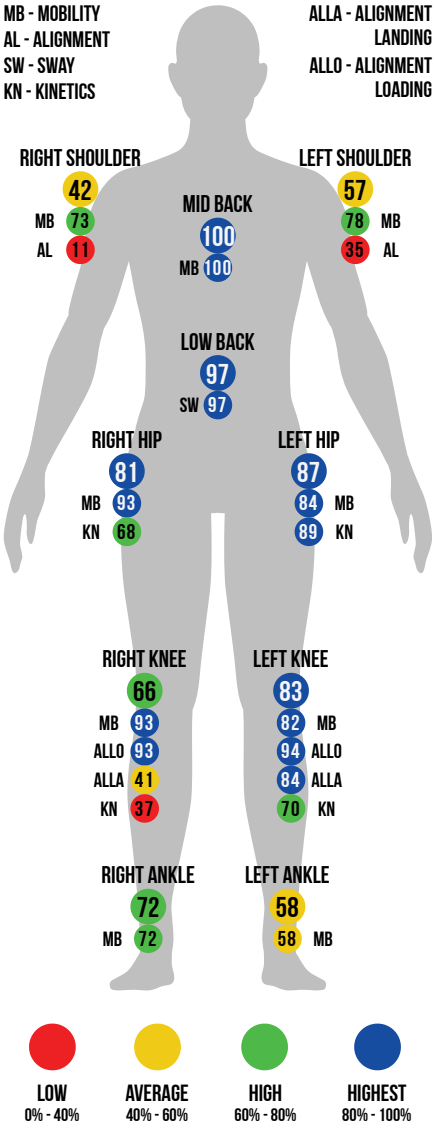
VARIABLE	LEFT	RIGHT
Jump Height	18.0"	20.6"
Peak GRF	2197 N	2780 N
Net Impulse	235 Ns	258 Ns
Peak RFD	8617 N/s	10463 N/s

CONCENTRIC JUMP

VARIABLE	VALUE
Jump Height	24.7"
Peak GRF	3333 N
Net Impulse	307 Ns
Peak RFD	11659 N/s

UPPER BODY

VARIABLE	LEFT	RIGHT
Shoulder Abduction	201°	194°
Horizontal Abduction	50°	42°
Internal Rotation	88°	76°
External Rotation	-105°	-111°
Shoulder Flexion	202°	211°
Shoulder Extension	-57°	-63°
Thoracic Rotation	50°	-50°



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PITCHER POTENTIAL

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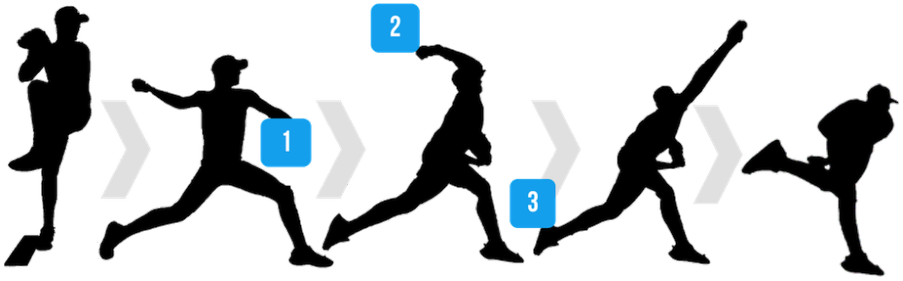
CORRECT POSITIONING

LOW — HIGH

Status: **Excellent**
Pitcher achieved excellent scores in all key areas that can greatly limit performance.



+ ASMI has identified three critical areas which may lead to a pitcher not performing to his full potential. Reduced performance may be due to mechanics and/or athletic capability, so both potential causes are examined.

F = Functional / P = Pitching

+ Each position is categorized into one of four levels (Limiting, Moderate, Good, Excellent). Based on normative ranges, we highlight the zone in which the athlete was rated. Read and watch more to better understand each area you can improve.

1

TRUNK SEPARATION

	LIMITING	MODERATE	GOOD	EXCELLENT
F				●
P			●	

VARIABLE	VALUE
Trunk Rotation	72°
Pitching Trunk Separation	25°

Pitcher showed excellent flexibility between pelvis and upper trunk during athletic screen. Pitcher achieves adequate separation between pelvis and upper trunk during pitching.

2

EXTERNAL SHOULDER ROTATION

	LIMITING	MODERATE	GOOD	EXCELLENT
F				●
P				●

VARIABLE	VALUE
Shoulder Ext. Rotation	111°
Pitch Shoulder Ext. Rotation	186°

Pitcher showed excellent flexibility in shoulder external rotation during athletic screen. Pitcher achieves excellent shoulder maximum external rotation during pitching.

3

KNEE EXTENSION

	LIMITING	MODERATE	GOOD	EXCELLENT
F			●	
P				●

VARIABLE	VALUE
Unilateral Vertical Jump	18"
Pitching Knee Extension ROM	21°

Pitcher showed adequate front leg unilateral jump ability during athletic screen. Pitcher achieves excellent front knee extension during pitching.

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PITCHING COORDINATION

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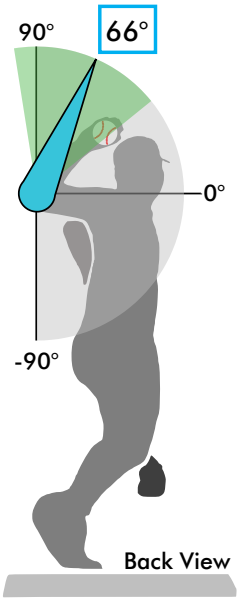
SEQUENCING

LOW — HIGH

Status: **Excellent**
The athlete is producing high rotational velocities.

+ The instant of foot contact is a critical checkpoint, as an improperly positioned arm at this instant often leads to mechanical flaws throughout the pitch.



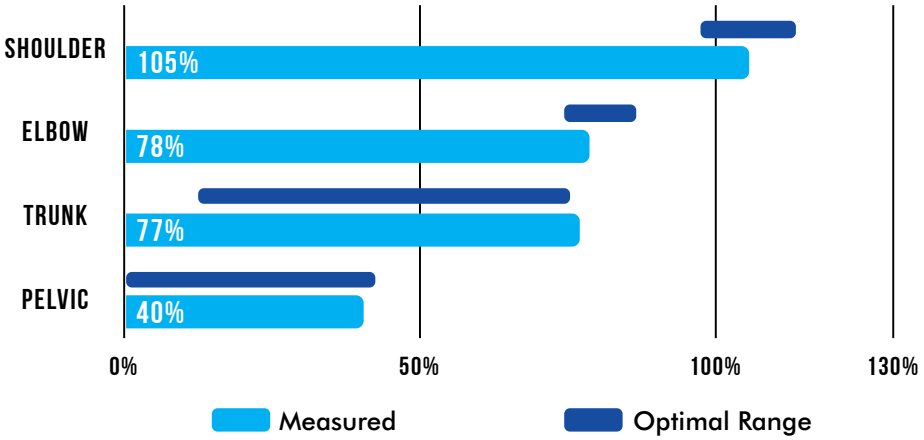
EXTERNAL SHOULDER ROTATION AT FOOT CONTACT

VARIABLE	VALUE
Pitch Shoulder Ext. Rotation	66°

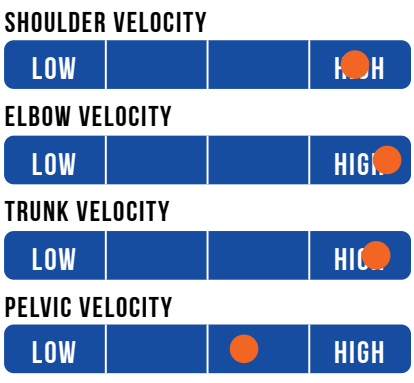
The athlete's arm is in an appropriate position at foot contact.

+ A pitcher should rotate his body segments during specific portions of the pitch cycle (with 0% corresponding to the instant of foot contact and 100% corresponding to the instant of ball release). The figure below on the left shows the timing of maximum joint velocities. The figure below on the right shows the magnitude of the velocities.

ROTATIONAL VELOCITY - PITCHING SEQUENCE



ROTATIONAL VELOCITY PEAK:



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PITCHING REVIEW

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AVERAGE OF ALL PITCHES

FOOT CONTACT	VALUE	UNITS	ST. DEV
Stride	60	inch	1
Stride (Percent Height)	84	%	2
Lead Foot Position	10	inch	2
Lead Knee Flexion	53	deg	2
Pelvis Rotation	6	deg	3
Trunk Separation	25	deg	7
Trunk Forward Tilt	2	deg	1
Trunk Side Tilt	-17	deg	2
Upper Trunk Tilt	10	deg	2
Shoulder Abduction	85	deg	2
Shoulder Horiz Abduction	50	deg	2
Shoulder External Rotation	66	deg	10
Elbow Flexion	80	deg	4
ARM COCKING PHASE	**VALUE**	**UNITS**	**ST. DEV**
Max Shoulder External Rotation	186	deg	3
Max Shoulder Horiz Adduction	3	deg	3
Max Elbow Flexion	94	deg	2
BALL RELEASE	**VALUE**	**UNITS**	**ST. DEV**
Lead Knee Flexion	33	deg	14
Trunk Forward Tilt	43	deg	2
Trunk Side Tilt	21	deg	1
Upper Trunk Tilt	-34	deg	2
Shoulder Abduction	97	deg	3
Elbow Flexion	10	deg	2
Arm Slot	52	deg	4
ANGULAR VELOCITIES	**VALUE**	**UNITS**	**ST. DEV**
Pelvic Rotation Velocity	650	deg/s	239
Trunk Rotation Velocity	1163	deg/s	59
Max Knee Extension Velocity	392	deg/s	106
Max Elbow Extension Velocity	1958	deg/s	68
Max Internal Shoulder Rotation Velocity	5346	deg/s	504
VELOCITY TIMING	**VALUE**	**UNITS**	**ST. DEV**
Pelvic Rotation Velocity Time	40	%	7
Trunk Rotation Velocity Time	77	%	2
Max Knee Extension Velocity Time	75	%	10
Max Elbow Extension Velocity Time	78	%	2
Max Internal Shoulder Rotation Velocity Time	105	%	4