



Ryan L. Crotin

PhD, CSCS, RSCC, USAW, SFMA L1

Organizational Strategist
Multidisciplinary Sports Scientist
Strength and Coordination Specialist
Global Expert in Injury Prevention
Sports Tech Executive and Innovator
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Professional Employment:

04/24 – Present



Specialist Pitching Coordinator USA Baseball Cary, NC, USA

- Specialist guest member of USA Baseball for the annual 13/14-year-old National Team event.
- Provide education, skill, strength, and testing protocols to players to develop elite habits that maximize health and performance.
- Assist the organization in future infrastructure to monitor players and adjust programming to improve individualized player development approaches.

04/23 – Present



Specialist Sports Science Advisor Baseball Canada Ottawa, ON, CAN

- Specialist advisor in baseball health and performance serving on a three-person committee dedicated to profiling athletic talent, providing high performance education to players, national programs, home teams, coaches, and parents to focus individualized player development efforts and improve collegiate recruitment and draft outcomes for Canada's best players.
- Through RC13 Sports evaluation events, athletes in Canada will be assessed to manage injury risks amongst the best players across travel baseball programs and identify projectable characteristics in athletes who can advance performance for the Junior National Team and future World Baseball Classic competitions.

10/21 – Present



President

**RC13 Baseball Consulting Services, LLC (RC13 Sports)
Phoenix, AZ**

- A consulting firm focused on the best-in-class performance advisement for athletes, teams, organizations, companies, and research institutions offering a full spectrum of baseball-related player, business, and research development services.

02/21 – Present



Founder

Farm System Network, Phoenix, AZ

- Innovator focused on connecting the baseball world through in-person and virtual events, software applications and remote coaching for individualized player development, advanced scouting, and making connections.
- Company vision is to build a thriving baseball community comprised of athletes, scouts, coaches, parents, and businesses to accelerate competitive and economic opportunities in the sport.

02/21 – Present



Executive Vice President

ArmCare.com, Indialantic, FL

- Responsible for implementation and global adoption of the ArmCare Platform – a technology that offers customized monitoring and training. Responsibilities include (1) Research and Development, (2) User Experience, Innovative Educational Offerings, Certificate Programs (3) Premium Athlete Monitoring Services, (4) Marketing Materials, (5) Internal and External Research and Publication, (6) Conference Speaking Appearances, and (7) Social Media, (8) Website Content, (9) Strategic Partnerships. Upon hiring, there were 500 athletes using the platform. A present, ArmCare.com is currently serving approximately 45,000 athletes with only 7 reported arm injuries to date. The current national average is 5 surgeries in every 100 pitchers. ArmCare athletes see 0.05 surgeries in 100 pitchers, well under 1% experiencing surgical intervention. For electronic courses, over 1300 students are enrolled in certification programs in 1.5 years and 155 are dual certified and a part of the ArmCare Elite Society – a mastermind group for those with expertise in strength and coordination.

11/18 – 02/21



Director of Performance Integration

**Los Angeles Angels of Anaheim, Major League Baseball
(MLB), Anaheim, CA**

- Responsible for quality control and systems infrastructure as it relates to integrating human performance data into treatment, training, coaching and scouting operations for the purpose of improving health, function, and athlete selection.

- Led 38 educational presentations to date across observation, communication, implementation, and evaluation strategies related to monitoring athletes in addition to core performance education (exercise physiology, biomechanics, workload management, culture, lifestyle behaviors).
- Hosted 77 outside speakers to date from my professional network to provide web education organizationally related to the latest trends in injury prevention, high performance programming, coaching strategy and leadership.
- Oversaw an organization-wide athlete monitoring approach to ensure consistent observation of athletic performance, strategic communication and implementation procedures that combine both evidence-based practice and practice-based evidence involvement.
- Lead official for building research and technology relationships
- Developed and implemented athletic profiling procedures for amateur draft selections including logistics derived from Performance Integration analytics.
- Directed strength and conditioning for the entire organization and its collaborative involvement with skill coaches, scouts and front office officials.
- Served on an organization-wide interview committee for Major League and Minor League candidates applying for leadership positions.

12/16 – 11/18



**Player Performance Coordinator
Los Angeles Angels of Anaheim, Major League Baseball
(MLB), Anaheim, CA**

- Established the strength and conditioning platform for the Player Development Department (260 athletes) that implements an evidence-based training method associated to a remote, longitudinal player monitoring system that indicates changes in rate of force, speed, maximal strength, anthropometrics, subjective ratings, hydration, range of motion and 2D biomechanics.
- Provided 35 interdepartmental presentations related to biomechanics, training theory, injury prevention and player education
- Established the role of Return to Performance Strength and Conditioning Coordinator to improve rehabilitation strength and conditioning programming and holistic healing.
- Authored the Iron Angels Mindset Package to obtain psychometric information on our athletes' cognitive processes, self-image, future projection, psychosocial relationships, preparation strategies and motivations.
- Assist Amateur Scouting Department in athletic profiling and analytics for the Amateur Draft and International Signees which includes field test evaluation and video assessment of skill biomechanics for predictive modeling.

- Perform internal research that denotes changes in physiologic functioning, process skills, workload acclimation, evaluation, and integration of technology, as well as injury analytics and epidemiology concerning the organization.
- Assist Pitching Coordinator in establishing workload guidelines for a multi-tiered throwing program (“ARM” Adaptive Repeatable Mechanics) that accounts for individual characteristics relative to age of maturity, seasonal participation, and previous injury history.
- Assist Field Coordinator, Director of Player Development and Infield and Outfield Coordinators in the development of position-specific throwing programs for the offseason which accounts for independent workload requirements specific to outfield, infield and catchers.
- Assist Hitting Coordinator in implementing “Gym Patterns”, specific movement constraint-based drills to create feel and expedite movement retention in minor league hitters.
- Provide educational presentations for the organization involving baseball-specific training approaches, biomechanics, sports medicine, sports psychology aspects, lifestyle management and performance monitoring.

06/15 – 12/16



**Chief Coordinator and Postdoctoral Fellow
Penn Throwing Clinic at the Human Motion Lab**

Penn Medicine, University of Pennsylvania, Philadelphia, PA

- Developed a Biomechanical Reporting System for Service and Research Operations for the Department of Orthopedics
- Created all procedural methods and key performance indicators for assessment of the baseball pitching delivery.
- Coordinated business development efforts, marketing strategy, website visibility and visualization for the Penn Throwing Clinic.
- Primary Researcher, Baseball Pitching Health and Performance
- Advisor to student technology projects for Biomedical Engineering Department.

02/12-11/14



**MLB Specialist Consultant (2012)/Full-Time Coach (2013-2014)
Baltimore Orioles LLC, Major League Baseball (MLB), Baltimore, MD**

- Reported to Brady Anderson, VP of Baseball Operations as the Assistant Strength and Conditioning Coach (MLB) and Roving Minor League Coordinator (MILB) to ensure organization-wide training processes were being carried out affiliates and to support minor league coaches while onsite.
- Performed athletic performance analyses as it relates to injury epidemiology, indexed player training histories and created an electronic tracking method for training performances that included estimated 1-rep max calculators to denote changes in strength.
- Created general offseason training documents and programming integrated with video for remote coaching.

- Participated in offseason travel to assist players in their home territory and served as an offseason strength and conditioning coach at Camden Yards.
- Provided special assignments when the team had road stands that included but were not limited to programs targeted for weight gain and injury rehabilitation.
- 2012 American League Wild Card (93 W- 69 L)
- 2013 Third-place finish in American League East Division (85 W-77 L)

01/10-12/11

Baseball/Softball Instructor

Sports Performance Park, Buffalo, NY

- Instructional skills programs for baseball and softball players in the Western New York Area and Southern Ontario.
- Video biomechanics assessments, skills instruction and collegiate profiling services for athletes in all positions ages 9-18 years old (150 athletes total).

01/10-12/11

Strength and Conditioning Coordinator

Sports Performance Park, Buffalo, NY

Total Athletic Development Programs

- Administration, instruction and management of periodized training for multiple sports training formats in collaboration with Thurman Thomas Sports Training.
- Strength and Conditioning Coordinator for the A-Turf Titans Travel Baseball, Amherst Lightning Travel Softball, and Buffalo Junior Sabres OJHL Hockey Organization (60 athletes total).

01/10-08/10

Radioshow Co-Host

WGR 550 Sports Radio, Buffalo, NY

Thurman Thomas Sports Training Hour

- Expert speaker concerning human performance aspects related to sport, fitness training and nutrition

WGR 550 Sports Radio Topics (complete list available on request):

- May 1st, 2010, *Marathon Running and Orthopaedic Points of Interest*
- April 24th, 2010, *Speed, Sprint Training and Sprinting Mechanics*
- April 17th, 2010, *Running Injuries and Injury Prevention*

10/09-12/09



Assistant to Amateur Scouting

St. Louis Cardinals LLC, Major League Baseball (MLB), Orlando, FLA

- Scouting assignment for Team Canada under Florida Area Scout, Charles Gonzalez
- Observation for all Team Canada games played at Disney Wide World of Sports in Orlando Florida for listing of Canadian Amateurs eligible for the 2010 Major League Baseball Draft.

04/08-12/09



Player Development Staff

**St. Louis Cardinals LLC, Major League Baseball (MLB),
Jupiter, FLA/ Batavia, NY**

- Special assignment strength and conditioning professional for rehabilitation and drug abuse populations in Extended Spring Training.
- Functional Movement Screening, First year, minor league signees
- Game Chart Assessment (Home - First Running Times and Pitching Velocity Charts)
- Strength and Conditioning Coordinator for Class A Short Season affiliate, Batavia Muckdogs
- Assistant to Team Athletic Therapist for Class A Short Season affiliate, Batavia Muckdogs (Interval throwing program, interval sprint program, PNF stretching and manual resistance exercise)
- Monitored Nutrition Safety and Supplementation in accordance to Major League Baseball Standards
- 2008 New York Penn League Champions (50W-29L)

09/06-05/09



Assistant Coach, Baseball and Sport Performance

University at Buffalo Athletics Department, Buffalo, NY

- Roving instructor in all baseball aspects; assisted with team strength and conditioning program concurrently, Firstbase coach in competitive play in the MAC (Mid-America Conference, NCAA Div I)
- Program set MAC Single Season Wins Record (2007)

06/07-08/07

Professional Baseball and Player Development Personnel

Israel Baseball Federation, Tel Aviv, Israel

- Professional baseball player for the Petach Tikvah Pioneers Organization
- Guest skills instructor for the Israeli Baseball Federation

03/05-11/05

**Independent League Professional Baseball and Player Development
Staff for Junior Programs**

Bundesliga Baseball, Deutsch National Team (DBV), Munich, Germany

- Independent league professional baseball player for the Gauting Indians Bundesliga Organization, Germany's premier professional baseball league.
- Coordinated instructional programs, athlete recruitment programs and served as a coach mentor to the organization's amateur fastball and baseball teams and national team programs.

09/04-03/05

**Independent League Professional Baseball and Player Development
Staff for Junior Programs
Australian Baseball Federation, Queensland Sport, Brisbane, Australia**

- Professional baseball player for the Toowoomba Rangers in the Greater Brisbane Major Baseball League, Queensland, Australia.
 - Coordinated instructional programs, player evaluations, cricket-athlete recruitment programs and served as the head baseball coach for 18U.
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Educational Presentations, Podcasts, Social Media, Articles

06/24 Invited to the Perception Action Journal Club Podcast by Rob Gray
Training to Increase Action Capacity in Baseball Pitchers

01/21-Present Over 150 Articles written on throwing arm performance for ArmCare.com
<https://blog.armcare.com/category/articles/>
<https://blog.armcare.com/category/newsletter/>

03/24 University of Nebraska Omaha – Allied Health Education
Stress-Shielding Training: The Intersect of 3D Motion and Arm Strength Dynamometry

01/24 ABCA Conference 2024
Eradicating Elbow Injuries: After 209,483 Strength Exams, Here's What We Know

01/24 ABCA Conference 2024
The Great Debate: Strength vs. Mechanics Which Matters Most to Preventing Injuries

05/23 Eliminating Arm Soreness & Pain Course

05/23 Arm Health and Performance Certificate Course

05/23 Major League Performance & Recovery Habits Course

05/23 Building Data-Driven Throwing Programs Course

05/23 Velocity Program Monitoring & Adjustments Course

05/23 Data-Led Pitching Management Course

05/23 Strength Training Secrets of Elite Athletic Performance Course

05/23 The Onboarding Master Class – Team Buy-In Course

05/23 Specialist Presenter at the National Pitching Association Clinic in Houston, TX

05/23 Author and Presenter - Certified Pitching Biomechanist Course
<https://armcare.com/products/2131623>

05/23 Author and Presenter - Certified ArmCare Specialist Course – Second Edition
<https://armcare.com/products/1600807>

03/23 University of Nebraska Omaha – Pitching Lab Presentation
An Intro to Strength and Coordination

03/23 St. James Baseball Performance Summit
Time for the World's Strongest Arms

01/23 American Baseball Coaches Association Convention
Building Bulletproof Arms: An Intersection of Biomechanics, Dynamometry and the Force-Velocity Curve

01/23 American Baseball Coaches Association Convention
ArmCare Elite Membership Meeting – A New Community in Building Industry Leaders

12/23 Invited Speaker at The Bridge Seminar at Wake Forest – Leading Conference in Baseball Sports Science
Baseball Strength and Coordination – Accelerated Transfer of Training Effects

11/22 Podcast Guest on Top Velocity – The Failures of ArmCare in Baseball
<https://www.youtube.com/watch?v=5kUELhh9BjQ>

11/22 Podcast Guest on Tread Athletics Podcast
<https://www.youtube.com/watch?v=cLqKqn8JPAs>

09/22 Guest on Kinetic Performance Institute Podcast

04/22 Purpose to Perform Podcast - Dr. Jo Brown
<https://anchor.fm/purpose2perform/episodes/Ryan-Crotin---Baseball-and-Arm-Care-Specialist-e1h155v>

04/22 Top Velocity - Brent Porciau
https://www.linkedin.com/posts/ryancrotin_armcare-velocity-podcast-activity-6892946675015434240-1Erw

03/22 SABR Metrics Conference – Determinants Biomechanical Efficiency

01/22 American Baseball Coaches Association Convention
Strength Analytics a New Frontier in Player Development

01/22 American Baseball Coaches Association Convention
Perfect Game TV – Interview with Daron Sutton – Former LA Angels Announcer on Arm Strength and Range of Motion Monitoring for Individualized Training

01/22 Figure It Out Baseball - Jeff Stanek
<https://www.figureitoutbaseball.com/en/c/podcast-123-ryan-crotin-vice-president-of-armcarecom.3280>

12/21 Overhead Athletics - Max Wardell
<https://www.youtube.com/watch?v=hvQ3FB9xTf8>

11/21 Informed Performance - Ben Ashworth <https://podcasts.apple.com/us/podcast/dr-ryan-crotin-baseball-special-organisational-strategist/id1487584876?i=1000541186517>

Arm Care Podcast Link <https://podcasts.apple.com/us/podcast/more-than-velocity/id1577851958>

12/21 Get Your Arm Primed to Throw Fuel
<https://www.youtube.com/watch?v=EBmH9wcWn2s&t=5s>

11/21 Isometric Exercises to Help You Throw Hard
<https://www.youtube.com/watch?v=sOsizj6Eqyg&t=390s>

11/21 These Exercises are Missing From Your Arm Care Program and It's Hurting Your Performance
<https://www.youtube.com/watch?v=lKa0ewwC1bw&t=359s>

10/21 Get Strong to Throw Hard – This is What Baseball Players Are Missing (Part 2)
<https://www.youtube.com/watch?v=pGBW823iHfE&t=756s>

10/21 Get Strong to Throw Hard – This is What Baseball Players Are Missing (Part 1)
<https://www.youtube.com/watch?v=osOmD7q-pUs>

10/21 What's the Deal With All These Adductor Strains?
https://www.youtube.com/watch?v=_8XLQK7jhrI

10/21 The Biggest Problem With Modern Day Arm Care
https://www.youtube.com/watch?v=wfl_tof0EQA

10/21 Your Arm Care Program Isn't Working.....Here's How We Know
https://www.youtube.com/watch?v=ggsr_b5wPgg

09/21 Is Your Serape Locked and Loaded?
<https://www.youtube.com/watch?v=7E57CL20E6E>

09/21 Separation and Stretch-Loading in the Delivery
<https://www.youtube.com/watch?v=hRZse47aKw4&t=783s>

09/21 Deceleration Training and the Kinematic Sequence
<https://www.youtube.com/watch?v=hOgrx0o8vNU&t=533s>

09/21 This Exercise Will Help You Throw Harder
<https://www.youtube.com/watch?v=Qmxlag1q4Kk&t=9s>

08/21 Pitchers are Weaker Than Position Players
<https://www.youtube.com/watch?v=pDAab5Zk3l8>

08/21 How to De-Stress Your UCL and Protect Yourself from Tommy John Surgery
<https://www.youtube.com/watch?v=NFx7PV6W6Uo&t=69s>

08/21 If You Don't Have This You'll Never Throw 90
https://www.youtube.com/watch?v=n_LUFH7bD5w&t=2s

08/21 This Player Assessment is Changing How We Look at Pitching Efficiency
<https://www.youtube.com/watch?v=7MPaXpqsg1U>

07/21 The Most Important Video About Throwing Weighted Balls Ever Made
<https://www.youtube.com/watch?v=SbxbPBDcL-E>

07/21 How to Access Data From the World's Most Elite Pitching Lab
<https://www.youtube.com/watch?v=f0LwKygD5ec>

07/21 Why Pitchers Get Hurt (and It's not Overuse)
<https://www.youtube.com/watch?v=f0LwKygD5ec>

12/20 Offseason – Video Recorded *360 Player Report Concept*

12/20 Offseason – Video Recorded *Angels Performance Department Overview 2021*

05/20 Coronavirus Hiatus - Video Recorded *360 Player Plan Presentation*

05/20 Coronavirus Hiatus - Video Recorded *360 Athlete Approach*

02/20 Pre-Spring Training - *Evidence-Based Biomechanics Refresher*

04/20 Coronavirus Hiatus - *Principles of 3-D Rotation*

04/20 Coronavirus Hiatus - *Athletic Measurables of Interest in Scouting*

02/20 Spring Training - *Kanga Tech for Pitchers and Angels Technology for Pitchers*

02/20 Spring Training - *Evidence-Based Biomechanics Communication*

02/20 Spring Training - *Kanga Tech and Angels Technology for Infielders*

01/20 Champs Camp - *Momentum Transfer and Jump Power Initiative*

- Combining 3D rotation and ground reaction force monitoring in jumping

01/20 Champs Camp

- Champs Camp - *Kanga Tech Measurable Approaches 2020*
- Strength and Range of Motion Measurement Across MIL and MLB Levels
- Consistency Measures and SOPs

01/20 Champs Camp - *Evidence-Based Biomechanics*

01/20 Champs Camp - *Momentum in Pitching and Hitting*

01/20 Champs Camp - *2720 Workload Presentation and Discussion 2020*

01/20 Champs Camp - *Grip and Rotator Cuff Activation*

01/20 Champs Camp - *Angels Position Players Arm Strength Program 2020*

01/20 Champs Camp - *Kanga Tech Standard Operating Procedures*

01/20 Champs Camp - *Angels Athletic Performance Measurables 2020*

01/20 Champs Camp - *Subjective Approach to Monitoring Workload*

12/19 Player Videos for Kanga Tech and Performance Technology

12/19 High Performance Initiatives 2020

- *Establishing better team dynamics*
- *Creating singular focus*
- *Understanding epidemiology*
- *Evolving current monitoring processes*

11/19 Workload Management Feature for HALO

11/19 Inning By Inning Pitching Performance Analysis

11/19 4D Primer Future Developments

10/19 Justin Upton RTP Approach - Beginning Benchmarks

10/19 Offseason Arm Strength and Throwing Program Scheduling

10/19 Evidence Based RTP Meeting

8/19 Performance Integration Player Meetings for Affiliates
Integrated Player Plans

8/19 Tech Integration Meeting: *Improving the use of technology at the Major League Level*

8/19 Performance Integration Player Meetings for Affiliates, All Minor League Affiliates
Integrated Player Plans

6/19 Hitting Interdepartmental Meeting, Anaheim, CA
3D Rotational Analysis for Pitchers

5/19 Hitting Interdepartmental Meeting
3D Rotational Analysis for Hitters

5/19 ML Pitching Scrum
Velocity Loss (Allen, Harvey, Skaggs, Pena)

04/19 MIL Pitching Scrum

Hernandez, Rivera, Cowart, Santa Maria

04/19 MIL Pitching Scrum

Jose Natera and Tulio Santa Maria

2/19 AZ Pre-Spring Training Full Staff Summit

360 Athlete Approach Overview

Scouting Athleticism

Tier System: Graduated Training Design

TeambuildR Education

2/19 Pitching Orientation Meetings

Body Bank Data

Training Design and Approaches for 2019

12/18 AZ Performance Summit, Tempe, AZ

Kaizen – A New Philosophy for Improvement

Injury Epidemiology 2012-2018

Evidence-Based Training: Key Performance Indicators, Process Skills and Process Influencers

Evidence-Based Training: Biomechanical Specificity

360 Athlete Approach Overview

Tier System: Graduated Training Design

11/18 ML Organizational Meeting, Anaheim, CA

Athletic Performance – An Observation, Communication and Implementation Problem

09/18 Instructional League, Tempe, AZ

Evidence-Based Biomechanics Presentation and Technology Walk Through

06/18 New Player Orientation Orem, UT and Tempe, AZ

Overview of the Angels Performance Program

04/18 – 06/18 Extended Spring Training, DR Spring Training and Roving Affiliate Assignments

Hydration Physiology and Performance

04/18 – 06/18 Extended Spring Training, DR Spring Training and Roving Affiliate Assignments

Sleep Performance

03/18 MIL Spring Training Staff, Tempe, AZ

Angels Performance Introduction: Evidenced-Based Practice and Lifestyle Management

03/18 Low Responders Pitchers and Hitters, Tempe, AZ

Impact of Physical Size on Offensive and Pitching Performance

02/18 MLB Spring Training (Pitchers), Tempe, AZ

Angels Performance: Orientation to Sports Science and Training as it Relates to Pitching

- 02/18 MLB Spring Training (Pitchers), Tempe, AZ
Throwing-Specific Training: Injuries, Workload Monitoring Strategies and Preparation
- 02/18 MLB Spring Training (Position Players), Tempe, AZ
Angels Performance: Orientation to Sports Science and Training
- 01/18 Champs Camp, Tempe, AZ
Managing Your Arm: Workload Monitoring Perspective for Health and Performance
- 01/18 Pre-Season Address, Tempe, AZ
Understanding Injury Analytics 2017 and Approaches
- 01/18 Pre-Season Address, Tempe, AZ
Sports Science Initiative 2018
- 01/18 Medical Staff Orientation, Tempe, AZ
Foundations of the Angels Performance Program
- 01/18 Angels Performance Program 2018 Edition, Tempe, AZ
Foundations of the Angels Performance Program for Athletes
- 12/17 Performance Summits, Anaheim, CA
1. *Hitting Performance: Biomechanics, Physiological and Cognitive Aspects to Consider*
 - a. *Development of Biomechanical Scouting Platform for the 2018 Draft for Hitters*
 2. *Pitching Performance: Throwing-Specific Programming, Pathological Biomechanics and Technology Integration*
 3. *Athletic Performance: Ideals of the Angels Performance Program and Future Direction in Athlete Monitoring for Player Health and Performance*
- 11/17 Angels Scouting Convention, Mesa, AZ
Athletic Performance Profiling – Projecting Physiologic Advancement
- 11/17 Sports Medicine - Sports Performance Round Table, Tempe, AZ
Uniting Epidemiology, Biomechanics and Preventative Exercise
- 11/17 Angels Scouting Convention, Mesa, AZ
Athletic Performance Profiling – Projecting Physiologic Advancement
- 11/17 Arm Care and Throwing Program Discussion, Tempe, AZ
Uniting Epidemiology, Biomechanics and Preventative Exercise
- 10/17 Instructional League Player Seminar, Tempe, AZ
Understanding Our Long-Toss: Biomechanics and Workload Management
- 09/17 Instructional League Player Seminar, Tempe, AZ
The Halo Effect - An Introduction to the Angels Mindset
- 09/17 Instructional League Player Seminar, Tempe, AZ
The Halo Effect - An Introduction to the Angels Mindset

- 03/17 Spring Training Introductions, Tempe, AZ
Angels Athletic Performance Program – Scientific Foundations for Baseball Training
- 06/17 Orem Owlz Baseball Stadium, Orem, UT
- 06/17 Angels Minor League Complex, Tempe, AZ
An Introduction to Angels Performance – Evidence-Based Training
- 03/17 Spring Training Introductions, Tempe, AZ
Angels Athletic Performance Program – Scientific Foundations for Baseball Training
- 01/17 Champions Camp, Tempe, AZ
Bilateral Training in Rotational Swing Patterns – Stretch Response Training Response
- 01/16 Keiser Power Pitching Summit, Los Angeles, CA
Optimizing Pitching Performance
- 01/11 Holmes Elementary School, Tonawanda, NY
Dig-It-At(I) Math, Science and Technology Expo: The Human Body in Sport
- 01/11 Peak Performance Project – P3, Santa Barbara, CA
Major League Baseball Hitting Biomechanics Symposium
- 12/10 University at Buffalo, Department of Exercise and Nutrition Science, Buffalo, NY
Departmental Presentation: Variability in Stride Length and Its Impact on Baseball Pitching Performance
- 11/10 Williamsville Central School District, Health Care Professionals, Buffalo, NY
Professional Development: Wellness and Obesity Management in Adolescents
- 07/10 Empire State Games Sports Medicine Convention, Buffalo, NY
Evaluation of Pitching Fatigue as an Injury Prevention Practice
- 03/10 Williamsville Central School District, Physical Education and Athletics, Buffalo, NY
Professional Development: Resistance Training for the Developing Body
- 01/10 Williamsville Central School District, Physical Education and Athletics, Buffalo, NY
Professional Development: Exercise Physiology Curriculum for Local High Schools
- 05/09 City Sports Medicine Rounds-School of Medicine, University of Toronto, Toronto, ON
A Biomechanical Analysis of the Shoulder in the Overhand Tennis Serve
- 02/08 Spring Training Convention - Seneca College, Toronto, ON
The Israeli Baseball League: Inside the Inaugural Season
- 10/07 University at Buffalo Athletics Department, Baseball, Prospect Camp, Buffalo, NY
Concepts in Baseball Strength and Conditioning

- 06/07 Winning With Weights – Rogers Cable Television, Oshawa, ON
Exercise Professional Co-Host with Bernice Pearce for 6 Episodes
- 10/06 FAN 590 Talk Radio – Host David Grossman, Toronto, ON
Training for Collision Sports
- 06/06 Winning With Weights – Rogers Cable Television, Oshawa, ON
Exercise Professional Co-Host for 3 Episodes
- 05/06 Day Break Morning Show – Rogers Cable Television, Oshawa, ON
Introducing Athletes Made in Canada (Business Owner)
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Education

- 05/13 **University at Buffalo, Buffalo, NY**
PhD Exercise Science (Sport Biomechanics and Exercise Physiology)
Dissertation: *A Kinematic and Kinetic Comparison of Baseball Pitching Mechanics Influenced by Stride Length*
Magna Cum Laude Graduate
- 10/05 **Salem International University, Salem, WV**
M.A/MBA Physical Education/Business Administration Concurrent
Thesis: *Violence in Sport and Its Effect on the Social Functioning of the Athlete*
Summa Cum Laude Graduate
- 12/01 **University of Maine, Orono, ME**
Honors B.S, Kinesiology
Summa Cum Laude Graduate
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Educational Awards

- 2014 Society for American Baseball Research (SABR) Award Winner for Outstanding Original Research Project in Advancing Baseball Knowledge.
- 2013 Outstanding Student Achievement Recognition– University at Buffalo Graduate School
- 2012 Force and Motion Foundation Award for Original Research - “Stride Length Compensations and Their Impacts on Brace-Transfer Ground Forces in Baseball Pitchers”
- 2011 First Place, Poster Presentation, “Stride Length Effects on Exertion in Baseball Pitchers” – J. Warren Perry Lecture and Research Symposium
- 2011 National Strength and Conditioning Association Scholarship Foundation: Challenge Scholarship Winner (National Recognition for Outstanding Achievement in Exercise Science Graduate Studies)

- 2007 Rachman Scholarship (Outstanding Achievement in University at Buffalo's Exercise Science Graduate Program)
- 2007 University at Buffalo Teacher Assistantship Award of Excellence (Exercise Science)
- 2006 University at Buffalo Teacher Assistantship Award of Excellence (Exercise Science)
- 2004 Archie Talley Winner- Top Scholar Athlete
- 2000 College of Education and Human Development's International Student of the Year
- 2000 International Golden Key Honour Society
- 2001 Ella S. Foster scholarship, Top Canadian Student at the University of Maine, Two-Time Recipient
- 2000 Lincoln Kinesiology Scholarship for Academic Excellence
- 2000 Holmes Scholar Award – Presented by the acclaimed author, Stephen King and the University President, Peter Hoff for outstanding academic achievement in the State of Maine
- 2000 Junior Year Academic Excellence Pin – College of Education and Human Development
- 2000 USAA All-American Scholar

Teaching Experience and Academic Service

10/20 – Present



Research Associate, Louisiana Tech University Human Performance Laboratories Ruston, LA

- Responsible for advising graduate students in sports science research as it relates to throwing and hitting performance
- Contributor for marketing approaches to procure student candidates
- Provide professional guidance to students who are seeking employment in the sports industry or applying to doctoral programs
- Department Chair – David Szymanski, Ph.D, CSCS

09/19 – Present



Research Associate, Auckland University of Technology Sports Performance Research Institute New Zealand Auckland, NZ

- Responsible for advising graduate students in sports science research as it relates to throwing and hitting performance.
- Contributor to marketing approaches to procure student candidates that work in the professional sports industry.
- Provide assistance in creating articulating agreements between the university at local businesses with sizeable and applicable study populations
- Provide professional guidance to students who are seeking employment in the sports industry or applying to doctoral programs
- Department Chair – John Cronin, Ph.D, CSCS

09/06-05/10	University at Buffalo, Buffalo, NY Lab Instructor/Teaching Assistant, Exercise and Nutrition Sciences Administered laboratory components, finals, grading, weekly lectures, as well as academic support for ES 370 (Biomechanics), ES 310 (Exercise Assessment I), and ES 410 (Exercise Assessment II)
7/10 – 11/10	Research Assistant, University at Buffalo, Buffalo, NY Galvan E., Crotin RL , Ramsey DK, Kozlowski KF, Roemmich JN, Hatch DA, Wilding GE, P Horvath <i>The Effects of Carbohydrate and Fluid Restriction on Physical and Cognitive Performance in Collegiate Wrestlers</i> Department of Exercise & Nutrition Sciences, Department of Biostatistics
09/10- Present	Ad Hoc Reviewer, <i>Strength and Conditioning Journal</i> ; National Strength and Conditioning Association (NSCA)
09/08-05/09	Research Assistant, University at Buffalo, Buffalo, NY <i>Conservative Treatment of Medial Knee Osteoarthritis</i> Ramsey DK, Russell ME, <u>Crotin RL</u> Department of Exercise & Nutrition Sciences
03/08-07/08	Biomechanics Demonstrator and Speaker, University at Buffalo, Buffalo, NY Biomechanics Higher Education Department of Exercise & Nutrition Sciences
01/07-04/07	Research Discussion Group, <i>Metabolic Cost and Lactate Threshold Concepts</i> Kozlowski KF and Cerny F Department of Exercise and Nutrition Sciences

Academic Advisement

- 09/23 Student: Austin Reedy (May 2024 Graduate)
 Academic Institution: Louisiana Tech University
 Directed Project: *Multi-correlational Analyses Between Throwing Arm Strength and Performance*
- 07/23 Student: Jose Martinez-Rodriguez (May 2026 Graduate)
 Academic Institution: Auckland University of Technology
 Doctoral Dissertation: *Curvilinear Agility Testing for Baseball Players*

- 08/22 Student: Chris Watson (May 2024 Graduate)
Academic Institution: Louisiana Tech University
Directed Project: *Relationship of Forearm Kinetics to Competitive Performance and Injury Prevention Amongst Collegiate Baseball Pitchers*
- 05/21 Student: Pablo Ortiz (May 2022 Graduate)
Academic Institution: Louisiana Tech University
Directed Project: *A Comparison of Marker-Based Optical Data to Single Camera Markerless Motion Capture Among Collegiate Division I Pitchers*
- 10/20 Student: Myles Fish (May 2022 Graduate)
Academic Institution: Louisiana Tech University
Directed Project: *Strength Associations to Fastball Velocity in Collegiate Pitchers*
- 10/20 Student: Motoki Sakurai (May 2020 Graduate)
Academic Institution: Louisiana Tech University
Masters Thesis: *The Relationship between Bilateral Jumping Performance and Proximal Throwing Mechanics in Baseball Pitchers*
- 10/20 Student: Ryan Lis (May 2020 Graduate)
Academic Institution: Louisiana Tech University
Masters Thesis: *The Relationship between Unilateral Jumping Performance and Proximal Throwing Mechanics in Baseball Pitchers*
- 09/20 Student: Ben Jones (May 2020 Graduate)
Academic Institution: San Jose State University
Masters Thesis: *The Relationship between Different Jump Types and Baseball Pitching and Hitting Outcomes*
- 07/19 Student: Trey Job (Ongoing – Matriculating into PhD Program)
Academic Institution: Auckland University of Technology
Sport Performance Research Institute New Zealand (SPRINZ)
Doctoral Dissertation: *Training Methods to Increase Throwing Velocity in Pitchers*
-

Academic Grants and Sponsored Research

1. Mark Diamond Research Fund,
Project Title: *The Effects of Stride Length on Baseball Pitching Performance*
Issue Code: (Sp11-03)
Funding Period: 04/01/11 – 03/31/12
Funding Amount: \$2,500 USD

2. Applied Research and Innovation Fellowship (ARIF)
Project Title: *Does Mass=Gas: An Exploration of How Lean Mass Proportion Impacts Throwing Arm Strength in Collegiate Pitchers*
Funding Period: 03/01/24 – 03/01/25
Funding Amount: \$28,500 CAD
-

Conference Proceedings

1. Galvan E., **Crotin RL**, Ramsey DK, Kozlowski KF, Roemmich JN, Hatch DA, Wilding GE, Horvath PJ. The effects of carbohydrate or fluid-restriction on physical and cognitive performance in collegiate wrestlers. *Experimental Biology*, Washington, DC. April 9-13th, 2011.
2. **Crotin RL** and Ramsey DK. The Effect of Stride Length on Exertion in Baseball Pitchers. J Warren Perry Symposium, University at Buffalo, Buffalo, NY. November 15th, 2011.
3. **Crotin RL** and Ramsey DK. Stride Length Compensations and Their Impacts on Brace-Transfer Ground Forces in Baseball Pitchers. 36th Annual American Society of Biomechanics Meeting, University of Florida, Gainesville FL, August 15-18th, 2012.
4. Panelist. (1) Case Based Approaches to Rotator Cuff and Labral Injuries: Surgery and Rehab; (2) Performance Optimization, a closer look at GIRD, Scapular Dyskinesia and Strengthening Techniques. Penn Medicine – Advances in Throwing: Latest on Injury Treatment and Performance Optimization, University at Pennsylvania, Philadelphia, PA. March 19th, 2016.
5. Michener LA, Behan, F, Plummer HA, **Crotin RL**, Hostetter G, Li B. Shoulder range of motion and strength in professional baseball players: a 3 year longitudinal study. Platform, Combined Sections Meeting-APTA, Virtual; Feb, 2021.
6. Szymanski D, Szymanski J, Ortiz P, Cloud D and **Crotin RL**. Relationship between Stature, Body Composition, and Absolute and Relative Strength and Power to Fastball Velocity among Collegiate Pitchers. National Strength and Conditioning Conference, Orlando, FL. July 9, 2021
7. Sakurai, M, Qiao, M, Szymanski, D and **Crotin RL**. Relationship Between Kinetics of Countermovement Jumps and Proximal Mechanics of Collegiate Baseball Pitching. National Strength and Conditioning Conference, Orlando, FL. July 8, 2021.
8. Ramsey DK and **Crotin RL**. Stride Length Impacts Sagittal Knee Biomechanics in Flat Ground Baseball Pitching. Poster presented at: the 21st Meeting of The Canadian Society for Biomechanics; May 25-28th, 2021; Montreal, Quebec, Canada
9. Barrack AJ, Michener LA, Liebeskind BY, Zerega RJ, Sum JC, **Crotin RL**, Plummer, HA. Rotational Shoulder Strength Profiles in North American and Latin American Professional Baseball Pitchers and Position Players. Post. American College of Sports Medicine Annual Meeting, World Congress on Exercise is Medicine and World Congress on the Basic Science of Exercise in Regenerative Medicine, Virtual, June 2021.
10. **Crotin RL** and Ramsey DK. Functional Forearm Fatigue Response to Changing Stride Lengths in Baseball Pitchers. Poster presented at: International Society of Biomechanics; July 25-July 29th, 2021; Stockholm, Sweden.
11. Ramsey DK and **Crotin RL**. Impact of Stride Length on Hip Dynamics in Baseball Pitching. Poster presented at the North American Congress on Biomechanics; August 21st – August 25th, 2022; Ottawa, Ontario, Canada
12. **Crotin RL**, Slowik JS, Brewer G, Fleisig GS. Biomechanical Predictors of Pitch Efficiency in Professional and Collegiate Pitchers. Podium presentation and Sports Science Panelist for Roundtable Discussion at the Virtual SABR Analytics Conference; March 18th-March 20th, 2022.

13. Qiao M, **Crotin RL** and Szymanski, D. Differences in Jump Characteristics Related to Elbow Varus Torque Among Division I Collegiate Pitchers. Poster presented at the National Strength and Conditioning Association National Conference; July 6-9th, 2022.
14. Fish M, Szymanski D, **Crotin RL**, Singh V, and Szymanski, J. Anthropometric and Physical Performance Relationships to Fastball Velocities in Collegiate Baseball Pitchers. Poster presented at the National Strength and Conditioning Association National Conference; July 6-9th, 2022.
15. Szymanski D, Qiao M, Szymanski J, and **Crotin RL**. Relationship Between Lower Body Power and Fastball Velocities Amongst Collegiate Baseball Pitchers. Poster presented at the National Strength and Conditioning Association National Conference; July 6-9th, 2022.
16. Ramsey DK, and **Crotin RL**. Impact of Stride Length on Sagittal Hip Dynamics in Baseball Pitching. Poster presented at the North American Congress on Biomechanics; August 21-25, 2022.
17. **Crotin RL**, Slowik JS, Brewer G, Cain EL, Fleisig GS. Biomechanical Efficiency in Collegiate and Professional Baseball Pitchers. International Society of Biomechanics in Sports Conference 2023
18. Szymanski D, Qiao M, Krobetzky T, Szymanski J, and **Crotin RL**. Relationship between absolute and relative strength, power, and lean body mass to bat and batted-ball exit velocities of collegiate baseball players. National Strength and Conditioning Association Coaches Conference 2023.
19. Szymanski D, Qiao M, Krobetzky T, Szymanski J, and **Crotin RL**. Relationship between body composition, agility, speed, and absolute and relative power to curvilinear ability amongst collegiate baseball players. National Strength and Conditioning Association Coaches Conference 2023.
20. Xu Z, Szymanski D, Singh V, Szymanski J, and **Crotin RL**. Oxygen Update and Heart Rate Response During Baseball Pitching. National Strength and Conditioning Coaches Conference 2023.
21. Ortiz P, Qiao M, Szymanski D, and **Crotin RL**. Comparison between smartphone markerless motion capture and marker-based motion capture systems during baseball pitching. National Strength and Conditioning Coaches Conference 2023.
22. Eaton R, **Crotin RL**, Ramsey DK, Proof of Concept: Nutritional Supplementation on Arm Strength Recovery – A Double-Blind, Placebo-Controlled Crossover Study of Division II Collegiate Baseball Pitchers. D'Youville College Research Day 2023.
23. Szymanski DJ, Reedy A, **Crotin RL**, Singh V, Xu J. Relationship Between Strength and Game Performance in Division I Collegiate Baseball Pitchers, NSCA Coaches Conference 2024.
24. Reedy A, Szymanski DJ, **Crotin RL**, Xu J. Relationship Between Isokinetic Arm Strength and Game Pitching Metrics in Division I Collegiate Baseball Pitchers, NSCA Coaches Conference 2024.
25. Szymanski J, Szymanski DJ, Crotin RL. Effect of the Offseason on Body Composition and Strength in Division I Collegiate Baseball Players. NSCA Coaches Conference 2024.
26. Reedy A, Szymanski DJ, Crotin RL. Relationship Between Isometric Arm Strength to Pitching Metrics and Game Performance in Division I Collegiate Baseball Pitchers. NSCA Coaches Conference 2024.

Peer-Reviewed Publications

1. **Crotin RL**. Game Speed Training in Baseball. *Strength Cond J*. 31(2): 13-25, 2009.
2. **Crotin RL**. Dryland Training: The Importance of Core Strength in Hockey. *Western New York Hockey Magazine*. 16(4): 24, 2011.

3. **Crotin RL.** Functional Lower Body Strength and Conditioning Exercises for Baseball Pitchers. *NSCA Performance Training Journal.* 10(2): 8-12, 2011.
4. **Crotin RL.** Dryland Training: Internal and External Hip Rotation in Goaltenders. *Western New York Hockey.* 1(1): 16-17, 2011.
5. **Crotin RL.** A Collaborative Approach to Prevent Medial Elbow Injuries in Baseball Pitchers. *Strength Cond J.* 33(5): 1-24, 2011.
6. **Crotin RL,** and Ramsey DK. Injury Prevention for Throwing Athletes PART I: The Pitchers' Baseball Bat Training Program. *Strength Cond J.* 34(2): 79-85, 2012.
7. **Crotin RL,** and Ramsey DK. Injury Prevention for Throwing Athletes PART II: Critical Instant Training. *Strength Cond J.* 34(3): 49-57, 2012.
8. Karakolis T, Bhan S, **Crotin RL.** An Inferential and Descriptive Statistical Examination of the Relationship Between Cumulative Work Metrics and Injury in Major League Baseball Pitchers. *J Strength Cond Res.* 27(8): 2113-2118, 2013.
9. **Crotin RL,** Bahn S, Karakolis T, and Ramsey DK. Fastball Velocity Trends in Short Season Minor League Baseball. *J Strength Cond Res:* 27(8): 2206-2212, 2013.
10. **Crotin RL,** Ramsey DK, White SC, Horvath P, and Kozlowski K. Altered Stride Length in Response to Increasing Exertion among Baseball Pitchers. *Med Sci Sports Exerc.* 46(3): 565-71, 2014.
11. **Crotin RL,** Ramsey DK. Influence of Stride Length on the Mechanics of Pitching. *Lower Extremity Review.* March 2014.
12. **Crotin RL,** Forsythe CM, Karakolis T, Bhan S. Physical Size Associations to Offensive Performance among Major League Leaders. *J Strength Cond Res.* 28(9): 2391 -6, 2014.
13. **Crotin RL,** Forsythe CM, Bhan S, Karakolis T. Changes in physical size among Major League baseball players and its attribution to elite offensive performance. *J Strength Cond Res.* 28 (10): 2705-8, 2014.
14. Ramsey DK, **Crotin RL,** White S. Effect of stride length on overarm throwing delivery: A linear momentum response. *Hum Mov Sci.* 38: 185-96, 2014.
15. **Crotin RL** and Ramsey DK. Stride Length: A reactive response to prolonged exertion potentially effecting ball velocity among baseball pitchers. *Int J Perform Analysis in Sport.* 15: 254-267, 2015.
16. **Crotin RL,** Bhan S, Ramsey DK. An inferential investigation into how stride length influences temporal parameters within the baseball pitching delivery. *Hum Mov Sci.* 41: 127-135, 2015.
17. Karakolis T, Bhan S, **Crotin RL.** Injuries to young professional baseball pitchers cannot be prevented solely by restricting number of innings pitched. *J Sports Med Phys Fitness.* 56 (5): 554-9, 2016
18. Ramsey DK, **Crotin RL,** White S. Effect of stride length on overarm throwing delivery: Part II: An angular momentum response. *Hum Mov Sci.* 46: 30-38, 2016.
19. Forsythe CM, **Crotin RL,** Greenwood M, Bhan S, Karakolis T. Examining the influence of physical size among Major League pitchers. *J Sports Med Phys Fitness.* April 2016.
20. **Crotin RL,** Zinamon SA, Kelly JD 4th, Baxter JR. Biomechanical estimation of elbow valgus loading in throwing athletes as a means to reduce injury risk. *Univ of Penn Ortho Journal,* 26: June 2016.
21. Ramsey DK, **Crotin RL.** Stride Length: The impact on propulsion and bracing ground reaction force in overhand throwing. *Sports Biomechanics,* 26: March 2018.

22. Thomas SJ, Paul RW, Rosen AB, Wilkins SJ, Scheidt J, Kelly IV JD, **Crotin RL**. Return-to-Play and Competitive Outcomes after Ulnar Collateral Ligament Reconstruction among Baseball Players: A Systematic Review. *Orthopaedic Journal of Sports Medicine*, 8(12): December 2020.
23. Slowik JS, Diffendaffer AZ, **Crotin RL**, Stewart MS, Hart K, Fleisig GS. Biomechanical Effects of Foot Placement during Pitching. *Sports Biomechanics*, DOI: 10.1080/14763141.2021.1898668: 2021.
24. Michener L, Barrack A, Liebeskind B, Zerega R, **Crotin RL**, Plummer H. Shoulder External and Internal Rotation Strength Profiles in Professional Baseball Players: Effects of Player Position and Geographic Origin. *International Journal of Sports Physical Therapy*, 16 (4): 1126-1134, 2021.
25. **Crotin RL**, Yanai T, Chalmers P, Smale KB, Kaneoka, K, Erickson B, Ishii M. An Injury and Pitching Performance Analysis between Major League and Nippon Professional Baseball: A Two-Team Comparison from 2015-2019. *Orthopaedic Journal of Sports Medicine* 2021;9(5):23259671211008810
26. **Crotin RL**, Chalmers P, Smale KB, Erickson B, Li B, Fiocchi L. An In-Game Analysis of Hamstring Injury Laterality in Major League Baseball from 2011-2017. *American Journal of Sports Medicine* (In Review December 2021).
27. **Crotin RL**, Ramsey DK. Grip Strength Measurement in Baseball Pitchers: A Clinical Examination to Indicate Stride Length Inefficiency. *The International Journal of Sports Physical Therapy*, 2021;16(5):1330-1337.
28. Ramsey DK, **Crotin RL**. Stride Length Impacts Sagittal Knee Biomechanics in Flat Ground Baseball Pitching. *Applied Sciences*, 12: 995, 2022
29. Conforti, CM, **Crotin RL**, Oseguera J. An Analysis of Playoff Performance Declines in Major League Baseball. *Journal of Strength and Conditioning Research*
30. Job TDW, Neville J, Cahil MJ, Bourgeois FA, **Crotin RL**, Cronin JB. Training Methods to Increase Throwing Velocity in Baseball Athletes: A Brief Review. *Strength and Conditioning Journal* (PAP)
31. Sakurai M, Szymanski DJ, Qiao M, **Crotin RL**. Combined Countermovement Jump Testing and Motion Analysis as the Future of Performance Assessment for Baseball Pitchers: A Narrative Review. *Journal of Strength and Conditioning Research* (PAP)
32. Lis R, Szymanski DJ, Qiao M, **Crotin RL**. The Relationship Between Various Jump Tests and Baseball Pitching Performance: A Brief Review. *Strength and Conditioning Research*
33. Lis R, Szymanski DJ, Qiao M, **Crotin RL**. An Exploratory Investigation into the Impact of Bilateral and Unilateral Jump Characteristics on Ground Reaction Force Applications in Baseball Pitching. *Journal of Strength and Conditioning Research*
34. Conforti, CM, **Crotin RL**, Oseguera J. Major League Draft WARs: An Analysis of Wins Above Replacement in Player Selection. *Journal of Sports Analytics*, 8:1, 2022
35. **Crotin RL**, Slowik JS, Brewer G, Cain EL, Fleisig GS. Determinants of Biomechanical Efficiency in Collegiate and Professional Baseball Pitchers. *American Journal of Sports Medicine*
36. **Crotin RL**, Conforti, CM, Oseguera J, Szymanski DJ. An Anthropometric Evaluation of First Round Draft Selections in Major League Baseball. *Journal of Strength and Conditioning Research*
37. **Crotin RL**, Ramsey DK. An Exploratory Investigation Evaluating the Impact of Fatigue-Induced Stride Length Compensations on Ankle Biomechanics among Skilled Baseball Pitchers. *Life*, 13(4), 1986, 2023
38. Z. Farrel, E.J. Dichiaro, P.C. Jones, B. Skutnik, **R.L Crotin**, E. Rimer, P. Ivey, J.F. Caruso. Relative Pitch Speed Predictors for Division I Collegiate Baseball Players. *Isokinetics and Exercise Science*

39. Yanai, T, **Crotin RL**. Proximal to Distal Sequencing Impacts on Maximum Shoulder Joint Angles and the Risk of Impingement in Baseball Pitching Involving a Scapular Independent Thoracohumeral Model. *Scandinavian Journal of Medicine and Science in Sport*
40. **Crotin RL**, Rimer E, Caruso, J. PitchLoad: A New Workload Metric to Assess Starting Pitcher Performance in Professional Baseball. *Journal of Sports Sciences* (In Preparation)
41. Balan AD, **Crotin RL**, Naito R, Escobar D, Zafar A. A Baseball Injury and Performance Initiative to Combat Health Risks Associated with Early Sport Specialization. *Strength and Conditioning Journal*
42. Qiao M, **Crotin RL**, Szymanski DJ. An Inferential Investigation into Countermovement Jump Determinants of Ulnar Collateral Ligament Injuries in Collegiate Baseball Pitchers. (In Preparation – *American Journal of Sports Medicine*)
43. Yanai T, Onuma K, **Crotin RL**, and Daisuke M. A novel method intersecting three-dimensional motion capture and medial elbow strength dynamometry to assess elbow injury risk in baseball pitchers. *Nature – Scientific Reports*.
44. Martinez-Rodriguez JA, **Crotin RL**, Szymanski DJ. An Introduction to an Advanced Change of Direction Test in Baseball and Softball: The Curvilinear Ability Test. *Strength and Conditioning Journal*
45. **Crotin RL**, Iniguez, X, Carlson E. Proximal Chain Strength, and Coordination Concepts to Maximize Injury Protection and Transfer of Training Effects for Competitive Baseball Players. *Strength and Conditioning Journal*
46. Farrel Z, Jones PC, Lowe CA, Gscheidle B, Cocco AR, Wellwood J, Patel NL, Skutnik BC, **Crotin RL**, Rimer E, Ivey P, and Caruso JF. Classifying batted ball outcomes from Division I collegiate baseball players. *Journal of Sport Sciences*.
47. Bordelon N, Fava A, Friesen KB, **Crotin RL**, Oliver GD. Kinematics of Hitting in Youth Baseball: Implications for Skill Development. *International Journal of Sports Medicine*
48. **Crotin RL**, Carlson E, Iniguez X. A Preliminary Analysis of Combine Performance on Draft Status and Player Valuation in Major League Baseball (In Preparation, Targeted Publication: *Journal of Strength and Conditioning Research*)
49. **Crotin RL**, Iniguez, X, Carlson E. Meta Analysis: Are Significant Differences in Pitching Biomechanics Actually Meaningful in Determining Throwing Velocity Potential? (In Preparation, Targeted Publication: *Sports Biomechanics*)
50. **Crotin RL**, Carlson E, Iniguez X. The Effect of Catching Performance on Pitching Injuries in Major League Baseball (In Preparation, Targeted Publication: *American Journal of Sports Medicine*)
51. Hill G, Zuberer M, **Crotin RL**, Szymanski D, Carlson E, Deer P, Iniguez X. The Pandemic Paradox: Do Spectators Actually Influence Major League Baseball Pitching Performance? (In Preparation, Targeted Publication: *Journal of Sports Sciences*)
52. Martinez-Rodriguez JA, **Crotin RL**, Cronin JB. The Impact of Age on Speed Characteristics Amongst Major League Baseball Players (In Preparation: *Journal of Sports Sciences*)

53. Martinez-Rodriguez JA, Crotin RL, Cronin JB. Baserunning Performance Determinants and Associations in Major League Baseball Using Human Tracking Technology at Stadium Scale (In Preparation: *Journal of Strength and Conditioning Research*)
54. **Crotin RL**, Watson, CW, Szymanski D. The Impact of Injuries on Team Success in Major League Baseball (In Review: *Journal of Sports Analytics*)
55. **Crotin RL**, Conforti CM, Borden M. A Sticky Pitch Clock Situation: An Analysis of Major League Baseball Rule Modifications on Tommy John Surgical Cases Amongst Baseball Pitchers (In Preparation: *American Journal of Sports Medicine*)
56. **Crotin RL**, Balevic J, Gannon III R, Johnson B, Conforti CM. A Case Study Exploring the Effects of a Novel Intra-Abdominal Pressure Belt on Throwing Arm Strength Among Collegiate Baseball Pitchers (In Review: *Applied Sciences*)
57. **Crotin RL**, Balevic J, Gannon III R, Johnson B, Conforti CM. A Case Study Exploring the Effects of a Novel Intra-Abdominal Pressure Belt on Fastball and Change-Up Velocity, Command, and Deception Among Collegiate Baseball Pitchers (In Review: *Applied Sciences*)
58. Hajjar B, Mansfield C, Oñate J, Crotin RL, Amelung B, Posner M, Brown, R. Predictability of Functional Movement Screen on Upper Extremity Injuries in Youth Baseball Players: A Systematic Narrative Review (In Review: *International Journal of Sports Physical Therapy*)

Active Memberships, Committees, Certifications

2021	International Society of Biomechanics
2020	American Baseball Biomechanics Society
2019	Selective Functional Movement Assessment (SFMA Level 1)
2018	USA Weightlifting Level I Sport Performance Coach
2011	The American College of Sports Medicine
2011	The American Society of Biomechanics
2006	The National Strength and Conditioning Association
	<ul style="list-style-type: none"> • Registered Strength and Conditioning Coach (RSCC) • Certified Strength and Conditioning Specialist (CSCS)

REFERENCES ON NEXT PAGE

References

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