



Ryan L. Crotin

PhD, CSCS, RSCC, USAW, SFMA L1

Organizational Strategist

Sport Scientist

Strength & Conditioning Specialist

Research Publication Author

3790 E. Matthew Dr., Phoenix, AZ 85050

716-998-9551

RLCROTIN@GMAIL.COM

<https://www.linkedin.com/in/ryancrotin/>

https://www.researchgate.net/profile/Ryan_Crotin2



Professional Employment:

02/21 – Present



Vice President Indiatlantic, 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, Education and Certificate Programs, (3) Marketing Materials, (4) Internal Research and Publication, (5) Conference Speaking Appearances and (6) Social Media and Website Content.

11/18 – 2/21



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
- Oversee 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
- Oversee implementation of athletic profiling procedures for amateur draft selections including logistics derived from Performance Integration analytics
- Oversee strength and conditioning and its collaborative involvement with skill coaches, scouts and front office officials
- Serve on an organization-wide interview committee for Major League and Minor League candidates applying for leadership positions

12/17 – 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 – 12/17



**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

- 12/10 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-All 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)

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
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Teaching Experience and Academic Service

- 10/20-Present **Louisiana Tech University – Human Performance Laboratories
Ruston, LA**
Research Associate/Adjunct Thesis Advisor
- 09/20-Present **Auckland University of Technology – Sports Performance Research
Institute New Zealand (SPRINZ), Auckland, NZ**
Research Associate/Adjunct Thesis Advisor
- 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
*The Effects of Carbohydrate and Fluid Restriction on Physical and
Cognitive Performance in Collegiate Wrestlers*
Department of Exercise & Nutrition Sciences, Department of Biostatistics
- 09/10- Present **Ad Hoc Reviewer,**
Strength and Conditioning Journal; National Strength and Conditioning
Association (NSCA)
- 09/08-05/09 **Research Assistant,**
University at Buffalo, Buffalo, NY
Conservative Treatment of Medial Knee Osteoarthritis
Ramsey DK, Russell ME, Crotin RL
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,**
Metabolic Cost and Lactate Threshold Concepts
Kozlowski KF and Cerny F
Department of Exercise and Nutrition Sciences
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Academic Advisement

- 10/20 Student: Motoki Sakurai
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
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
Academic Institution: San Jose State University
Masters Thesis: *The Relationship between Different Jump Types and Baseball Pitching and Hitting Outcomes*
- 08/20 Student: Adam Smith
Academic Institution: Auckland University of Technology
Sport Performance Research Institute New Zealand (SPRINZ)
Masters Thesis: *Acute Effects of Specific and Non-Specific Priming Strategies to Enhance Baseball Pitching Velocity*
- 07/19 Student: Trey Job
Academic Institution: Auckland University of Technology
Sport Performance Research Institute New Zealand (SPRINZ)
Masters Thesis: *Training Methods to Increase Throwing Velocity in Baseball Pitchers*
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Academic Grants

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
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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 9-13, 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, 2021
7. Sakurai, M, Qiao, M, Szymanski, D and **Crotin RL**. Relationship Between Kinetics of Countermovement and Proximal Mechanics of Collegiate Baseball Pitching. National Strength and Conditioning Conference 2021.

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. *The Orthopaedic Journal of Sports Medicine*, 8(12): December 2020.
23. **Crotin RL**, Ramsey DK. An Exploratory Ankle Mechanics Analysis to Infer Biomechanical Criteria for Stride Length Optimization in Baseball Pitchers. *International Journal of Performance Analysis in Sports* (In Review January 2021).
24. Slowik JS, Diffendaffer AZ, **Crotin RL**, Stewart MS, Hart K, Fleisig GS. Biomechanical Effects of Foot Placement during Pitching. *Sports Biomechanics* (Accepted February 2021).
25. 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* (Accepted March 2021).
26. **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* (In Review October 2020)
27. **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 October 2020).
28. **Crotin RL**, Ramsey DK. Lower Body Compensation Presents an Elbow Health Risk to Baseball Pitchers. *Journal of Athletic Training* (In Review December 2020).

29. Ramsey DK, **Crotin RL**. Stride Length Impacts Sagittal Knee Biomechanics in Flat Ground Baseball Pitching. *Journal of Biomechanics* (In Review December 2020).

Active Memberships, Committees, Certifications

- 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**
 • Registered Strength and Conditioning Coach (RSCC)
 • Certified Strength and Conditioning Specialist (CSCS)

Volunteer Services:

Free Arm Clinics

Nov 2017

- Provide athletic development service to youth baseball players' ages 9-18 years old with the emphasis of education and training in prevention of injuries and improving sequential throwing movement.

Grassroots Crisis Intervention Center, Career Resources Columbia, MD

Nov 2014 – May 2015

- Assist clients with resumes, work searches, application procedures and interview preparation

Route 1 Day Resource Center, Transport Jessup, MD

Dec 2014 – May 2015

- Assist facility in transporting clients

References

Dr. Dan Ramsey, Dissertation Chair, Assistant Professor, Biomechanics

Department of Health Professions Education, D'Youville College
Buffalo, New York USA
(716) 829-7585
ramseyd@dyc.edu

Brady Anderson

Former Vice-President of Baseball Operations, Baltimore Orioles LLC, Major League Baseball
Former Major League Player
(310) 795-8699
9bradyanderson@gmail.com

Lee Fiocchi, Los Angeles Angels LLC, Major League Baseball
Major League Strength and Conditioning Coordinator
(217) 549-0437
Lee.Fiocchi@angels.com

Dr. John Kelly, IV, Director, Sports Shoulder – Penn Medicine
University of Pennsylvania
(610) 639-4884
johndak4@gmail.com

Shivam Bhan, NIKE Labs
Global Product Line Manager - Footwear
(503) 367-4568
shivambhan@gmail.com
