

Lorena Martin, Ph.D.

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EDUCATION

University of California San Diego, CA **Aug 2015**
Postdoctoral Fellowship – GIS Spatial Analysis
Department of Family Medicine and Public Health

University of California San Diego, CA **Aug 2014**
Postdoctoral Fellowship – Biostatistics
Department of Family Medicine and Public Health

University of California San Diego, CA **Aug 2013**
Postdoctoral Fellowship – Epidemiology
Department of Family Medicine and Public Health

University of Miami, FL - **July 2013**
Ph.D. obtained/Doctorate in Exercise Physiology
Specialization: **Statistics**
Departmental Honors in Qualifying Exams
Department of Kinesiology and Sport Sciences

Nova Southeastern University, Fort. Lauderdale - **June 2009**
MS obtained/Master of Science, Mental Health Counseling
Department of Mental Health Counseling

University of Miami, FL - **June 2005**
BA obtained/Bachelor's Degree, Major: Psychology
Double Minor: **Leadership and Spanish**
Department of Psychology

EMPLOYMENT

University of Southern California **Assistant Professor of Data Sciences and Operations**

I teach statistics courses at both the undergraduate and graduate levels at the USC Marshall School of Business. Courses taught at USC Marshall School of Business:

1. DSO-545 Statistical Computing and Data Visualization
2. DSO-510 Business Analytics
3. BUAD-310 Applied Business Statistics
4. DSO-599 Sports Performance Analytics
5. GSBA-545 Data-Driven Decision Making
6. DSO-499 Statistical Computing and Data Visualization in R and Tableau

Courses taught in the Division of Biokinesiology:

1. BKN-610 Technology in Sport: Field Assessment of Athlete Performance
2. BKN-599 Sports Science Statistics

Seattle Mariners

Role: Director of High Performance 2017 – 2018

Oversee and manage medical and support staff including; athletic trainers, strength and conditioning coaches, psychological staff, consultants, both MLB and MiLB staff, orthopedic surgeons, and team physicians.

- Reduced number of days on Disabled List for the Major League players by over 50% compared to 2017 by All-Star Break.
- Reduced number of days on Disabled List for the Major League players by over 22% on average compared to past five seasons.
- I implemented a “Rest and Recovery Priority” by incorporating hyperbaric chambers, firefly wearable during flights, hydration emphasis, and encouraging players to think of the training room as a “recovery room” to remove the stigma of the training room.
- We implemented Fatigue Schedule Analyses to promote the importance of sleep and recovery.
- I provided protocols for every system in place. Examples include Emergency Protocol for the Dominican Academy, Return to Play Protocols for different injuries, External Consultants Protocols, Physical Therapy for Staff Protocol, Athletic Training Modality Protocol, Hyperbaric Chamber Usage Protocol, the Dominican Academy Medical Protocol, Mariners Grip Strength Protocol, and an Athlete Managements System Protocol.
- Spearheaded the initiative to create a Microsoft Platform Player application and staff portal template for data-driven decisions.
- Implemented the first Athlete Management System for the Seattle Mariners (Kinduct) as a pilot in preparation for the Microsoft AMS platform to establish a communication link between Major League and Minor Leagues teams.
- Initiated weekly meetings to establish improved communications between sub-departments areas of Athletic Training, Strength and Conditioning, Rehab, Mental Skills, Consultants, Sports Scientists, and Team Physicians.
- Evaluated each of the following programs; Athletic Training, Strength and Conditioning, Mental Skills (Peak Performance), Nutrition, and Sport Science.
- Analyzed, interpreted, and created reports from player anthropometric profile data from 2000-2018.
- Implemented CPR and AED training for both Player Development and High-Performance staff in the Dominican Republic.
- Provided Hyperbaric Chamber Training and Certification for support staff.
- Implemented Fatigue Travel Statistical Modeling (using team travel and schedules) to identify when players would be most fatigued in efforts to provide suggestions to buffer extensive travel fatigue.

Los Angeles Lakers

Role: Director of Sports Performance Analytics 2016 -2017

Evaluate, analyze, and integrate data-driven sports science research to maximize performance and reduce injury risk.

- Other duties performed included:
 - Created and developed a data collection protocol.
 - Provide support and guidance on the implementation of a comprehensive and innovative athlete management system.
 - Collected data on all the following variables: nutrition, strength and conditioning, SportsVU, and Second Spectrum data, psychological, and recovery data to optimize athletic performance and prevent injuries.
 - Worked closely with three departments: Management, coaching staff, and training staff.
 - Management: Used statistical models to identify future talents based on physical, psychological, and environmental variables across the NBA, D-League, NCAA basketball, and international players.
 - Coaching staff: Worked closely together to develop simple, practical, and useful metrics for the coaches to evaluate the fatigue threshold of players, psychological determinants, and playerload and recovery regimen recommendations.
 - Training staff: Worked closely with strength and conditioning coach to evaluate fatigue, acute to chronic load, improve body composition. Also, I designed a program to calibrate baseline muscular strength, power, and endurance levels using validated submaximal and maximal (cautiously) assessments. Evaluated anthropometric variables to determine player potential and deficits where there was room for improvement to optimize athletic performance.

Kaweah Delta Hospital District

Role: Lead Statistician for the Hospital

Duties: Focused on research design, calculating sample size, establishing inter-rater reliability, developing data collection protocols, statistical analyses, and interpretation of generalizable findings.

Projects

- Oxygen Delivery as the Therapeutic Goal in Early Goal-Directed in Sepsis Using Thoracic Impedance Cardiology
- Utility of a Simplified Tiered Bedside Exam and Score to Recognize At-Risk Patients
- Impact of Pharmacists on a Transitions of Care Program
- Intravenous Opiate Choice and Effect on Patient Outcomes
- A Pilot of Metoclopramide and Benadryl vs. Ketamine for the Treatment of Acute Migraines
- Hospital-Acquired Pneumonia Prevention Initiative (HAPPI) study
- Chronic Disease Management Clinic: Heart Failure Readmission Management study
- Recognizing Early & Rapidly Treating Potentially at Risk Patients
- Opioid Prescribing Habits study
- Ultrasound-Guided Reductions of Forearm Fractures study
- Vitamin D and Diabetes Mellitus: Are Low Vitamin D Levels Associated with Poor Glycemic Control?
- Comparison of Clinical Experience Vs. Clinical Decision Rules for CT Utilization in Pediatric Minor Head Trauma.
- Retrospective Analysis of Carotid Revascularization in Patients with Recent Coronary Intervention

OTHER RESEARCH EXPERIENCE

NASA Visiting Researcher

August 2017

Invited to present on: **Multidisciplinary integration of Predictive Analytics, Machine Learning, and Biometric Technology for Optimization of human performance.**

Reviewed predictive analytics models, machine learning methods, and state of the art biometric wearable technology used in the professional sports world, healthcare, and hospital settings.

Division of Behavioral Medicine

Sept.2014-July 2016

Moderating Effects of Neighborhood Environment on Individual-Centered Physical Activity Interventions: [R01CA15995; PI: Marcus]

Duties: Collect and update data on recreational facilities, parks, streetlights, and trees for each participant buffer, access regional planning data, calculate minutes of light and moderate-to-vigorous physical activity for each participant from the raw accelerometer data, Geocode built and social environment data for each participant buffer, use spatial analysis & mixed modeling techniques to analyze data & write-up findings.

Division of Endocrinology and Metabolism, Sears Laboratory

Duties: Designed program and protocol, performed analyses & adhoc analysis. Examined and analyzed biomarkers of inflammation, gene expression, insulin, and glucose data in participants with Metabolic Syndrome. Investigated inflammatory biomarkers and validated studies of output results.

Division of Behavioral Medicine

Duties: Examine correlates and design statistical models to examine relationships between sugar-sweetened beverages, the DASH diet, moderate to vigorous activity (MVPA), and sedentary behaviors. Analyzed physical activity using ActiLife software, R & SPSS

Salk Institute for Biological Studies

October 2014 – 2016

Gene Expression Laboratory

Visiting Scientist

Research among physical activity and cartilage regeneration for injury treatment.

San Diego State University

October 2014 – June 2015

Heart Research Institute - Dept. of Biology

Visiting Scholar - Molecular Cardiovascular Biology Laboratory

Researcher

University of Miami, FL

Jan. 2010-July 2013

Dept. Kinesiology and Sports Science

Duties: Developed a statistical model and design for my dissertation.

- Research Study - Collaborated with data management members, programming, and statistics in planning clinical trials and protocols.
- Developed statistical design, IRB protocol, run pilot study, recruit, supervise trainees, collect and analyze data using regression.
- Supervised 19 sport science trained graduate students on implementing two types of resistance training programs at the University of Miami.

Researcher

University of Miami, FL

Jan. 2013-July 2013

Dept. Kinesiology and Sport Science

Study: ***Implicit Associations of the Top #100 Professional Male Tennis Players***

Duties: Developed measure of sports performance for elite athletes

Performed testing on male professional tennis players ranked in the top #100

Researcher

University of Miami, FL

Jan. 2012-July 2012

Dept. Kinesiology and Sports Science

Study: ***What Makes Winners Win?***

Duties: Ran pilot study, recruited, and supervised trainees on collecting and analyzing data.

Researcher

University of Miami, FL

Jan. 2011-July 2011

Dept. Kinesiology and Sports Science

Study: ***An Assessment of Narcissism and Confidence in Elite Performers***

Duties: Collaborated with members in Data management, programming, and statistics in planning clinical trials and protocols.

Research Assistant

University of Miami, FL

Jan. 2009-Dec. 2009

Duties: Research using Tobii Eye Tracker and psychophysiological measures to investigate attention and its relation to athletic performance.

TEACHING EXPERIENCE

Northwestern University (School of Continuing Studies)

Adjunct Faculty for the Master of Science in Predictive Analytics

Adjunct Faculty for the Master of Science in Global Health

Taught the following courses:

- Introduction to Statistical Analysis
- Sports Performance Analytics
- Biostatistics and Epidemiology
- Medical Data Science
- Research Methods

Duties included teaching students to apply statistical techniques to the processing and interpretation of data for sports performance optimization and injury prevention. Also, being culturally sensitive when collecting data in different parts of the world and making sure that the surveys are culturally sensitive and appropriate.

Florida International University

Adjunct Faculty Statistics;

Taught the following courses:

- Research Methods - Statistics (PSY3213)
- Theories of Personality (PPE3003)
- Guest Lecture on Research Methods
- Guest Lecture on Statistical Models on Exercise and Bioenergetics Metabolism

University of Miami

Research Assistant/Teaching Assistant/Graduate Assistant -Sports Scientist

Taught the following courses:

- ESS 212 Elements of Sport Psychology
- KIN 222 Exercise Physiology Laboratory: Neuromuscular Testing
- KIN457 Nutrition Research

Duties included: Taught both undergraduate and graduate-level students how to develop and implement sports performance programs for different populations ranging from children to elite athletes in other sports.

Also, trained in teaching online, hybrid courses.

Keiser University

Director of Sports Performance and Medicine Program at Keiser University

Developed an athletic performance curriculum with a foundation on evidence-based sports medicine research.

Taught the following courses:

- Principles of Health and Fitness
- Exercise Physiology
- Exercise Leadership
- Nutrition and Wellness
- Sport Psychology
- Sports Law and Ethics
- Substance Abuse in Sports
- Sports Marketing
- Stress Management
- Nutrition in Health and Exercise

PUBLICATIONS

1. **Martin, L.** (2019). Sports Science Data Protocol. *Sports and Exercise Medicine*, 5(2).
2. Perry AC, & **Martin L.** (2014). Race differences in obesity and its relationship to the sex hormone milieu. [*Hormone Molecular Biology and Clinical Investigation*](#), 19(3):151-161.
3. Wu, Michael, Belmonte JC, **Martin L.** (2016). Investigating the role of hypoxia-responsive miRNA and T helper 9 cells in hypoxia-induced immunosuppression. *Nature Cell Biology*. 2017 Oct;19(10):1286-1296. doi: 10.1038/ncb3615.
4. Diaz-Roman Y, **Martin L**, Becerra BJ, & Sears DD. (2016). Ethnic disparity in diabetes self-management class utilization, behavioral risk factors surveillance system 2012. *Integrative diabetes and cardiovascular diseases*, 1(1), 23-28.
5. **Martin L**, Martin Jr JJ. (2016) Sports Injuries: prevention and rehabilitation in tennis, 2nd Edition, McGraw-Hill Publishers.
6. **Martin, L.** (2016) Sports Performance Measurement and Analytics: The science of assessing performance, predicting future outcomes, interpreting statistical models, and evaluating the market value of athletes. 1st Edition, Pearson Publishers.
7. **Martin L.** (2015). Is socioeconomic status a contributing factor to tennis players' success? *Journal of Medicine and Science in Tennis*, 20(3):116-121.
8. Perry AC, & **Martin L.** (2015). Redefining the Metabolic Syndrome: Contribution of inflammatory and steroidal antecedents. *Medical Research Archives*. Vol.2 No.9, pp19-25.
9. **Martin L**, Signorile JF, Kahn BE, Perkins AW, Soyeon A, & Perry AC. (2015). Improving exercise adherence and physical measures in English-speaking Latina women. *Journal of Racial and Ethnic Health Disparities*. DOI: 10.1007/s40615-015-0100-4.
10. Larsen B, **Martin L**, Strong DR. (2014). Sedentary behaviors and prevalent diabetes in a diverse population. *Journal of Public Health*, pp. 1–7 /doi:10.1093/PubMed/fdu103.
11. Martinez ME, Wertheim BC, Anderson K, **Martin L.** (2014). Family history of breast and ovarian cancer and triple-negative subtype in Hispanic/Latina women, *SpringerPlus*, 3:727.

In Preparation

12. Squillante A, McCormick B, **Martin L**, Sigward S, Schroeder ET. Determining Optimal Load for Maximal Power Production in the Mid-Thigh Power Clean.
13. Squillante A, McCormick B, **Martin L**, Sigward S, Schroeder ET. Determining The Optimal Dropping Height In Depth Jump vs Drop Jump Training.
14. **Martin L**, La Greca A, Lai B, Perry AC. (2021). Correlates of breakfast intake, psychological variables with physical fitness levels in Latino children.
15. **Martin L**, Kerr J, Sallis JF, Godbole S, Meseck K, Mendoza A, Marcus BH. Moderating effects of neighborhood environmental variables on self-reported and objectively measured physical activity from an individually-tailored physical activity intervention at six months from a west coast Latina population.

PRESENTATIONS

Martin L (2021). Data Privacy in Professional Sports. 11th Official Statistics and Methodology Symposium, Korea.

Martin L (2021). Prolonging Players' Careers in Sports through Technology and Analytics. TBD Tennis Innovation Conference, Virtual.

Martin L (2019). Rethinking How We Maximize Performance. Invited Presentation at NASA, Langley, VA.

Martin L (2018). Pro Sports - Challenges and Successes in Sports Performance presented at the Sports Innovation Summit in **Tokyo, Japan**.

Martin L (2017). Multidisciplinary integration of Predictive Analytics, Machine Learning, and Biometric Technology for Optimization of human performance at **NASA**, Langley, VA.

Martin L (2016). Sports performance measurement and analytics. Presented at the **MIT Sloan Sports Analytics Conference**, Cambridge, Mass.

Martin L, Meseck KA, Dunsiger SI, Marcus BH (2015). Moderating effects of neighborhood characteristics on a physical activity intervention. Presented at the National Cancer Institute Center for Reducing Cancer Health Disparities.

Martin L, Kahn BE, Perkins AW, Signorile JF, & Perry AC. (2014). Evaluative Conditioning as Method to Modify Health Behaviors. Presented at the 2014 Association for Applied Sport Psychology Annual Convention, Las Vegas, NV.

Martin L, Kahn BE, Perkins AW, Signorile JF, & Perry AC. (2014). Improving exercise adherence and physical measures. Presented at the 2014 American College of Sports Medicine (ACSM), Orlando, FL.

Martin L, Kahn BE, Perkins AW, Signorile JF, & Perry AC. (2013). Evaluative conditioning combined with Resistance Training Improves Exercise Adherence. Presented lecture at the Association for Applied Sport Psychology Annual Convention, New Orleans, LA.

Martin L, Kahn BE, Perkins AW, Signorile JF, & Perry AC. (2013). Evaluative Conditioning May Improve Exercise Adherence in Hispanic Females. Presented at the Miami Clinical and Translational Science Institute Research Forum at the University of Miami Medical Campus.

Martin L, Signorile JF, & Perry AC. (2012). Pilot Study - Is Breakfast Related to Total Daily Calorie Intake and BMI in Middle School Latino Adolescents? Presented at the 58th Annual Meeting and 2nd World Congress on Exercise is Medicine - ACSM (American College of Sports Medicine) Convention.

Martin L, Kahn BE, Perkins AW, Signorile JF, & Perry AC. (2012). Self-identity, self-esteem, and body attitude in thin and overweight Hispanic females Evaluative conditioning and Exercise intervention: Initial findings and future directions. Presented at the AASP Regional Conference at Barry University, Florida.

Martin L, & Perry AC. (2011). Pilot Study - Is Breakfast Related to Total Daily Calorie Intake and BMI in Middle School Latino Adolescents? Presenting at the 58th Annual Meeting and 2nd World Congress on Exercise is Medicine - ACSM (American College of Sports Medicine) Convention.

Martin L, Perry AC, & Menne E. (2011). Do Professional Tennis Players Have More Self-Efficacy in Their Tennis Matches than Non-Professional Tennis Players? 2011 American Psychological Association Annual

Convention.

Martin L, & Marker CD. (2009). What Makes Tennis Players Win? Presented at the 2009 Nova Southeastern University Research Fair.

PUBLISHED ABSTRACTS

Martin L, Kahn BE, Perkins AW, Signorile JF, & Perry AC. (2014). Improving exercise adherence and physical measures in Latina women. Presented at the 2014 American College of Sports Medicine (ACSM), Orlando, FL.

Martin L, Kahn BE, Perkins AW, Signorile JF, & Perry AC. (2013). Evaluative conditioning combined with Resistance Training Improves Exercise Adherence in Hispanic Females.

Martin L, Signorile JF, & Perry AC. (2012). Is Breakfast Related to Total Daily Calorie Intake and BMI in Middle School Latino Adolescents?

Martin L, Kahn BE, Perkins AW, Signorile JF, & Perry AC. (2012). Self-identity, self-esteem, and body attitude in thin and overweight Hispanic females Evaluative conditioning and Exercise intervention: Initial findings and future directions.

Martin L, Kahn BE, Perkins AW, Signorile JF, & Perry AC. (2012). "Thin Women Display Hedonic Treadmill Tendencies Regarding Their Weight Vs. Overweight Counterpart!"

AWARDS

2016 NIMHD Research Training Institute Awarded Bethesda, MD
2016 Joint Statistical Meeting Training Workshop Awarded Chicago, IL
2016 NIH/NHLBI Post-doctoral Research Fellowship Awarded \$100,000
2016 NIH/NIMHD Loan Repayment Program Awarded \$35,000
2015 NIH/NIMHD Loan Repayment Program Awarded \$35,000
2015 NIH/NCI Post-doctoral Research Fellowship Awarded: R01CA15995; \$97,362
2014 NIH/NCI Post-doctoral Research Fellowship Awarded: R01CA15995; \$94,408
2014 AHA award for the Ten-day seminar in Epidemiology
2014 Society for Multivariate Experimental Psychology Awarded
2014 Federation of American Societies for Experimental Biology (FASEB) Travel Award
2014 Experimental Biology – Poster Finalist
2013 FASEB Professional Skills-Scientific Award 2013
2013 Graduate Assistantship - University of Miami
2013 Federation of American Societies for Experimental Biology (FASEB)
2013 MARC Grant Writing Training Award
2012 Passed Exercise Physiology Qualifying Examination with "Honors."
2012 Teaching Assistantship - University of Miami
2012 Barbara Marks Research Grant
2012 Barbara Marks Travel Award
2012 GAFAC travel award
2011 Transformative Consumer Research Grant
2011 Research Assistantship-University of Miami
2011 Katy Dean Research Grant
2011 Katy Dean Travel Award
2011 GAFAC travel award for conference presentation
2010 Graduate Assistantship at the University of Miami
2010 Graduate Student Association Senator for Dept.
2010 Barbara Marks Research Grant

2005 Dean's List, Provost List, President's List at University of Miami
2005 Golden Key Honor Society
2000 All American Scholar Award
1996 State Tennis Champion

ANALYTIC AND STATISTICAL SKILLS

1. Experimental design
2. Statistical analysis of large datasets
3. Attention to detail
4. Supervisory experience
5. SPSS (GLM, ANOVA, MANOVA, MANCOVA, simple regression, multiple regression, logistic regression, chi-square, mixed models)
6. Awarded Society for Multivariate Experimental Psychology statistical scholarships to Curran-Bauer Analytics - Structural Equation Modeling and Latent Growth Curve Modeling
7. R software - The R Project for Statistical Computing
8. Bioinformatics – Bioconductor – Ingenuity Pathways
9. Tableau for Data Visualization
10. Data visualization in multiple platforms
11. Develop Data-Driven Algorithms

EXTRACURRICULAR ACTIVITIES

Developed three apps for promotion of health, mHealth - Healthy Changes, LLC
Top #3 in the Florida Women's Open 2009
Top #10 in the Florida State Tennis Player
Top #200 in the USA (Women's Professional Tennis Circuit)
Graduate Student Association Senator (GSA) –University of Miami
Tennis Professional (Independent Contractor) 1998-2008
Personal Trainer 1998-2008 Trained children and adults to modify health behaviors

CERTIFICATIONS

1. Collaborative IRB Training Initiative (CITI) Certified
2. ACE Certified Personal Trainer
3. Scirion Personal Trainer Certified
4. Scirion Personal Trainer Proctor
5. Bfit Aerobics Certified Instructor
6. PTR Certified Tennis Professional
7. USPTA P1 Certified Tennis Professional
8. AMFPT Certified Personal Trainer, Sports Nutritionist
9. NESTA Sports Yoga Certified
10. AMFPT Sports Nutrition Certified
11. CPR and AED Certified

SERVICE

2021 Founder of the Sports Science Diversity and Inclusion Association
2021 SoCal Diversity and Inclusion Committee Member
2021 USTA National Sports Science Committee Member
2020 SoCal Foundation – Board Member
2019 USTA National Sports Science Committee
2019 SCTA Chair for Hispanic Advisory Council
2018 USTA National Sports Science Committee
2018 SCTA Chair for Hispanic Advisory Council
2018 Sports Advisory Board Member - Northwestern University
2018 USTA National Sports Science Committee
2017 USTA National Sports Science Committee
2016 USTA National Sports Science Committee
2016 ACSM Health Science Policy Committee Member
2016 Advisory Board Member -Sports Biometrics Conference (technology and analytics)
2016 Appointed Vice-Chair SCTA Diversity and Inclusion Committee
2015 Volunteer, Southern California Tennis Association (SCTA)
2013 Volunteer, Active Living Research
2013 Volunteer, Health promotion with Tennis - Davis Cup
2012 Team Leader, Health Fair for Doral community at Keiser University.
2011 Volunteer, Tim Hardaway Foundation
2011 Fundraising, Physical Activity in Underserved Children
2011 Fundraising, Toys for tots

LANGUAGES

Bilingual: English and Spanish