

Who Are You and Why Are You Here? Building Research, Student, and Community Relationships in the Tactical/Occupational Environment

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Goals of Today

Background/example of research I have done

- Law enforcement, firefighting, ROTC/military
- Collaborations with national and international partners

Opportunities for student research

Considerations for working with a
community/industry partner



I started at CSUF in 2016 with what I though were set research interests...



How the tactical/occupational side of things started...

To: Mick Stierli

10/12/16, 10:12 AM



Hey mate I'm in LA what college are you actually at and where is it located? I might have a line on some stuff with LASD that you might be interested in

Hi Mick! I'm at Cal State Fullerton, which is in the Anaheim area. For sure I'd be interested, and there are quite a few other faculty members here that work in the S&C area too



Ok what's your best email so I can get you introduced etc

rlockie@fullerton.edu. Thanks for thinking of me mate, appreciate it! Are you at the ASCA conference this year?

Yes I will be



What's your mobile number?

Which then led to an hour long conversation...



Joseph Dulla, MA

Lieutenant, Training Bureau-Recruit Training Unit, Los Angeles County Sheriff's Department

Fast forward to now → Collaborations

LA County Sheriff's Department

LA County Fire Department

Santa Ana College Fire Technology

Colorado State Patrol

Stillwater Police Department

CSUF University Police and ROTC

Oklahoma State University

Southern California University of Health

Tactical Research Unit – Bond University, Australia

National Strength and Conditioning Association TSAC-F job analysis and standard setting committee



**TACTICAL FITNESS
AND NUTRITION**



Los Angeles County
Sheriff's Department



**BOND
UNIVERSITY**
TACTICAL RESEARCH UNIT



County of Los Angeles
Fire Department



ARMY ROTC



SOUTHERN CALIFORNIA
UNIVERSITY OF
HEALTH SCIENCES



Since October 2016...

71 lead and co-authored publications with my collaborators across a range of different journals

- Professional and trade publications
- 21 publications with students as lead author

88 conference presentations (podiums and posters)

- Local, national, and international conferences
- 66 presentations with students as lead author

6 invited speaker presentations

- National Strength and Conditioning Association (tactical national conference and state clinic), International Association of the Chiefs of Police, Australian Strength and Conditioning Association, Southern California University of Health



Introduction

Conducting research can be mutually beneficial to tactical/occupational organizations and researchers/practitioners

- Influence policy and decision making by command staff
- Determine best practice for physical preparation and career longevity
- Validate testing or training approaches
- Assess equipment design

Not always a common process for a variety of reasons

Numerous challenges that must be considered and reconciled



How the Research Started...

Recruit: a person newly enlisted in the armed forces (and police) and not yet fully trained

Cadet: a young trainee in the armed services or police force

Candidate: a person who applies for a job







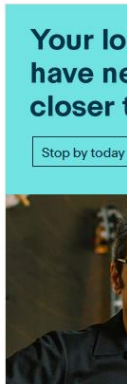






NEWS

Why Southern California police are struggling to hire more cops



NEWS > CRIME & COURTS

As Denver police go on a hiring spree, recruiting new cops is more challenging than ever

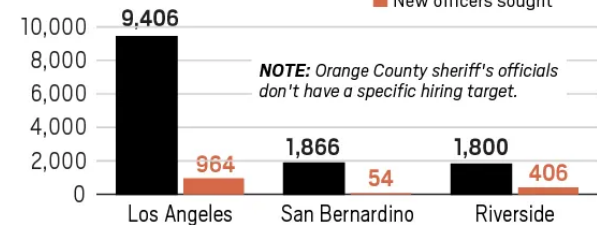
The Denver Police Department welcomed its largest recruiting class in a decade in spite of the challenges



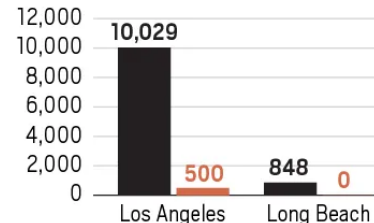
Hoping to hire

Many Southern California law enforcement agencies want to add officers in the next few years. Beyond those needed to replace departing officers, here's how many they want.

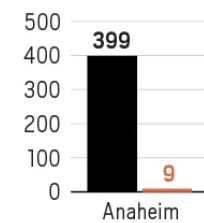
COUNTY SHERIFF'S DEPARTMENTS ■ Number of sworn officers ■ New officers sought



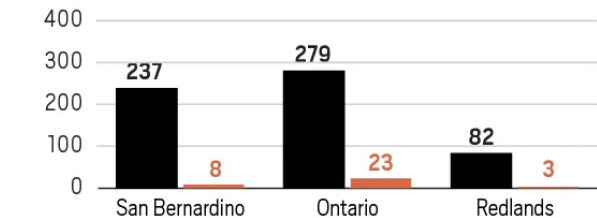
LOS ANGELES COUNTY



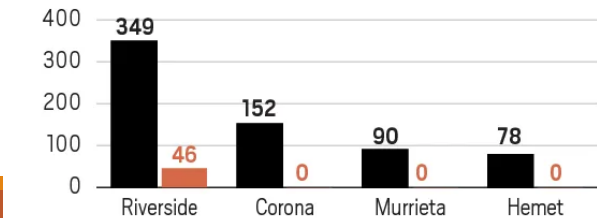
ORANGE COUNTY



SAN BERNARDINO COUNTY



RIVERSIDE COUNTY



Sources: Sheriff's and police departments listed

[Military recruitment, retention challenges remain, service ...](#) ✓

May 16, 2019 - Despite retention and some recruitment gains, plenty of challenges remain for the military branches to adapt to an evolving economy and ...

[It's Not the Economy: Why the Army Missed its Recruitment ...](#) ✓

Feb 14, 2019 - In 2018 the US Army failed to meet its recruitment goals for the first time since the height of the Iraq war in 2005. Military leaders have attributed that failure to the strong US job market drawing talent away with the promise of lucrative private sector careers.

Panel Says U.S. Military Recruitment Pool Must Broaden

"The military wants the talent" from that larger pool of young people, "but it doesn't know to how to bring them in," Moore said. She and other panelists cited Army Gen. Mark Milley's comments that about 80 percent of his service's recruits come from those families. Milley, the incoming chairman of the Joint Chiefs of Staff, said that the Army fell more than 6,500 recruits short of its goal.

[Why the US military is on the brink of a recruitment crisis | WJLA](#) ✓

Feb 16, 2018 - They found that the issues plaguing military recruitment go well beyond national security. The major drivers impeding the recruitment pool ...

[Army on track to meet its smaller 2019 recruitment goals](#) ✓

Jul 1, 2019 - After missing its recruitment goals in 2018, the Army's top enlisted ... had to scale that back to about 2,000 a year because of recruitment issues.

It'll be tight, but the Army expects to meet recruiting goals this year
After last year's recruiting shortfall, The Army has been having trouble meeting its recruiting requirements

[The Recruitment Problem the Military Doesn't Want to Talk About](#) ✓

Aug 15, 2018 - Back in September 2016, candidate Trump promised he would not only increase the Pentagon's budget, he would add more soldiers, sailors, and airmen (and women) to the military's ranks. ... Senior military officers, and particularly Army Chief of Staff Mark Milley, celebrated the ...

[As Economy Roars, Army Falls Thousands Short of Recruiting ...](#) ✓

Sep 21, 2018 - More than two-thirds of young adults do not qualify for military service because of poor physical fitness or other issues such as drug use, according to the Army.

Manning the military: America's problem

initial recruiting goal was 80,000 enlistees. Early in the year, that was reduced to 76,500. The Army ultimately enlisted 70,000, a shortfall of 7,600. Of the 70,000 recruited, 10 to 12 percent required waivers of existing

Example – LASD Testing Protocols

Validated Physical Ability Test (VPAT)

Used the 1.5 mile (2.4 km) run

Wanted to investigate the use of the 20-m Multistage Fitness Test

- Could be done indoors
- Required less space
- External pacing
- Could test large number of recruits relatively quickly and easily





Relationship Between the 20-m Multistage Fitness Test and 2.4-km Run in Law Enforcement Recruits

Robert G. Lockie,¹ J. Jay Dawes,² Matthew R. Moreno,¹ Karly A. Cesario,¹ Katherine Balfany,¹ Michael Stierli,³ Joseph M. Dulla,⁴ and Robin M. Orr⁵

¹Department of Kinesiology, California State University Fullerton, Fullerton, California; ²Department of Health Sciences, University of Colorado-Colorado Springs, Colorado Springs, Colorado; ³Sydney Police Center, Surry Hills, New South Wales, Australia; ⁴Recruit Training Unit, Training Bureau, Los Angeles County Sheriff's Department, Los Angeles, California; and ⁵Tactical Research Unit, Bond University, Robina, Queensland, Australia

Short Communication

The effects of aerobic fitness on day one physical training session completion in law enforcement recruits

Robert G. Lockie, Matthew R. Moreno, Karly A. Cesario, Megan B. McGuire,
J. Jay Dawes, Robin M. Orr, Joseph M. Dulla.

Article

The Influence of Physical Fitness on Reasons for Academy Separation in Law Enforcement Recruits

Robert G. Lockie ^{1,*}, Katherine Balfany ¹, Ashley M. Bloodgood ¹, Matthew R. Moreno ¹, Karly A. Cesario ¹, Joseph M. Dulla ², J. Jay Dawes ³ and Robin M. Orr ⁴

WAIST CIRCUMFERENCE AND WAIST-TO-HIP RATIO IN LAW ENFORCEMENT AGENCY RECRUITS: RELATIONSHIP TO PERFORMANCE IN PHYSICAL FITNESS TESTS

ROBERT G. LOCKIE,¹ TOMAS R. RUVALCABA,¹ MICHAEL STIERLI,^{2,3} JOSEPH M. DULLA,⁴ J. JAY DAWES,⁵ AND ROBIN M. ORR²

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LASD Validated Physical Ability Test

Old VPAT

- Push-ups
- Sit-ups
- Arm Ergometer
- 75-Yard Pursuit Run
- 1.5 mile run



New VPAT (<https://careers.lasd.org/physical-ability-test/>)

- Push-ups
- Sit-ups
- 75-Yard Pursuit Run
- 20-m Multistage Fitness Test

Would not have happened without collaborative effort between LASD and academics – especially CSUF students!

The Student Experience

Opportunity for in-the-field, real-world experience

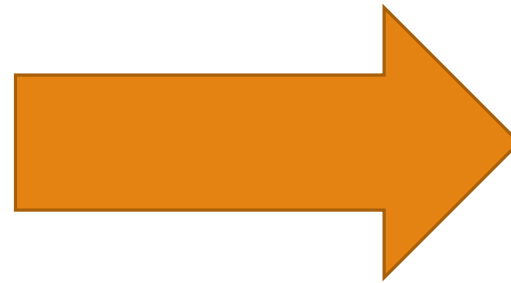
- Thesis topics that directly influence an agency → and directly affect people
- Conference presentations
- Use trade publications to develop writing skills for students
 - Review papers written in a more accessible way (TSAC Report)

Benefits the agency → more students = more studies = more evidence

Give your students autonomy

- Make sure it's a team effort
- Leadership group → grads and undergrads







Don't Go Breaking My Heart: The Effects of Ability-Based Training on the Health and Fitness Characteristics of Custody Assistant Recruits

Karly A. Cesario¹ ♦ Ashley Bloodgood¹ ♦ Javier Hernandez¹ ♦ Robin M. Orr³ ♦ J. Jay Dawes² ♦ Joseph M. Dulla⁴ ♦ Matthew R. Moreno¹ ♦ Robert G Lockie¹

¹Center for Sport Performance, Department of Kinesiology, California State University, Fullerton, CA, USA. ²Department of Health Sciences, University of Colorado-Colorado Springs, Colorado Springs, CO, USA.

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ABSTRACT

Custody Assistants (CAs) are responsible for security in detention facilities, where they may be required to complete high-intensity physical actions to ensure the personal safety of themselves, personnel, and inmates. Due to these job demands, and need for overall fitness, physical training (PT) programs are commonly implemented during academy. A paramilitary one-size-fits-all model, via modalities such as formation runs and bodyweight calisthenics, are a common form of PT. However, this type of training may not be optimal for each individual CA recruit to make positive adaptations. The purpose of this study was to analyze an ability-based approach to PT in a CA academy compared to the traditional approach. Retrospective analysis was performed on data from two CA classes consisting of 39 (23 men, 16 women) and 36 (22 men, 13 women) recruits. Recruits in the first class received 15 PT sessions in the traditional training (TT) model, where recruits were expected to all complete the same exercises and distance runs. Recruits in the ability-based training (ABT) group were subject to 15 PT sessions comprising of an ABT circuit and interval running workouts. Pre- and post-academy training, health and fitness assessments were performed, which included: resting heart rate (RHR); systolic and diastolic blood pressure (BP); push-ups and sit-ups in 60 s; and recovery heart rate from the YMCA step test. Changes in these assessments were compared using 2x2 factorial ANOVA for each measure, and a repeated measures ANOVA for each class ($p < 0.05$). Results revealed significant differences in performance in both classes for both the recovery heart rate for the YMCA (reduced) and push-ups (increased), with no difference between the groups. The ABT group significantly lowered their RHR post academy (6.5 mean reduction in bpm). Systolic BP did not significantly change post-academy for either group, while diastolic BP increased in the TT group (5.8 mmHg mean increase) but not the ABT group. Although TT and ABT achieved similar changes in fitness as measured in this study, the ABT group was able to achieve these while also reducing RHR and maintaining diastolic BP. RHR can be a predictor of cardiovascular and all-cause mortality. Any increases in diastolic BP for the TT group could be a maladaptation to the rigors of academy, including chronic stress and the physical training load. BP is also a factor in predicting the development of coronary heart disease. Given these positive adaptations in heart rate and BP for CAs, further research should be done to confirm these results and investigate the wider and systemic implementation of ABT in CA.

INTRODUCTION

- Custody Assistants (CAs) are responsible for security in detention facilities, where they may be required to complete high-intensity physical actions to ensure the personal safety of themselves, personnel, and inmates (3).
- Due to these job demands, and need for overall fitness, physical training (PT) programs are commonly implemented during academy (2). A paramilitary one-size-fits-all model, via modalities such as formation runs and bodyweight calisthenics, are a common form of PT. However, this type of training may not be optimal for each individual CA recruit to make positive adaptations.
- Due to the large variance in training age, some recruits may not have the ability to complete all of the TT and so would not gain any positive adaptations. Others with a higher training age may not be challenged enough to elicit a training adaptation, and some may even decondition.
- The purpose of this study was to analyze an ability-based approach to PT in a CA academy compared to the traditional approach.

METHODS

- Retrospective analysis was performed on data from two CA classes consisting of 39 (23 men, 16 women) and 36 (22 men, 13 women) recruits (age range = 18-52 years).
- The control class received a traditional training program (TT) which was designed and implemented by the training staff of the agency and consisted of a large volume of steady-state running and body weight strength endurance exercise and calisthenics (e.g. push-ups and sit-ups completed for repetitions).
- Recruits in the ability-based training (ABT) group were given a specially designed program consisting of 15 sessions designed by the experimenters.
- The ability-based program scaled the exercise activity to the ability level of each recruit. For example, in the case of running this meant altering the sprint distance so that each recruit's distance more closely matched the desired training effort, based off their 1.5 mile run time. As shown in Figure 1, this meant fitter recruits completed a greater distance for a run than less fit recruits over an equivalent interval time.
- Pre- and post-academy training, health and fitness assessments were performed, which included: resting heart rate (RHR); systolic and diastolic blood pressure (BP); push-ups and sit-ups in 60 s; and recovery heart rate (HR) from the YMCA step test.
- Pre academy assessment was done on day 1 of the academy and post assessment was done within the week of graduation.
- Changes in these assessments were compared using 2x2 factorial ANOVA for each measure, and a repeated measures ANOVA for each class ($p < 0.05$).

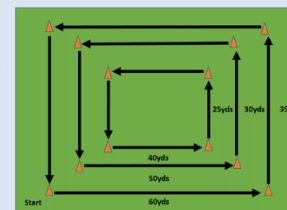
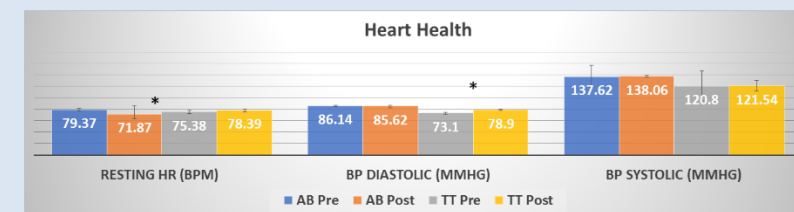


Figure 1. Ability based run set up.

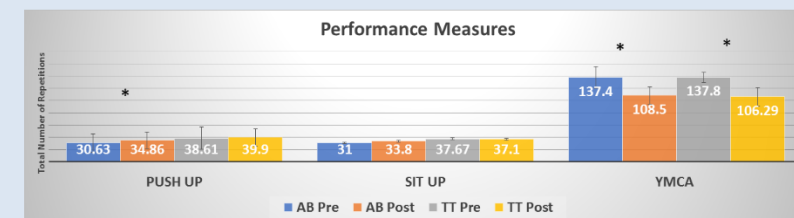
RESULTS

- Figure 2 displays the heart health related data. The ABT group significantly lowered their RHR post academy (6.5 mean reduction in bpm).
- Systolic BP did not significantly change post-academy for either group, while diastolic BP increased in the TT group (5.8 mmHg mean increase) but not the ABT group.
- The results also revealed significant differences in performance in both classes for both the recovery HR for the YMCA (reduced) and push-ups (increased), with no difference between the groups (Figure 3).



* Significant ($p < 0.05$) change pre to post.

Figure 2. Data (mean \pm SD) for the health measures of resting heart rate and blood pressure for the TT and ABT groups.



* Significant ($p < 0.05$) change pre to post.

Figure 3. Data (mean \pm SD) for the performance measures of push-ups, sit-ups, and YMCA recovery HR for the TT and ABT groups.

CONCLUSIONS

- Although TT and ABT achieved similar changes in fitness as measured in this study, the ABT group was able to achieve these while also reducing RHR and maintaining diastolic BP.
- RHR can be a predictor of cardiovascular and all-cause mortality and BP is also a factor in predicting the development of coronary heart disease.
- The increases in diastolic BP for the TT group could be a maladaptation to the rigors of academy, including chronic stress and the physical training load (1,4).
- A possible explanation for the increase in BP is total stress of the academy; although mental stress was probably similar for both groups, the physical stress seemed to be more appropriate for the ABT group.
- Given these positive adaptations in heart rate and BP for CAs, further research should be done to confirm these results and investigate the wider and systemic implementation of ABT in CA.

References:
 1. Fox, K, Borer, JS, Camo, AJ, Deschin, N, Ferrari, R, Lopez Sender, B, Steg, PG, Tarfil, J-C, Tawada, L, and Tendera, M. Resting Heart Rate in Cardiovascular Disease. *Journal of the American College of Cardiology* 50(9): 813-830, 2007.
 2. Jarrink, VK, Thomas, SG, and Gledhill, N. Applying the Metirin Decision requirements to the fitness test for correctional officer applicants: examining adverse impact and accommodation. *Applied Physiology, Nutrition, and Metabolism* 35(1): 71-81, 2010.
 3. Jarrink, VK, Thomas, SG, Shaw, JA, and Gledhill, N. Identification and characterization of the critical physically demanding tasks encountered by correctional officers. *Applied Physiology, Nutrition, and Metabolism* 35(1): 45-58, 2010.
 4. Wilson, PW, D'Agostino, RB, Levy, D, Belanger, AM, Silbershatz, H, and Kannel, WB. Prediction of coronary heart disease using risk factor categories. *Circulation* 97(18): 1837-1847, 1998.

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A REVIEW OF HYDRATION AND BODY COMPOSITION FOR WILDLAND FIRE SUPPRESSION AIDS

ASHLEY BLOODGOOD, MS, MEGAN MCGUIRE, AND ROBERT LOCKIE, PHD, TSAC-F,*D

SEASONAL CONSIDERATIONS FOR OUTDOOR FITNESS TESTING OF LAW ENFORCEMENT RECRUITS

MEGAN MCGUIRE, MATTHEW MORENO, TSAC-F, AND ROBERT LOCKIE, PHD, TSAC-F

PRACTICAL EXERCISE PROGRAMMING FOR WILDLAND FIRE SUPPRESSION AIDS

CIARA GONZALES, AND ROBERT LOCKIE, PHD, TSAC-F

ABDOMINAL AND LUMBO-PELVIC STABILITY EXERCISES FOR FIRST RESPONDERS

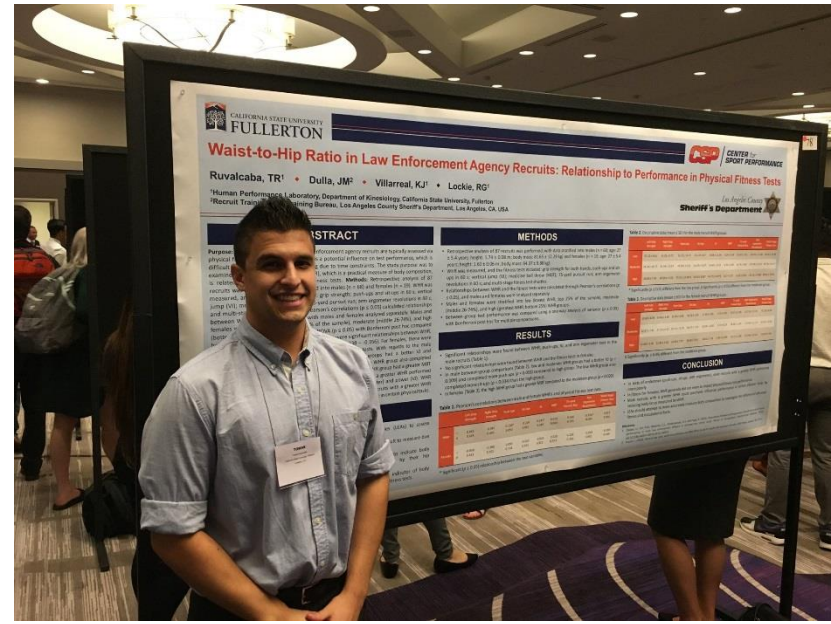
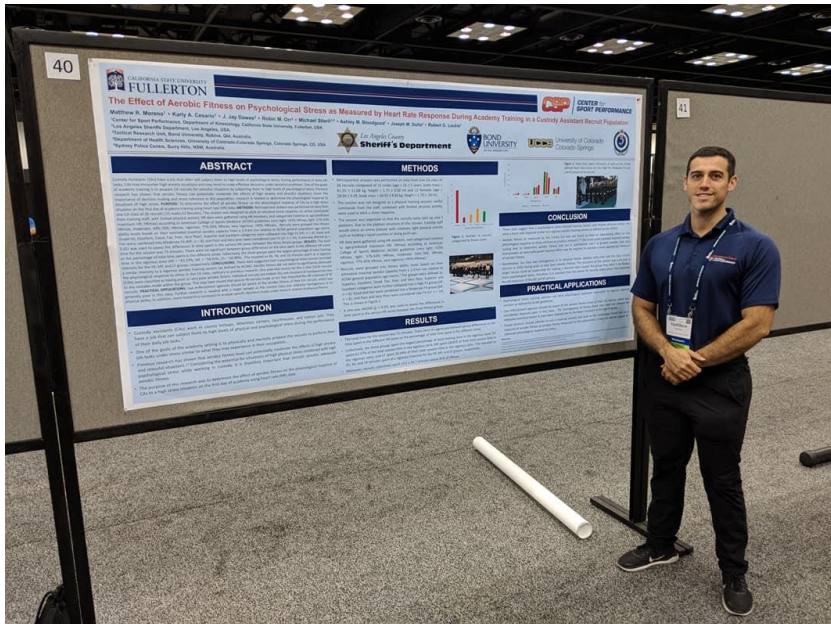
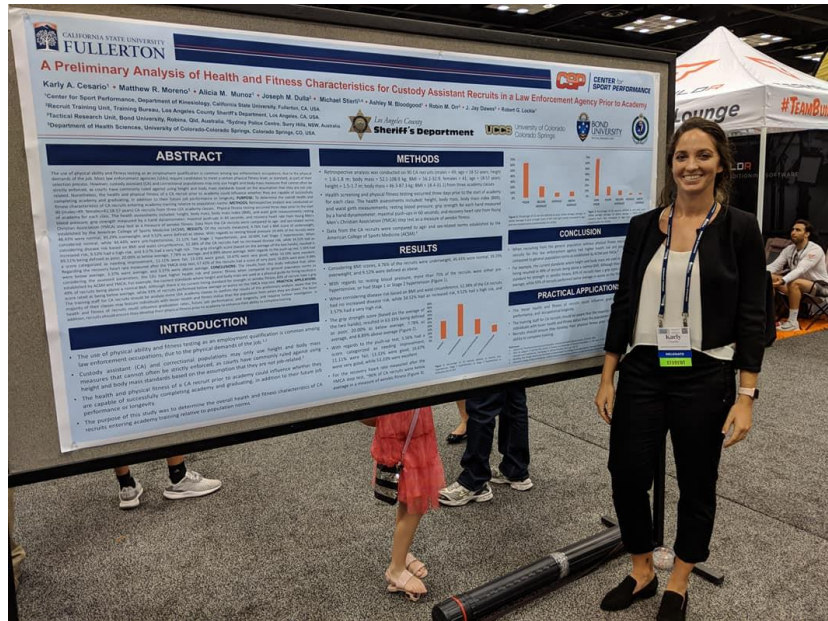
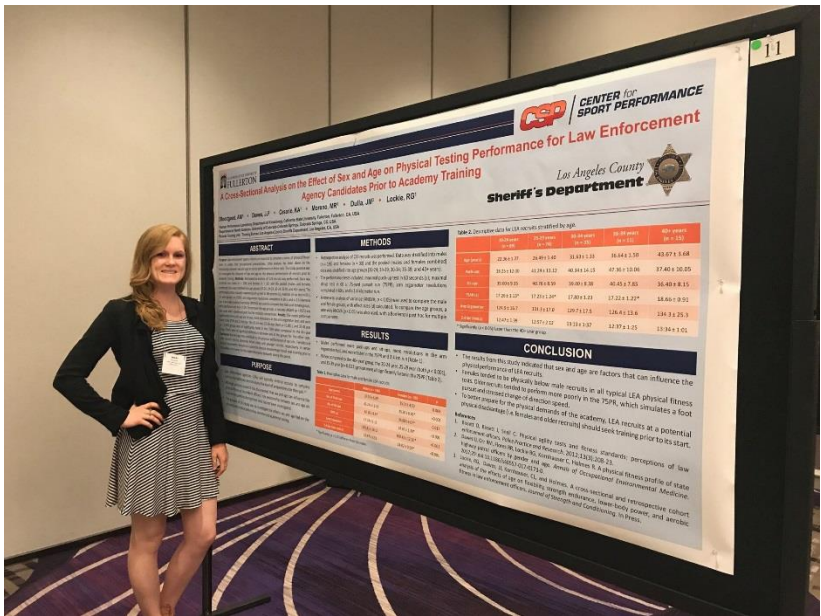
Conferences

Research experience, resume builders, team building

Local conferences

- Opportunities for more students, affordable







Building Partnerships

WORK WITH GOOD PEOPLE

Communication

- e.g. between and within agency
- Recognize your audience
- Hidden curriculum?
- Staff interaction is key

Know how to explain yourself to people who don't know or care who you are

- Be vulnerable



THREAT

*THEY DON'T CARE WHAT
YOU KNOW UNTIL THEY
KNOW THAT YOU CARE*

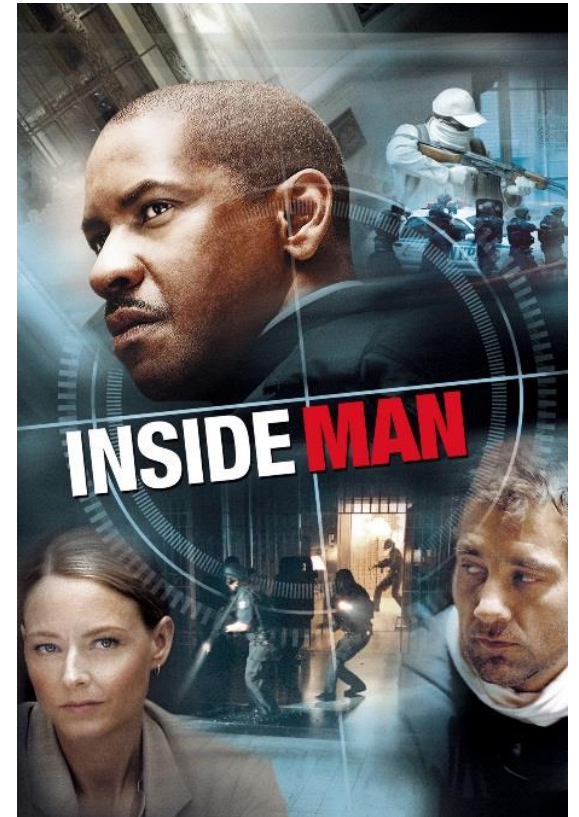
Building Partnerships

Have someone on the inside that can fight the battles you can't

Recognize the realities of your situation

- Lab vs. field
- Data may not be perfect BUT still often part of official record for agency!
- What you want vs. what you can get

Making the best 'bad decision'



Building Partnerships

Not everything is going to work

- Relationships may change through no fault of your own
- Rank-based organizations

Priorities??? Something that is important to you may not be to people In the agency

A little luck doesn't hurt!

DELIVER



It's better sometimes to be lucky than good.

Kurt Busch

Where possible...get involved!

Help out training scenarios

Role playing

- Inmates
- Offenders
- Bystanders



Learn what your collaborators do and what they experience

Show that you care about the people, not the numbers



FORT KNOX
STRENGTH
STARTS
HERE.



U.S. ARMY

ARMY STRONG.®





The best work happens when your collaborators are your friends...



Take Home Points

Work with good people that have similar goals, work ethic, and egos to yourself

Make sure yourself and the agency have similar goals i.e. publishable research that benefits you and the agency

Know your surroundings

Select students that fit what you want to do with the agency, and give them some autonomy

- Ownership of the research

Enjoy the process!



Questions???

