

PHYSICAL FITNESS PANEL SUMMARY

The following is a summary of the discussion from the Physical Fitness Panel event on October 18, 2024. Footnotes are used as a reference for certain statistics.

Panelists:

Melissa Metzke TSAC-F, is a highly knowledgeable professional in the field of first responder fitness, wellness, and injury prevention. She currently serves as the Director of Officer Health and Performance for the Massachusetts Municipal Police Training Committee. In this role, she oversees the fitness testing standards, Physical Training Instructor certification, and recruit wellness curriculum development and training programs in academies throughout the Commonwealth. Melissa previously spent six years as the lead strength and conditioning specialist for recruit and officer fitness and wellness with the Washington DC Metropolitan Police Department. During her time there, she prioritized injury prevention while developing effective fitness training and testing programs for recruits. Additionally, Melissa owned a successful strength and conditioning facility in Newport Beach, CA for ten years prior to relocating to the DC area.

Brianna Britt is the Deputy Director of the Civil Service Unit for the MA Human Resources Division. Brianna has a master's degree in industrial/organizational psychology. Brianna has focused in the area of pre-employment and promotional testing in unionized environments for over 12 years. Brianna oversees all aspects of job analysis, revalidation, exam creation for all Civil Service Public Safety job titles. This includes testing for Police Officers and Firefighters, Correction Officers, through Principal Fire Alarm Operators and Fire Chiefs. A range of testing styles are utilized from physical ability tests, technical knowledge tests, personality tests, to situational judgment tests.

Joe Dulla has over 40 years of experience in first responder roles, including emergency medical technician, lifeguard, mountain rescue, and law enforcement. He served for 31 years with the Los Angeles County Sheriff's Department (LASD) in various sworn ranks & positions including academy director overseeing the training of over 5,550 recruits and an annual training budget of \$80+million dollars. Joe's expertise includes physical fitness, wellness, and human performance optimization for public safety personnel across numerous domains. He managed the LASD's "Fast Track Injury Care" program that used cutting-edge sports medicine approaches to rapidly return injured personnel safely back to duty. Joe was a member and served as chairman of the California POST Physical Abilities and Training Program SME Group; Los Angeles County Human Performance Workgroup; Job Task Analysis and Return to Work committees. After LASD, he served as Interim Associate Dean of Fire Technology at Santa Ana College serving the fire academy and wellness needs of over 30 member departments across five Southern California counties. He holds TSAC-F certification, has presented internationally, and authored or co-authored over 30 articles on law enforcement physical demands, wellness, injury, and human performance. Joe currently serves as

affiliate faculty with Georgia Southern University's Tactical Athlete Program providing services to first responders across the Southeastern United States. He also works with agencies via the Department of Justice/IACP CRI-TAC program in the areas of wellness, physical fitness, recruitment and retention. Joe is a PhD student at Bond University, researching recruit attrition, success factors, physical abilities, injuries, costs, and human performance optimization.

Dr. Rob Orr, Director of Tactical Research Unit at Bond University. Professor Rob Orr joined the Australian Army in 1989 as an infantry soldier before transferring to the Australian Defence Force Physical Training Instructor (PTI) stream. Serving for 10 years in this stream, Rob designed, developed, instructed and audited physical training programs and physical education and rehabilitation courses for military personnel and fellow PTIs from both Australian and foreign defence forces. Rob subsequently transferred to the physiotherapy stream where his role included the clinical rehabilitation of defence members and project management of physical conditioning optimisation reviews. Serving as the Human Performance Officer for Special Operations before joining the team at Bond University in 2012, Rob continues to serve in the Army Reserve. Professor Orr is the Director of the Tactical Research Unit, a faculty research centre at Bond University with international collaborations designed to provide research, consultancy and education services to tactical professions around the globe. Rob's fields of research, consultancy, and education provision spans physical conditioning, reconditioning, rehabilitation and injury prevention for military, law enforcement and protective services across their occupational lifespan (initial trainee to specialist). Generally focusing on the tactical population, Rob is actively involved in research with the Australian and foreign defence forces, an extensive list of law enforcement departments (both national and international), and firefighters / first responders. Professor Orr served as the editor for the National Strength and Conditioning Association (NSCA) TSAC Technical Report (2015-2020) and on the organising committee for the 4th and 5th International Congress on Soldiers' Physical Performance and on the scientific committees for the occupational branch of the Australian Physiotherapy Association and 2019 and 2021 World Physical Therapy Organisation conferences. Dr. Orr is also Chair of the organising committee for the 4th Physical Employment Standards Conference to be held in 2023 at Bond University, Australia. Winning awards for research outcomes, publications, presentations, and teaching, Dr. Orr has presented keynote presentations at internationally renowned research facilities and congresses. With over 280 peer reviewed published papers, 300 presentations, and 60 technical reports, Professor Orr has been awarded the NSCA TSAC Professional of the year, a Queensland Young Tall Poppy Science Award, Australian Physiotherapy Association Best Clinical Paper award, an Australian Award for University Teaching, and numerous other military, academic, and education awards.

Dr. Robert Lockie is an Associate Professor of Strength and Conditioning at California State University Fullerton and has been a sports and tactical researcher for more than 20 years. He has conducted numerous research projects with law enforcement, fire, military, and sports organizations. Dr. Lockie has authored or co-authored over 140 manuscripts and 110 presentations on the topics of law enforcement, firefighter, and military fitness, testing, and tactical performance. He has presented his research findings locally, nationally, and internationally. In October of 2023,

Dr. Lockie was recognized by Elsevier & Stanford University as one of the top 2% most-cited scientists in the world.* In 2024, Dr. Lockie was awarded the National Strength and Conditioning Association's Tactical Strength and Conditioning Professional of the Year.

Dr. Jay Dawes is a Professor of Applied Exercise Science in the Department of Kinesiology, Health and Recreation at Oklahoma State University. Dr. Dawes has worked as a university athletic performance coordinator, strength/performance coach, personal trainer, and educator for over 25 years. Additionally, he also worked as the Director of Education for the NSCA from 2007–2010 and served on the NSCA Board of Directors' Executive Council from 2016–2019 as both Vice President and Secretary/Treasurer. While he still conducts research in the area of sports performance, his primary research interests are focused on improving the health, fitness and human performance for tactical athletes/first responders. In 2021, Dr. Dawes was recognized by the NSCA as the Tactical Strength and Conditioning Professional of the Year for his contributions in this area.

DISCUSSION SUMMARY:

AN AGING WORKFORCE

- The largest age cohort in US police officers (48%) are over 40 years old.
- Average age of police officers has risen from 35.9 years to 40.8 years over a 30-year period.
- Birth rate decreased from 1982 – 2018, meaning fewer 18–40-year-olds are available for recruit training today than in the past.

IN GENERAL, RECRUITS ARE ENTERING POLICE ACADEMIES LESS PHYSICALLY FIT

- According to the World Health Organization (WHO), the worldwide prevalence of obesity has more than doubled between 1990 and 2022. In fact, 50% of the US population will be obese by 2030. ¹
- Today's men are weaker than their fathers. Grip strength in 1985 was 117 pounds and decreased to 98 in 2016.² Grip strength is important for police officers because it's a key factor in many tasks they perform, including shooting, handling confrontations, grappling, apprehension and victim rescue, moving obstacles and carrying heavy items.³
- Obesity and extra weight slows down recruits and veteran officers because they are carrying more non-functional mass.
- BMIs have increased over the years while physical strength has decreased.
- Physical education in K-12 is offered fewer times nationally and there are fewer multi-sport athletes with diverse athletic abilities.⁴

¹ NHANES data

² Washington Post "Today's Men are Nowhere Near as Strong as their Dads Were, Researchers Say" August 15, 2016.

³ Effective Fitness, 2023

⁴ Secular Changes in Physical Education Attendance Among US High School Students YRBS 1991-2013; CDC National Physical Activity Plan Alliance

GREATER INJURY RISK FOR ACADEMY TRAINEES

- Poor muscular and cardiovascular endurance of academy cadets is correlated with higher odds of not graduating.
- Cadet separations from injuries and training failures pose significant financial burdens on academies and sponsoring agencies.
- The purpose and intent of the fitness program must be clearly articulated before program begins. Determine actual vs. perceived tasks of the officer's job to align with training.
- Physical assessments should be fair and account for differences in gender physicality and age-related changes in strength and power. Set fair assessment standards based on age and gender and consider varying the number of repetitions to account for differences in strength.
- Assessments help to identify and predict risk of injury. Those who are unfit are at a greater risk for injury than their fit counterparts.
- There is a big difference between recruit training (they are being paid to work) and ongoing officer work. Being paid to exercise is an incentive that veteran officers don't always have.
- In addition to risk of injury, curriculum and academy directors should take into account the reality that in periods of high physical demands, actual learning is likely diminished.

THE MASSACHUSETTS REQUIREMENT FOR THE ACADEMY TRAINING

- Currently, in Massachusetts, interested recruits can take the Civil Service Police Officer Physical Ability Test (PAT), a pre-employment test for Police Officers taken in conjunction with other pre-employment multiple choice testing, a background check, and a medical examination.
 - The PAT was developed over a three-year period. Occupational survey data garnered from small to large police departments in Massachusetts allowed the PAT to be tailored to the needs of departments of all sizes.
 - All candidates must pass this timed event according to the same standards. Candidates are encouraged to preview the PAT so they are familiar with the goals before signing up.
 - Those who have passed are placed on a civil service list, and if selected by a municipal police department, will attend a police academy before being hired. This process can take many months to complete, from a few months to a few years.⁵
 - Candidates with conditional offers from a department have two chances to pass the test. If they fail, they can decide to apply at another department in the future.
- The PAT is a simulation based occupational test developed through a job analysis process that measures the minimum qualifications of a police officer in Massachusetts. Candidates must pass all events to pass the test consisting of the obstacle course, separation/control event, and dummy drag as outlined below.
 - **The obstacle course event** simulates the actions necessary to pursue and take down a suspect. The event begins with an obstacle course where the candidate will be faced with going through an open window, traversing an uneven terrain, climbing

⁵ Brianna Britt, Deputy Director of the Civil Service Unit, MA Human Resources Division

over a wall, climbing up and down steps, and negotiating a series of cones arranged in a zigzag pattern. At the end of the course, the candidate will be required to grab hold of a weighted bag attached to a pulley and touch it to the ground. Next, the candidate secures a moveable bag to the ground, then reads a statement. The candidate will then immediately move to the power station to the handcuffing simulation where he/she will be required to individually pull on two hand levers until the cable hits the stop. The time limit is 163.4 seconds.

- **The separation event** simulates tasks that require separating one party from another and controlling individuals, such as in crowd control situations. Candidates are required to pull a hanging bag backward, touching it to the ground across a marked line. Candidates will have to perform two "pulls". The time limit is 12.8 seconds.
- **The Dummy Drag event** simulates dragging a victim or suspect. Candidates will be required to drag a dummy over a straight course. The time limit is 11.2 seconds.

MOVE TOWARD TASK-BASED TRAINING BASED ON OCCUPATIONAL REQUIREMENTS

- Student officer physical and mental readiness and curriculum must establish a culture of wellness.⁶
- The curriculum will be implemented throughout the Massachusetts Academy includes:
 - Physical readiness orientation
 - Nutrition for health and performance
 - Injury prevention: injuries have a negative impact on recruit retention
- Habits for a healthy lifestyle:
 - Physical activity for health
 - Sleep habits for police officers
- Fundamentals of exercise:
 - LEO physical job demands and injury risks
 - Human physiology
 - Periodization
 - Exercise program design
- Resilience:
 - Start: Understanding and Building Resilience
 - Midway: Reflection and Skill Enhancement
 - End: Application and Integration
- Traditional model of physical training and testing in academies requires certain physical standards (push-ups, mile run, etc.) adjusted for gender and age. However, this approach does not address the actual physical requirements of the job (i.e., jumping over a fence, going through a window) that also require additional skills.
- Training curriculum must change and evolve. Considerations when developing a training curriculum include:
 - Evidence-based best practices
 - Program design for officer job demands, injury risks and managing stress

⁶ Melissa Metzke MPTC

- Update current Physical Training Instructor Certification to the National Strength and Conditioning Tactical Strength and Conditioning Course,
- Updated current staff instructor curriculum to include officer physical job demands and injury risks, human physiology, exercise program design, and data driven decision making.
- Academic and subject matter expert involvement in police training can help inform current research-based best practices in academy curriculum design and can create partnerships between police and academia. It also sets the groundwork for formal research partnerships and grant funding opportunities for ongoing research in the field to inform evidence-based practices.
- Lower fitness standards mean more injuries for all officers. Adapting fitness level to the person helps their conditioning increase while the risk of injury decreases.
- BMIs have increased over the years and training needs to adjust for the added weight. For example, the “body drag” standard is for a 150-pound person, but people today are closer (on average) to 200 pounds.
- Training approach can make a big difference if you meet individuals where they are at.
- Arbitrary fitness standards are mainly based on gender, but not job task.

POLICE WORK IS NOT CONDUCTIVE TO LONG TERM HEALTH

- Shift work, stress, disrupted sleep, and sedentary behaviors are all negative health factors leading to cardiovascular disease and issues like high cholesterol, lipids, coronary artery calcification and body fat.⁷
- Patrol officers are typically hypervigilant for long periods of time, thinking if they stay alert, they stay alive. Hypervigilance keeps officers safe but can be harmful when chronic or prolonged, leading to negative physical and psychological effects.⁸
- There are potentially negative physiological and psychological effects of prolonged periods of hypervigilance.⁹ Conversely, officer jobs are often sedentary between intervals of high-stress and high-intensity encounters.
- Police officers are more prone to anxiety and depression than the rest of the population due to the stressful nature of their work. Police officers are more exposed to “Significant Emotional Events” (traumatic events such as violence, injuries, critical situations) and historically have been reluctant to seek treatment for behavioral due to stigmas.
- Untreated anxiety and depression can lead to dopamine-seeking behaviors such as alcohol and/or substance misuse or addiction.
- Officers who worked the midnight shift had 4x the symptoms of metabolic syndrome¹⁰ when compared to day shift officers. Officers have a higher risk of metabolic syndrome because

⁷ Orr, R., Hinton B., Wilson A., Pope R., Dawes, J.” Investigating the routine dispatch tasks performed by police officers” Safety 6: 54, 2020.

⁸ The Biological Rollercoaster, Dr. Kevin Gilmartin

⁹ The Biological Rollercoaster, Dr. Kevin Gilmartin

¹⁰ Metabolic syndrome is a group of conditions that together raise the risk of coronary heart disease, diabetes, stroke, and other serious health problems. Metabolic syndrome, also called insulin resistance syndrome, is

they are more exposed to violence and other stressors, have sedentary periods at work, and may have other unhealthy personal habits, like poor nutrition, alcohol or cigarette smoking.

- Long term night shift work is associated with adverse health outcomes including cancer.¹¹ The International Agency for Research into Cancer (IARC) has found a correlation between night shift work with a potential increased risk of cancer.¹² Shift work is associated with other unhealthy outcomes because it can typically interfere with exercise, sleep and good nutrition.
- Cardiovascular fitness: Police officers often have cardiovascular fitness below the American College of Sports Medicine (ACSM) standards for healthy adults.¹³ Officers also experience significant decreases in cardiovascular fitness with age.¹⁴
- Body fat percentage and Body Mass Index (“BMI”): Police officers often have higher than normal increases in body fat percentage and BMI with age, and these values surpass recommendations.¹⁵
- Health risks: Police officers have elevated levels of cardiovascular disease and associated risks. The average age of a law enforcement officer who has suffered a heart attack is 49 years old, compared to 67 years of age for the general population.¹⁶

THE CASE FOR MAINTAINING HEALTH AND FITNESS FOR INCUMBENT OFFICERS

- When graduating from academies, officers have a higher level of physical fitness compared with the rest of the population. By the time officers leave the profession, their level of fitness is on average lower than the rest of the population.
 - Police officers experience elevated levels of cardiovascular disease and associated risks making fitness a peak concern.
 - A cross-sectional study investigated the cardiovascular health, muscular strength/endurance, and mobility of officers in a medium-sized police department of 4 females and 79 males and compared those findings to American College of Sports Medicine (ACSM) guidelines.
 - The findings revealed that police officers begin their careers with above average strength but demonstrate greater declines with age than the general population.

present if a person has three or more conditions such as: obesity, high blood pressure, high blood sugar, high blood triglycerides, high cholesterol, and low LDL (NIH National Heart, Lung and Blood Institute “What is Metabolic Syndrome?” May 18, 2022)

¹¹ National Toxicology Program

¹² A study of nearly 4 million women found that long-term night shift work increased the risk of several types of cancer, including skin cancer, breast cancer, gastrointestinal cancer, and lung cancer.

¹³ The ACSM established fitness standards for those aged 30-39 in four areas: forearm plank, grip strength, vertical jump and sit and reach.

¹⁴ MDPI, “Age-Related Declines in Health and Fitness among Law Enforcement Officers Compared to Population Norms”, by Katherine A. Frick, Philip J. Agostinelli, Julia F. Swinford, Mick E. Harris, C. Brooks Mobley and JoEllen Sefton

¹⁵ Ibid

¹⁶ Ibid

- Officers also demonstrated cardiovascular fitness below ACSM standards and significant decreases with aging compared to the general population.¹⁷
- Given the above, maintaining a level of fitness during the tenure of an officer's career is an important goal
- An officer in poor physical fitness is more likely to use force in ways that put the health of themselves and others at greater risk. An unfit officer may not be able to operate effectively or respond swiftly to a given situation and thus be more likely to be injured. Low fitness levels could also lead an officer to use higher levels of required or necessary force to stop a real or perceived threat.
- Most states do not have standards for incumbent officers, but non-punitive annual fitness testing is recommended.
- Motivation is a very important factor in maintaining health and fitness. Fitness incentives can be helpful if the agency can afford to launch and sustain such programs.
- Agencies, departments and individuals should monitor fitness levels of academy recruits and veteran officers.
 - There can be increased benefits from deploying a benchmarking or "traffic light" system (color-coded system with multiple indicators that monitor health, assess health risks and help identify and manage risks from occupational hazards).
 - Such assessment tools make it easier to monitor health over time, predict and detect health issues and take preventative action.
- Attaining better fitness outcomes is often constrained by available time.
 - The effective dose of physical fitness for the general population is a minimum of 75 minutes per week of moderate to vigorous exercise or 150 minutes of low-to moderate impact exercise to increase life expectancy.
 - However, those who exercise at least 15 min per day at a moderate intensity reduce their risk of all-cause mortality by 14% and increase life expectancy by three years, when compared to those who are inactive.¹⁸
 - Strength can be attained by resistance-training with just three 13-min sessions per week. Similar gains can be achieved with a substantially greater time commitment when training in a moderate loading range (8–12 repetitions per set).
 - This finding has important implications for officers who are time-pressed, allowing the ability to get stronger in an efficient manner, and may help to promote greater exercise adherence.¹⁹
- Leadership involvement is a key factor in driving the culture shift toward maintaining health and wellness. Leadership should model healthy behaviors by leading by example and offer benefits and incentives to retain current officers and attract new ones. Status quo is not

¹⁷ National Library of Medicine, "Age-Related Declines in Health and Fitness among Law Enforcement Officers Compared to Population Norms" March 2024.

¹⁸ Wen, C., Wai, J, Tsai M Yang, Y Cheng, T. Lee, M, and Wu, X. Minimum amount of physical activity for reduced mortality and extended life expectancy: A prospective cohort study. *The Lancet* 378 (9798): 1244-1253, 2011,

¹⁹ Schoenfeld BJ, Contreras B, Krieger J, Grgic J, Delcastillo K, Belliard R, Alto A. Resistance Training Volume Enhances Muscle Hypertrophy but Not Strength in Trained Men. *Med Sci Sports Exerc.* 2019 Jan;51(1):94-103. doi: 10.1249/MSS.0000000000001764. PMID: 30153194; PMCID: PMC6303131.

working to help officers deal with the growing operational stressors, family pressures and complex work environments.