



RESEARCH ON  
**TRAINING AND  
DEVELOPMENT**

This document highlights RAND Project AIR FORCE (PAF) research on training and development. We also highlight exemplars of RAND research on this topic conducted for the sister services and the Office of the Secretary of Defense that may be applicable to Department of the Air Force (DAF) training and development efforts.

### RESEARCH TOPICS

RAND research on training and development for the DAF and other military departments has addressed various topics, including

- selection and classification
- the training pipeline
- training effectiveness
- officer development
- live, virtual, and constructive training
- the training environment.

### RESEARCH METHODS

RAND staff include more than 600 doctoral-level researchers with expertise in a variety of topics. PAF is able to draw from this broad research staff to help address important research questions raised by the DAF.

PAF also maintains a core set of researchers who have particular expertise and knowledge of the DAF to help ensure that our research approach fits the DAF context. PAF research on training and development

issues has used a variety of approaches, including

- training needs analysis
- program evaluation
- test validation
- statistical modeling
- survey design, administration, and analysis
- interviews and focus groups
- literature reviews.

### IMPACT

PAF's policy-focused approach to research has enabled our findings to directly influence DAF policy and practices related to various training and development topics, including

- pilot training
- force development
- testing standards
- monitoring of abuse and misconduct in training environments
- improvements to training pipeline processes.

### FOR MORE INFORMATION, CONTACT

Nelson Lim, Ph.D.  
nlim@rand.org

Miriam Matthews, Ph.D.  
matthews@rand.org



## SELECTION AND CLASSIFICATION

### DAF-SPONSORED RESEARCH

**Tailoring Medical Standards for Air Force Personnel**

**RR-A571-1, [www.rand.org/t/RAA571-1](http://www.rand.org/t/RAA571-1)**

**Physical Task Simulations: Performance Measures for the Validation of Physical Tests and Standards for Battlefield Airmen**

**RR-1595-AF, [www.rand.org/t/RR1595](http://www.rand.org/t/RR1595)**

**Evaluating an Operator Physical Fitness Test Prototype for Tactical Air Control Party and Air Liaison Officers: A Preliminary Analysis of Test Implementation**

**RR-2171-AF, [www.rand.org/t/RR2171](http://www.rand.org/t/RR2171)**

**Evaluation of the Strength Aptitude Test and Other Fitness Tests to Qualify Air Force Recruits for Physically Demanding Specialties**

**RR-1789-AF, [www.rand.org/t/RR1789](http://www.rand.org/t/RR1789)**

**Training Success for U.S. Air Force Special Operations and Combat Support Specialties: An Analysis of Recruiting, Screening, and Development Processes**

**RR-2002-AF, [www.rand.org/t/RR2002](http://www.rand.org/t/RR2002)**

**Fit for Duty? Evaluating the Physical Fitness Requirements of Battlefield Airmen**

**RR-618-AF, [www.rand.org/t/RR618](http://www.rand.org/t/RR618)**

**Strength Testing in the Air Force: Current Processes and Suggestions for Improvements**

**RR-471-AF, [www.rand.org/t/RR471](http://www.rand.org/t/RR471)**

**The Air Force Officer Qualifying Test: Validity, Fairness, and Bias**

**TR-744-AF, [www.rand.org/t/TR744](http://www.rand.org/t/TR744)**

**Assessment and Selection for U.S. Air Force Special Warfare: Vol. 1, Defining Attributes and Designing Rater Training**

**RR-A549-1, *forthcoming***

**U.S. Air Force Enlisted Classification and Reclassification: Potential Improvements Using Machine Learning and Optimization Models**

**RR-A284-1, [www.rand.org/t/RRA284-1](http://www.rand.org/t/RRA284-1)**

### OTHER DEPARTMENT OF DEFENSE (DOD)-SPONSORED RESEARCH

**The Use of Standardized Scores in Officer Career Management and Selection**

**TR-952-OSD, [www.rand.org/t/TR952](http://www.rand.org/t/TR952)**

## TRAINING PIPELINE



### DAF-SPONSORED RESEARCH

**Air Force Nonrated Technical Training: Selected Topics to Improve Efficiency**  
**RR-2774-AF, [www.rand.org/t/RR2774](http://www.rand.org/t/RR2774)**

**The Relative Cost-Effectiveness of Retaining Versus Accessing Air Force Pilots**  
**RR-2415-AF, [www.rand.org/t/RR2415](http://www.rand.org/t/RR2415)**

**Understanding Demographic Differences in Undergraduate Pilot Training Attrition**  
**RR-1936-AF, [www.rand.org/t/RR1936](http://www.rand.org/t/RR1936)**

**Air Force Non-Rated Technical Training: Opportunities for Improving Pipeline Processes**  
**RR-2116-AF, [www.rand.org/t/RR2116](http://www.rand.org/t/RR2116)**

**Reducing Attrition in Selected Air Force Training Pipelines**  
**TR-955-AF, [www.rand.org/t/TR955](http://www.rand.org/t/TR955)**

**Finding the Balance Between Schoolhouse and On-the-Job Training**  
**MG-555-AF, [www.rand.org/t/MG555](http://www.rand.org/t/MG555)**

**A User's Guide to the Technical Training Schoolhouse Model**  
**TR-378-AF, [www.rand.org/t/TR378](http://www.rand.org/t/TR378)**

**Managing Cost and Capacity Data in the Air Force's Air Education and Training Command**  
**RB-125-1-AF, [www.rand.org/t/RB125-1](http://www.rand.org/t/RB125-1)**

**Organizing and Training for the Contested, Degraded, and Operationally Limited Space Force: Considerations Regarding General Officers, Career Field Sustainability, Training Pipelines, and the Civilian Workforce**  
**RR-A547-1, forthcoming**

### OTHER DOD-SPONSORED RESEARCH

**General Military Training: Standardization and Reduction Options**  
**TR-1222-OSD, [www.rand.org/t/TR1222](http://www.rand.org/t/TR1222)**

## TRAINING EFFECTIVENESS

### DAF-SPONSORED RESEARCH

**Enhancing Performance Under Stress: Stress Inoculation Training for Battlefield Airmen**

**RR-750-AF, [www.rand.org/t/RR750](http://www.rand.org/t/RR750)**

**Customized Learning: Potential Air Force Applications**

**TR-880-AF, [www.rand.org/t/TR880](http://www.rand.org/t/TR880)**

**Common Battlefield Training for Airmen**

**MG-624-AF, [www.rand.org/t/MG624](http://www.rand.org/t/MG624)**

**Cross-Cultural Skills for Deployed Air Force Personnel: Defining Cross-Cultural Performance**

**MG-811-AF, [www.rand.org/t/MG811](http://www.rand.org/t/MG811)**

### OTHER DOD-SPONSORED RESEARCH

**Meeting the Language and Culture Training Needs of U.S. Department of Defense Personnel: An Evaluation of the Language Training Center Program**

**RR-2555-OSD, [www.rand.org/t/RR2555](http://www.rand.org/t/RR2555)**

**Malleability and Measurement of Army Leader Attributes: Personnel Development in the U.S. Army**

**RR-1583-A, [www.rand.org/t/RR1583](http://www.rand.org/t/RR1583)**

**Active Component Responsibility in Reserve Component Pre- and Postmobilization Training**

**RR-738-A, [www.rand.org/t/RR738](http://www.rand.org/t/RR738)**

**Training Cyber Warriors: What Can Be Learned from Defense Language Training?**

**RR-476-OSD, [www.rand.org/t/RR476](http://www.rand.org/t/RR476)**

**Changing the Army's Weapons Training Strategies to Meet Operational Requirements More Efficiently and Effectively**

**RR-448-A, [www.rand.org/t/RR448](http://www.rand.org/t/RR448)**



**An Evaluation of the Implementation and Perceived Utility of the Airman Resilience Training Program**

**RR-655-OSD, [www.rand.org/t/RR655](http://www.rand.org/t/RR655)**

**Innovative Leader Development: Evaluation of the U. S. Army Asymmetric Warfare Adaptive Leader Program**

**RR-504-A, [www.rand.org/t/RR504](http://www.rand.org/t/RR504)**

**Enhancing Critical Thinking Skills for Army Leaders Using Blended-Learning Methods**

**RR-172-A, [www.rand.org/t/RR172](http://www.rand.org/t/RR172)**

**Making Improvements to The Army Distributed Learning Program**

**MG-1016-A, [www.rand.org/t/MG1016](http://www.rand.org/t/MG1016)**

**New Tools and Metrics for Evaluating Army Distributed Learning**

**MG-1072-A, [www.rand.org/t/MG1072](http://www.rand.org/t/MG1072)**

**Improving the Army's Assessment of Interactive Multimedia Instruction Courseware**

**MG-865-A, [www.rand.org/t/MG865](http://www.rand.org/t/MG865)**

## OFFICER DEVELOPMENT



### DAF-SPONSORED RESEARCH

**Building the Best Offensive and Defensive Cyber Workforce: Volume I, Improving U.S. Air Force Training and Development**

**RR-A1056-1, [www.rand.org/t/RRA1056-1](http://www.rand.org/t/RRA1056-1)**

**Improving Development Teams to Support Deliberate Development of Air Force Officers**

**RR-1010-AF, [www.rand.org/t/RR1010](http://www.rand.org/t/RR1010)**

**Targeting the Occupational Skill Pairings Needed in New Air Force Colonels**

**TR-759-AF, [www.rand.org/t/TR759](http://www.rand.org/t/TR759)**

**Improving Development and Utilization of U.S. Air Force Intelligence Officers**

**TR-628-AF, [www.rand.org/t/TR628](http://www.rand.org/t/TR628)**

**Improving the Development and Utilization of Air Force Space and Missile Officers**

**MG-382-AF, [www.rand.org/t/MG382](http://www.rand.org/t/MG382)**

### OTHER DOD-SPONSORED RESEARCH

**Making the Grade: Integration of Joint Professional Military Education and Talent Management in Developing Joint Officers**

**RR-A473-1, [www.rand.org/t/RRA473-1](http://www.rand.org/t/RRA473-1)**

**Raising the Flag: Implications of U.S. Military Approaches to General and Flag Officer Development**

**RR-4347-OSD, [www.rand.org/t/RR4347](http://www.rand.org/t/RR4347)**

**Developing Army Leaders: Lessons for Teaching Critical Thinking in Distributed, Resident, and Mixed-Delivery Venues**

**RR-321-A, [www.rand.org/t/RR321](http://www.rand.org/t/RR321)**

**Adapting the Army's Training and Leader Development Programs for Future Challenges**

**TR-1236-A, [www.rand.org/t/TR1236](http://www.rand.org/t/TR1236)**

**Developing Military Health Care Leaders: Insights from the Military, Civilian, and Government Sectors**

**MG-967-OSD, [www.rand.org/t/MG967](http://www.rand.org/t/MG967)**

**Developing U.S. Army Officers' Capabilities for Joint, Interagency, Intergovernmental and Multinational Environments**

**MG-990-A, [www.rand.org/t/MG990](http://www.rand.org/t/MG990)**

**Developing Senior Navy Leaders: Requirements for Flag Officer Expertise Today and in the Future**

**MG-618-NAVY, [www.rand.org/t/MG618](http://www.rand.org/t/MG618)**

**Is the Navy Developing Flag Officers with the Expertise They Need?**

**RB-9297-NAVY, [www.rand.org/t/RB9297](http://www.rand.org/t/RB9297)**

## LIVE, VIRTUAL, AND CONSTRUCTIVE TRAINING



### DAF-SPONSORED RESEARCH

**A New Framework and Logic Model for Using Live, Virtual, and Constructive Training in the United States Air Force**

**RR-A551-2, forthcoming**

**Investment Strategies for Improving Fifth-Generation Fighter Training**

**TR-871-AF, [www.rand.org/t/TR871](http://www.rand.org/t/TR871)**

**Absorbing and Developing Qualified Fighter Pilots: The Role of the Advanced Simulator**

**MG-597-AF, [www.rand.org/t/MG597](http://www.rand.org/t/MG597)**

### OTHER DOD-SPONSORED RESEARCH

**Collective Simulation-Based Training in the U.S. Army: User Interface Fidelity, Costs, and Training Effectiveness**

**RR-2250-A, [www.rand.org/t/RR2250](http://www.rand.org/t/RR2250)**

## TRAINING ENVIRONMENT

### DAF-SPONSORED RESEARCH

**A Survey System to Assess Abuse and Misconduct Toward Air Force Students in Occupational Specialty Training**

**RR-2692-AF, [www.rand.org/t/RR2692](http://www.rand.org/t/RR2692)**

**An Assessment of Options for Increasing Gender Integration in Air Force Basic Military Training**

**RR-1795-AF, [www.rand.org/t/RR1795](http://www.rand.org/t/RR1795)**

**An Integrated Survey System for Addressing Abuse and Misconduct Toward Air Force Trainees During Basic Military Training**

**RR-964-AF, [www.rand.org/t/RR964](http://www.rand.org/t/RR964)**

## WORKING WITH US

### WHAT WE DELIVER

PAF's studies and analyses are tailored to the needs of the sponsor. Generally, PAF provides

- continuous interaction with PAF subject-matter experts throughout the project
- accessible, timely, and policy-focused reports that address senior leader concerns and recommend courses of action
- descriptive, transparent, and rigorous supporting materials that describe the project's methodology and support the project's conclusions
- as appropriate, additional outreach materials to help socialize the work to other interested stakeholders, such as the DAF, the U.S. Department of Defense, Congress, or the public.

### SPONSOR IDENTIFICATION

All PAF research projects must be sponsored by a USAF general officer (GO) or member of the senior executive service (SES). Most sponsors assign one or more action officers (AOs) to manage the technical and administrative aspects of their PAF projects.

### LINES OF FUNDING

DAF organizations can initiate a PAF research project in two ways:

1. **Centrally Funded** (also referred to as “core projects”). Air Force Studies, Analyses, and Assessments (SAF/SA; formerly HAF/A9) employs a rigorous, iterative, GO/SES voting process to select projects for inclusion in its annual research plan. This process accounts for about 70 percent of the projects that PAF will conduct during a fiscal year. Funding for these projects is part

of a line item in the congressional budget and is awarded through the competitive selection process. Project topics are submitted in January and the research plan is approved by a steering group consisting of three- and four-star GOs between June and July. Maintaining a balance of projects across the DAF and the four PAF programs is key to this selection process.

2. **Sponsor Funded** (also referred to as “add-on projects” because they are add-ons to the core research agenda). This process accounts for about 30 percent of the projects that PAF will conduct during a fiscal year. Funding for these projects comes directly from the organization requesting the research and does not require a competitive selection process because the requesting organization is paying for the research (and not competing with others). DAF sponsors may initiate a PAF add-on research project at any time of the year by requesting the work, submitting required documentation, and transmitting organizational funds. Ideas and requests for PAF add-on projects may originate from a variety of circumstances (e.g., continuation of prior PAF work or new challenges). To initiate the process, a sponsor or AO typically contacts the appropriate PAF program director or subject-matter expert. The timeline of add-on projects is flexible.

PAF also supports DAF organizations in many informal ways. To request Workforce, Development, and Health (WDH) research reports highlighted here or to discuss pressing DAF challenges, contact the director of PAF's WDH program at [www.rand.org/paf/about/pafmanagement](http://www.rand.org/paf/about/pafmanagement).

RAND Project AIR FORCE (PAF), a division of the RAND Corporation, is the Department of the Air Force's (DAF's) federally funded research and development center for studies and analyses, supporting both the United States Air Force and the United States Space Force. PAF provides the DAF with independent analyses of policy alternatives affecting the development, employment, combat readiness, and support of current and future air, space, and cyber forces. Research is conducted in four programs: Strategy and Doctrine; Force Modernization and Employment; Resource Management; and Workforce, Development, and Health.

The RAND Corporation is a research organization that develops solutions to public policy challenges to help make communities throughout the world safer and more secure, healthier and more prosperous. RAND is nonprofit, nonpartisan, and committed to the public interest. RAND® is a registered trademark.

IMAGE CREDITS: Cover—Airman 1st Class Patrick Sullivan/U.S. Air Force, Zffoto/Adobe Stock, Airman 1st Class Colin Hollowell/U.S. Air Force; page 2—Staff Sgt. Christian Conrad/U.S. Air Force; page 3—Senior Airman Kayla A. Palmer/U.S. Air Force; page 4—U.S. Cyber Command Public Affairs Office; page 5—Sarayuth Pinthong/U.S. Air Force; page 6—Senior Airman Erick Requadt/U.S. Air Force; page 7—Airman 1st Class Jacob B. Wrightsman/U.S. Air Force.

[www.rand.org/t/CPA1885-5](http://www.rand.org/t/CPA1885-5)



PROJECT AIR FORCE

[www.rand.org](http://www.rand.org)