

Headquarters U.S. Air Force

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Physiological Differences: Leveraging Science in Physical Training



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RFI #5 Questions 1 and 2

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Q1 Approved and published additional training for combat airmen

Q2 What are the Services doing to ensure women are prepared to successfully complete their MOS producing school?

- **Physical Training (PT) for Battlefield Airmen - STO/CCT, CRO/PJ, SOWT, ALO/TACP (special tactics and conventional)**
 - **PT at most operational units guided by strength & conditioning coach**
 - **PT training pipelines: Recruit (SRD) - BMT - TT (COIE and Advanced)**
 - **Guided by new human performance (HP) staff in AETC BA Training Group**
 - **Curriculum approved and published via the AETC Instructional System**
 - **At training and operational levels unaware of:**
 - **External content review; some HP staff use traditional or popular training methods not necessarily related to AFSC operational physical requirements**
 - **Capability likely present, but unaware of gender specific preparation**



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RFI #5 Question 3 - Physical Training

Q3 How are Services incorporating science and new technologies into improving the training methodologies? *For example, tapping into the American Mountaineering Guide Association for how women move under load for long distances in rough terrain; fitness enhancement programs, such as Navy NOFFs; the [Air Force Prototype Battlefield Airmen Occupational Specific Fitness Test](#); and leveraging Master Fitness Trainers*

■ Test and Training: Test Status

■ AF Tier 2 Prototype OSOR PF Test and Standards

- ALO TACP - complete with Study Steps 1 through 4; meet with CFMs July
- STO/CCT, CRO/PJ, SOWT - waiting, observing
- EOD complete with Study Step 1, delineated 39 CPTs
- Other AFSCs future
- Strength Aptitude Test - major review, fundamental Tier 2 across AFSCs
- Tier 2 Prototype: overall well accepted, especially by operators - per direct feedback, survey, interviews; however, small minority with reservations
- Educ-Mkt-Comm: key to overcome misperceptions; assist in adaptation to Paradigm Shift in tests & standards and corresponding training (ACSM, NATO)



Physical Training - Behavior

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- **Test and Training: Behavior**
 - **Tests and Standards drive behavior, “364 day question”**
 - **Training more important than the test**
 - **Tier 1: drive training in key Physical Fitness components (CRF and BC) for health, medical care \$, present for duty, physical and cognitive performance**
 - **Tier 2: drive training to ensure OSOR performance capability**
 - **Tier 2 Test results provide solid OSOR feedback for:**
 - **Member’s operational physical status - individual and small team**
 - **Team Leader / Commander Tool**
 - ***Training guide* for local HP staff/coach**
 - **Example - real data from recent test**



Battlefield Airman Operator Tests and Standards

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PJ/ CRO	Op1	Op2	Op3	Op4	Op5	Op6	Op7	Op8	Op9	Op10
	Grip Strength Max	Med Ball Toss Sum	Three Cone Drill	Trap Bar DL	Pull up	Lunges Wtd	Ext Cross Knee Crunch	Farmer's Carry	Row Erg 1000m	Run 1.5 Mile
Points	PSI	ft	secs	lbs	reps	reps	reps	secs	mins:secs	mins:secs
10	195	50.5	7.4	467	35	185	168	13.0	3:07	7:40
9	161	46.5	7.7	403	30	152	149	14.5	3:18	8:15
8	149	43.5	8.1	370	26	120	130	16.0	3:28	9:03
7	140	41.0	8.4	348	23	100	111	17.7	3:36	9:35
6	134	39.5	8.7	330	21	86	92	19.2	3:41	10:01
5	128	37.5	8.9	314	18	74	73	20.5	3:46	10:26
4	121	36.0	9.1	298	16	62	55	21.8	3:52	10:49
3	115	34.0	9.4	280	14	51	40	23.3	3:58	11:16
2	106	32.0	9.7	258	11	39	28	25.0	4:05	11:47
1	94	28.5	10.1	226	7	24	16	27.7	4:16	12:35

Component Minimums indicated in blue

Composite score requirement ≥ 52 of 100



Physical Training - Action

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- **Test and Training: Actions and Recommendations**
 - **Employ *AF Exercise Principles and Methods Course (EPM)***
 - Science-based exercise training principles and methods (since 2008)
 - Includes sex-specific training methods/techniques
 - 50/50 mix of academic and practical
 - Graduation requirement: develop real time physical training plan
 - **Tier 1: EPM for BMT, TT, PME, SLOC, SEL, SLC - need consistency***
 - **Tier 2: EPM for SRD - BMT - BA TRG - S&C Coaches**
 - Study Step 4A: Implementation and Train - short version
 - Study Product: tests, standards, plus training, *i.e.*, EPM full version
 - **Recommend Air Staff approve and resource EPM over R-A-T-O**
 - Need systematic process - certification, recert, efficacy checks
 - Exercise Science Unit (ESU) act as central SME hub; EPM train the trainer
 - ESU act as independent review agency across R-A-T-O (content check of HP staff training methods) - centralized guardrails with decentralized execution
 - *Educ-Mkt-Comm: communicate fundamental training principles/methods

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Professional venues specifically addressing Combat Integration

- **Test and Training: ESU sources, references, relationships**
 - **ACSM, NSCA, TSAC, CDC, AHA, NIH, sci lit, etc**
 - **ACSM 2017 Annual Scientific Meeting**
 - **“Paradigm Shift: Operationally-Relevant Physical Fitness Tests and Standards for the Military - International Progress” speakers - Canada, US, Australia, UK**
 - **Military physiology sessions addressing male-female similarities and differences in load carriage, heat stress, material lifting, training volume**
 - **4th International Congress on Soldiers’ Physical Performance, Nov 17**
 - **Thematic Session, “Occupational and Operational Physical Employment Tests and Standards for the Military - International Status and Lessons Learned” - addresses Tier 1, Tier 2, Commonalities and Differences, Training**
 - **3rd International Conference on Physical Employment Standards, Jul 18**
 - **Recruitment, retention, retirement processes in physically demanding occupations**
 - **NATO Human Factors Medicine Research Task Group 269, “Combat Integration: Implications for Physical Employment Standards”**
 - **Chapters on PES best practices, biological limitations to task performance and trainability, role of PES in injury risk, incentives, adverse impact (14 nations)**
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Gender - Age Group Record

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