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DACOWITS RFI #1

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Baseline explanation behind the program's history and design

- **History**
 - 1955 – PE 110 (Boxing) implemented in Phys Ed curriculum
- **Design**
 - Instills the USAFA Institutional Outcome of Warrior Ethos in a realistic and controlled environment
 - Content delivered over 8, 75-min lessons
 - Three graded evaluations based on course objectives
 - Moral courage: Do right in the face of danger
 - Grit: Hardiness of spirit/resistance to failure
 - Discipline: Adherence to rules of engagement
 - Physical courage: Mission before self
 - Establishes initial combatives skillset, lays foundation for remaining combatives rqmts
 - PE 215 – Combatives 1 and PE 315 – Combatives 2 complete the core curriculum

Identification of whether program is optional or a mandatory course requirement for graduation

- PE 110 is a mandatory graduation requirement for all USAFA cadets (customarily C4C year)
 - Prior to Fall 2016, PE 110 only required for male cadets



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Science based research of selected concussion protocol and potential value of standardizing a protocol amongst the Military Service Academies

- USAFA concussion management provided by multispecialty medical team in a dedicated Concussion Clinic
- Concussion protocol based on current research and includes comprehensive baseline testing and post injury assessments
 - Assessments include:
 - Self-Report Symptom Assessment
 - Motor Control/Postural Stability
 - Mental-Status Testing
 - Neurocognitive Testing
 - Any cadet suspected of having a concussion is immediately removed from participation and systematic injury evaluation is conducted
 - Once diagnosed with concussion a cadet is removed from sport/military training and not allowed to return to physical activity until cleared by Concussion Clinic
 - Cognitive and physical rest used as appropriate to aid recovery
 - Return to full duty after completing staged return-to-play progression and normal clinical examination at or above pre-injury baseline levels
- Standardization of protocol – implemented through DoD NCAA Grand Alliance Study
 - USAFA, USMA, and USCGA utilize Grand Alliance Protocol
 - Continue to collaborate with USNA



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Types of protective safety gear that are required to be worn during matches and other risk mitigation efforts

- **Protective Safety Gear**
 - **Headgear – Ringside® Gel Sparring Headgear**
 - **Gloves – 14 Oz Top Ten® Gloves**
 - **Hand Wraps – Radius® hand wrap (8.9% striking force displacement)¹**
 - **Mouthpiece – standard form-fitted athletic mouthpiece**
- **Other Risk Mitigation Efforts**
 - **Medical screener required to identify pre-existing injuries**
 - **Concussion education and reporting protocol briefed to cadets on lesson one**
 - **Course mandates safe matchups based on gender, weight, and skill level**
 - **70% of curriculum dedicated to defense**
 - **Exposure to power hand reduced 80% (from ten to two minutes)**
 - **Instructors qualified to teach through formal upgrade program**
 - **Instructors are always in the ring as referee and safety officer during bouts**
 - **On-campus medical staff (trainers/EMTs, physician led concussion care clinic)**



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How do you assess whether your boxing program is meeting your objectives?

- **Objectives measured through Cadet Performance**
 - **Grading criteria**
 - **Courage & Initiative – cadet exhibits physical and mental fortitude**
 - **Offense – cadet operates within rules of engagement**
 - **Defense – cadet displays proper defensive techniques under pressure**
 - **Form – cadet displays proper technique as instructed**
 - **Tactical Strategy – cadet implements appropriate action based on situation**
- **Methods of course evaluation**
 - **Course mean**
 - **Course surveys**
 - **Informal feedback**
 - **Instructor observation of cadet improvement**
- **Byproducts that develop positive officer attributes**
 - **Willingness to engage**
 - **Self reliance**
 - **Physical conditioning**
 - **Confidence**
 - **Courage**
 - **Resiliency**

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QUESTIONS



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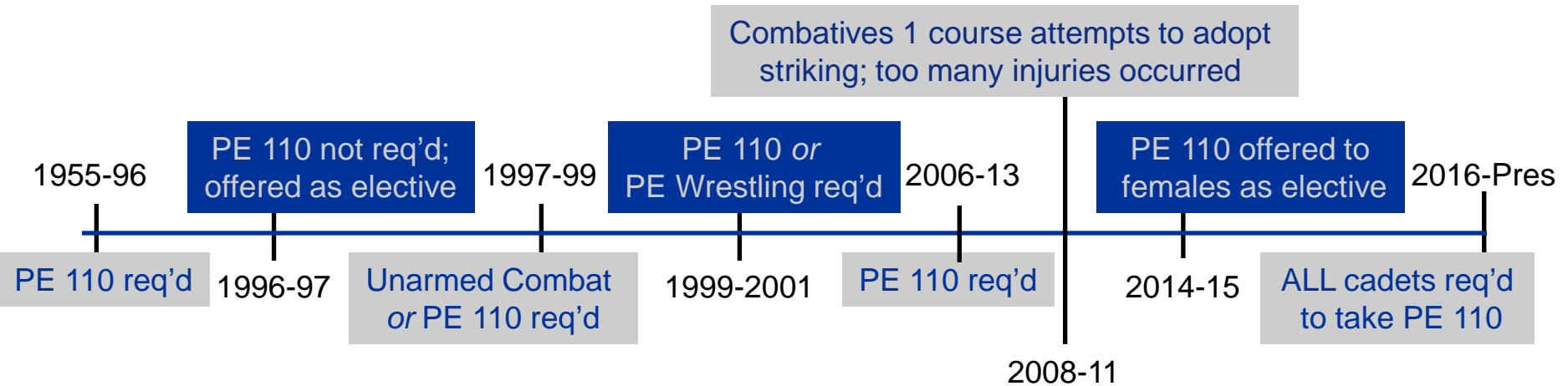
BACKUP SLIDES

Integrity - Service - Excellence



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Backup – PE110 Timeline





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Backup - Case Study #1

- 18 yo male cadet who sustained concussion during BCT
- Date of Injury: 15 July
- Mechanism of Injury: hit in head during military training
- Asymptomatic: 17 July
- Began RTP protocol: 18 July
- Completed RTP protocol: 22 July
- Returned to full duty: 23 July

- Symptomatic for 2 days
- Accomplished RTP protocol in 5 days
- Total days until returned to full duty – 8 days



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Backup - Case Study #2

- 19 yo female cadet who sustained concussion during PE Boxing
- Date of Injury: 12 Sept
- Mechanism of Injury: hit in head during sparring
- Asymptomatic: 26 Sept
- Began RTP protocol: 27 Sept
- Completed RTP protocol: 2 Oct
- Returned to full duty: 3 Oct

- Symptomatic for 14 days
- Accomplished RTP protocol in 6 days
- Total days until returned to full duty – 21 days

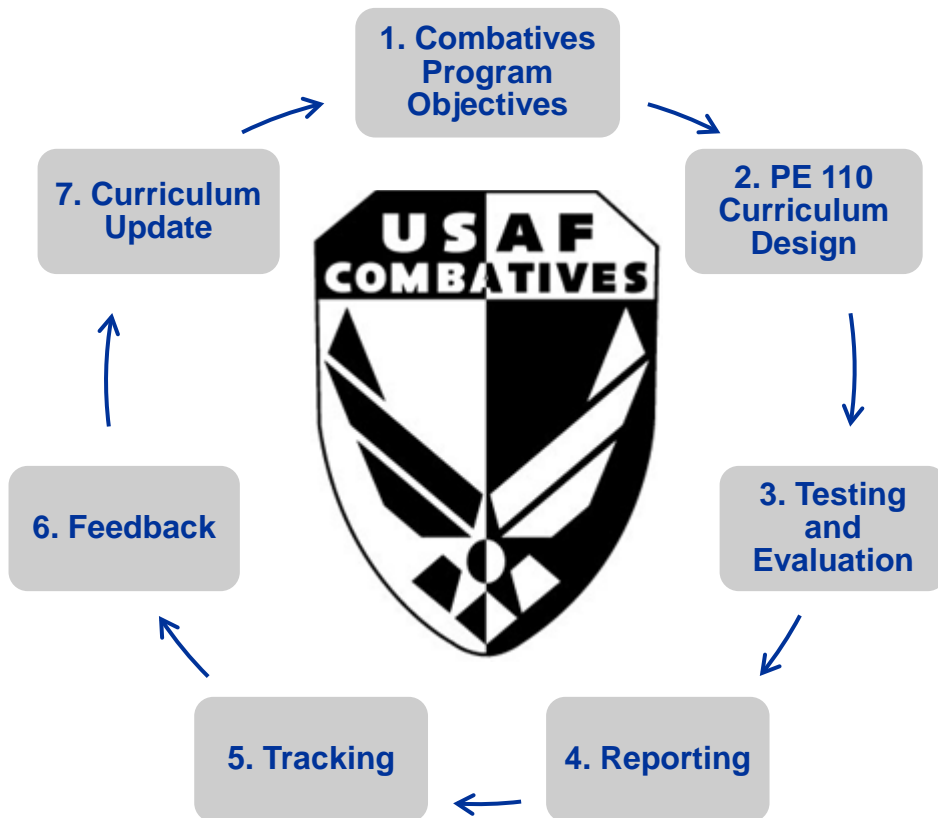


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Backup – Program Objectives

How do you assess whether your boxing program is meeting your objectives?

Program effectiveness vetted through a seven step process



1. Program objectives are established IAW institutional outcomes
2. PE 110 curriculum is designed to meet combatives program objectives
3. Cadets are tested and evaluated on ability to meet objectives during three graded reviews
4. Overall course means and safety incidents analyzed and reported
5. Historical data archived & reviewed annually
6. Informal and formal feedback collected from cadets, instructors, and administrators
7. Curriculum and operating procedures updated to ensure objectives are safely and effectively met
 - Curriculum change proposals submitted as necessary to Academy Board
 - Minor operating procedures updated as required



Backup - Headgear

Types of protective safety gear that are required to be worn during matches and other risk mitigation efforts

- The headgear in use is a Ringside Gel Sparring Headgear. The use of headgear as a protective measure is a debated topic. The International Boxing Association, known as AIBA, made the decision to remove headgear in competitions following a 2013 internal study; the full report from the study was never made public. However, the data they did release showed the rate of concussion for boxers wearing headgear was 0.38 percent in 7,352 rounds while the rate of concussion for those without headgear was a little less than half that at 0.17 percent in 7,545 rounds.
- In a study published in the Journal of Neurosurgery, researchers concluded that headgear provided additional protection when compared against no headgear. In addition, they found boxing gloves and boxing headgear reduce lineal acceleration more than boxing gloves and no headgear. At the USAFA, boxers are only allowed to throw straight punches, jabs and power hands, and are restricted from utilizing hooks and uppercuts. Many factors make it difficult to definitively recommend the safest combination of personal protective equipment (PPE). For instance, angular acceleration may increase with the use of headgear and a boxer wearing headgear does have a larger target area to be hit.¹
- In AIBA regulated amateur boxing, headgear is worn by male and female boxers until they are at least 18 years of age and have had at least 10 bouts. AIBA concluded the risk of laceration and orbital injuries from head clashes remained too risky with novice boxers to remove them.



Backup - Lesson Breakdown

- Lesson 1
 - Concussion protocol brief
 - Admin notes and safety policy
 - Hand wrap instruction
 - Stance & Movement
 - Ranges, Angles, Levels
 - Jab
 - Fakes and Feints
 - Health check & debrief
- Lesson 2
 - Power Hand
 - Combinations
 - Defense to the Jab
 - Partner drilling (jab only)
 - Health check & debrief
- Lesson 3
 - Review defense to the Jab
 - Defense to the power hand
 - Controlled Partner Drilling (jab only)
 - Full ring spar – 30 sec, jab only
- Lesson 4
 - Describe duties of judge, timekeeper, second, and referee
 - Perform first graded evaluation (1, 1-min, jab-only round)
 - Health check & debrief
- Lesson 5
 - Review first graded evaluation
 - Discuss additional strategy
 - Teach partial cover
 - Partner drilling (body only)
 - Demonstrate countering
 - Technical spar – full speed with drill power; 1 round
 - Health check & debrief
- Lesson 6
 - Warm up
 - Perform second graded evaluation (2, 1-min, jab-only rounds)
 - Health check & debrief
- Lesson 7
 - Video review of 2nd evaluation
 - Review defense of power hand
 - Drill defense of multiple punches
 - Partner drilling (drill speed, both hands)
 - Full ring spar – 30 sec, limit 2 power hands
 - Health check & debrief
- Lesson 8
 - Warm up
 - Perform final graded evaluation (2, 1-min, full spar rounds)
 - Course feedback with Cadets
 - Health check & debrief



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Backup – Radius Hand Wraps

Types of protective safety gear that are required to be worn during matches and other risk mitigation efforts

“More importantly, punching force was significantly reduced with WRAP [radius hand wrap] during the mechanical (29.3%) and human (PRO [professional boxers] = 12.6%, UNT [untrained persons] = 8.9%) settings. These initial findings suggest padded hand wraps such as the one used in this study significantly reduce punching force, which may be important for long-term safety considerations in combat sports.” (1)



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Backup – Outcomes Research

How do you assess whether your boxing program is meeting your objectives?

What research tells us about service academy boxing programs

“The primary objective of the present research was to quantify the development of students’ self-efficacy, not only in course-specific athletic domains (physicality), but also in disparate domains (leadership initiative). Boxing students increased significantly on the overall scale and on both subscales, while swimming students did not (although they had marginal increases in physicality efficacy).”²

“These findings are consistent with earlier sport psychology research on boxing and suggests a character strengths profile associated with early success in boxing and possibly other sports.”³

“A pattern emerged that depicted the combative and competitive contact sport of boxing increasing the self-efficacy of students in just 10 lessons.”²

“While it is important to teach a variety of specific physical education class skills, combative types of physical education courses should be incorporated into the curriculum if administrators hope for the development of other traits in their students. It is in unique courses such as boxing that such contributions can be made. For service academies, these courses allow physical education departments to contribute to efficacious growth and to help produce leaders with a vision for tomorrow.”³



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Backup – Q&A

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- **Q: Is there a method other than boxing to complete USAFA's institutional outcomes?**
 - **A: We have tested other introductory combatives curriculums and were unable to safely meet our outcomes. In boxing, we have a real, safe, meaningful, and highly controlled environment capable of mirroring a combative experience.**

 - **Q: Do men and women box each other?**
 - **A: No, we conform with the international boxing association regulations which prohibit mixing of genders.**

 - **Q: Do women require different protective equipment than men?**
 - **A: No, the British Journal of Sports medicine found that women do not require chest protectors, the only other possible protective equipment.**

 - **Q: Has course integration been successful?**
 - **A: Yes, all cadets have been equally successful. We have not witnessed any difference in male and female cadet's ability to accomplish course objectives.**

 - **Q: Has the course curriculum change been successful?**
 - **A: Yes, injuries have been reduced and outcomes are still achieved.**
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Backup – Risk Mitigation Efforts

Types of protective safety gear that are required to be worn during matches and other risk mitigation efforts

The PE Boxing curriculum went through significant changes ahead of the 2017 Academic Year in an effort to reduce the number of concussion and provide a safer course while still meeting the desired outcomes. The significant changes are highlighted below.

Lesson 1

- Standardized concussion briefing and prior injury screening

Lesson 2

- Eliminated use of power hand on line drill

Lesson 3

- Eliminated teaching of hook; additional time gained spent on defensive work
- Eliminated use of power hand in technical sparring

Lesson 4

- Eliminated teaching of uppercut
- Implemented GR 1: 1, 1-min round, jab only
- 20% of grade, primarily used by instructor to create safe matchups

Lesson 5

- Eliminated practice GR: 2, 1-min rounds, both hands and all punches
- Lesson refocused on defensive work and strategy

Lesson 6

- Eliminated GR 1: 3, 1-min rounds with both hands and all punches
- Implemented GR 2: 2, 1-min rounds, jab only

Lesson 7

- Formerly film review only
- Currently film review with additional defensive work of the power hand and strategy

Lesson 8

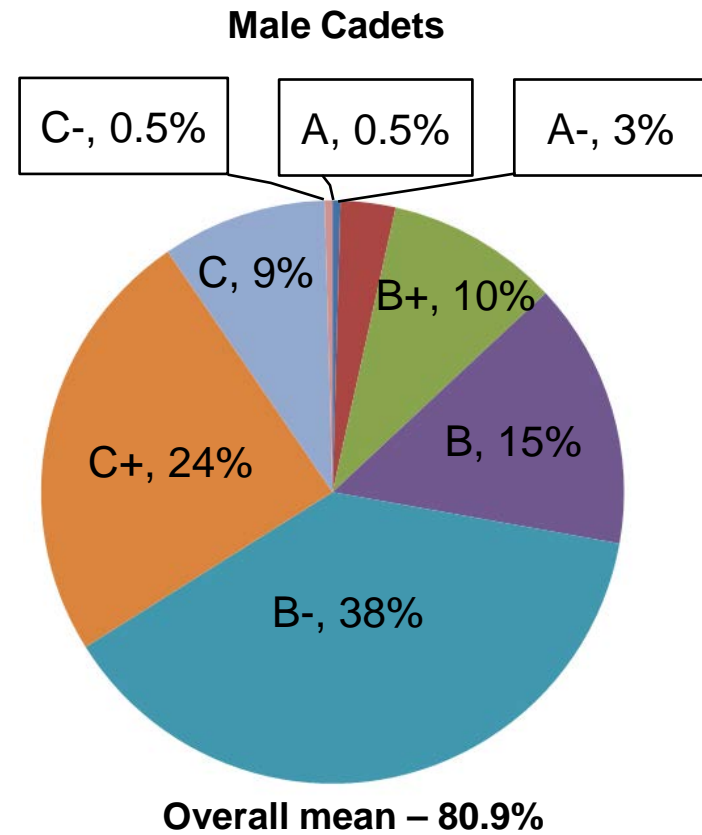
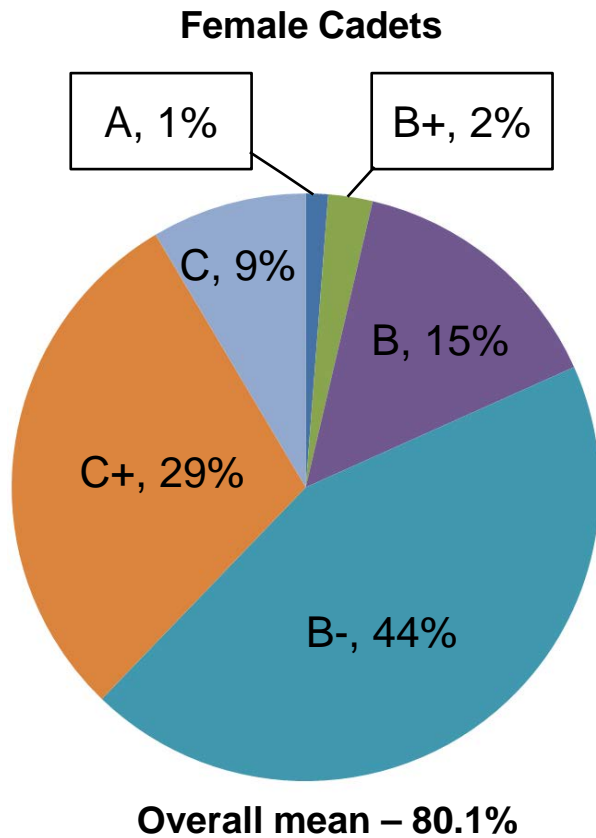
- Eliminated GR 2: 3, 1-min rounds, both hands and all punches
- Implemented GR 3: 2, 1-min rounds, jab and power hand

Total exposure time to power hand

AY 15-16: ~10 minutes

AY 16-17: ~2 minutes

Backup – 1st semester AY16 Grades by Gender





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 - (2) Peterson and Seligman, Character Strengths and Virtues in Predicting Boxing Physical Education Class Performance of USMA cadets. 2004. United States Military Academy West Point.**
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 - (4) Bartsch et al, Boxing and mixed martial arts: preliminary traumatic neuromechanical injury risk analyses from laboratory impact dosage data. 2012. Journal of Neurosurgery**
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