2019 NSCA TACTICAL ANNUAL TRAINING

Conflict of Interest Statement

I have no actual or potential conflict of interest
in relation to this presentation.

The opinions expressed in this presentation are my own and
do not represent the views of the United States Air Force,
U.S. Government, or DoD.

Vision Training Research & Applicability

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History

Galen (130-210AD)[1]

- Father of experimental physiology

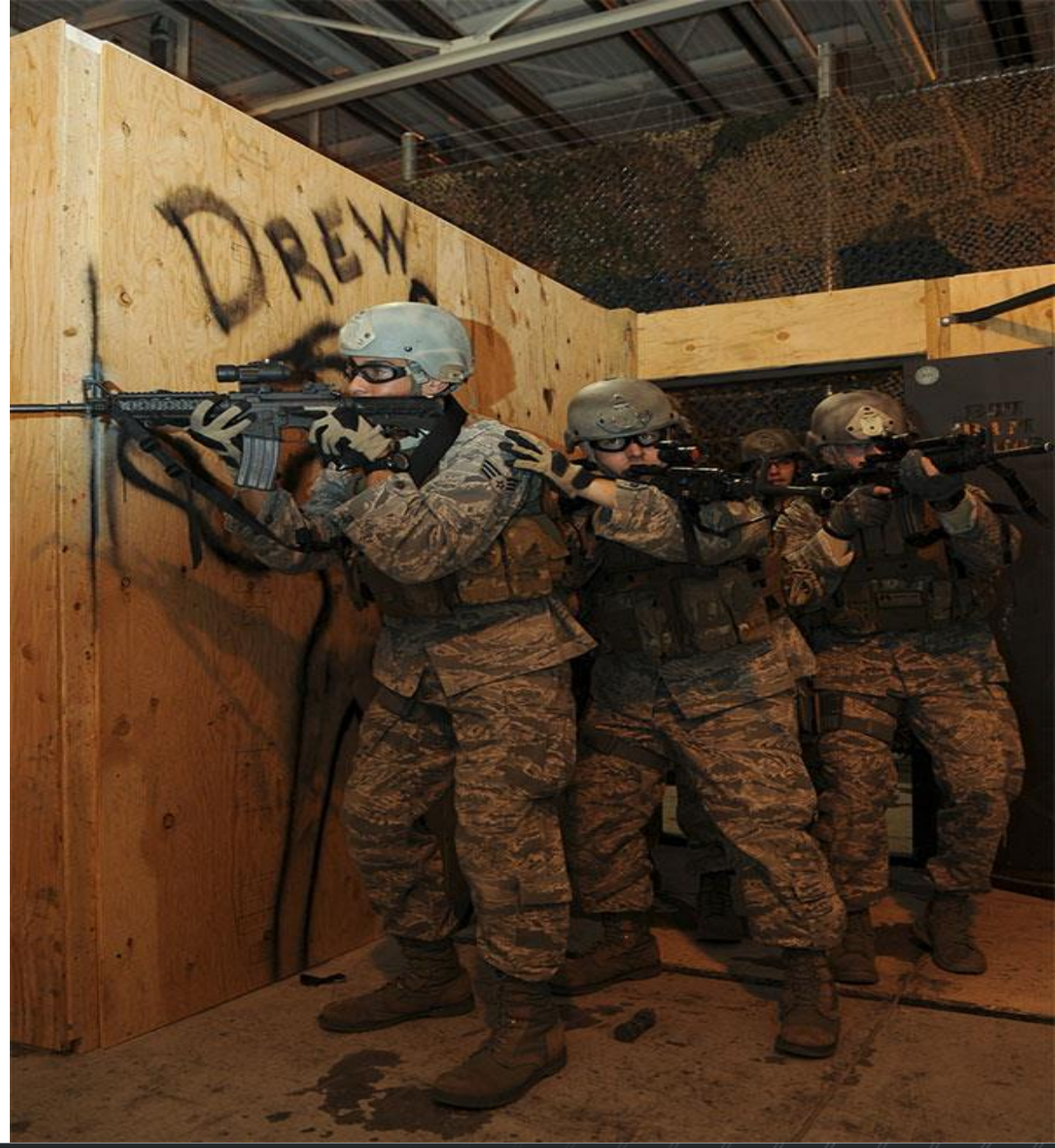
Returned mid-20th century

- 1970s-1990s
- Today

Picture Reference: Breaking Muscle; https://breakingmuscle.com/fitness/how-to-construct-an-effective-tactical-training-program

Visual System

- 8 muscles in each eye
  - 6 striated; 2 smooth
- 70% sensory receptors[2]
  - 80% of info obtained[2]
- Two visual systems[2]
  - Perceptual presentation of info
  - Visuomotor control



Picture Reference: American Special Ops; Tactical Response Force; https://www.americanspecialops.com/tactical-response-force/

Visual System

- Hardware vs. Software
- Training hardware vs. training software vs. training both[2]
- Quiet Eye[3]
- Motor vs. Visuomotor control[4&10]
- Perceptual – cognitive training[4]

Picture Reference: InMyArea.com; health; https://www.inmyarea.com/firefighters-need-saving-too

Visual Research

- Eliminate extraneous variables
  - Transfer?
- 1 variable vs. program
  - Sporadic programming
- Same apparatus
- Small sample size [5]
- Placebo, Hawthorne effect[5]
- Importance of EBP

Picture Reference: Official US Navy Page on Flickr; https://www.flickr.com/photos/usnavy/28262519019

Research

- ↑ post visual exercises in youth handball athletes[2]
- ↑ depth perception & stereopsis-baseball athletes[6 & 7]
- ↑ central detection, motion coherence, and divided attention[5]
- ↑Choice reaction & peripheral vision in youth hockey players[11]

Picture Reference: Market Watch article; https://www.marketwatch.com/story/verizon-throttled-firefighters-data-plan-during-california-wildfire-2018-08-21

Research

- ↑ choice reaction, depth, accommodation, eye/hand coordination, sport specific task-table tennis[1]
- ↑ sport specific badminton task in elite level athletes[5]
- ↑ shooting/passing (18%) in NHL players[5]

Picture Reference: MPN News article; https://www.mintpressnews.com/us-police-cancel-israel/252469/

Research

- ↑ Hockey players performance[8]
  - Goals made/shots taken/goal percentage
  - Survey – felt ↑ in vision
- ↑ shooting performance high level b-ball athletes[9]
  - Increase quiet eye
  - Visual software
- ↑ batting, slugging %, on-base %, runs, hits-college baseball[12]

Picture Reference: Change.org article; https://medium.com/the-fifth-estate/this-former-officer-wants-more-training-for-police-108068d0b4bf

Transfer

- Transfer to game/event
- Perceptual-cognitive over low-level training[4]

Picture Reference: Tactical Life article; https://www.tactical-life.com/firearms/tactical-weapons-pararescue-jumpers/

Concussion[18]

- 2006-2009 vs. 2010-2013
- 6x/wk 40mins for 2.5wks (5ex)
  - 1x/wk 10mins for 14wks (1ex)
- 4 coaches
- ‘06-’09 = 8.75±1.7 concussions/season; 9.2/100
- ‘10-’13 = 1.5±1.0 concussions/season; 1.4/100

Picture Reference: Air Combat Command article; https://www.acc.af.mil/News/Article-Display/Article/202577/atlantic-strike-v-exercise-begins-in-florida/

Concussion (mTBI)

- ~50% brain's circuits are vision[13]
- Vision complaints[14&15]
- Abnormalities[14]
  - 60% in pursuit eye movements
  - 47-64% in convergence
  - 65% in accommodative amplitude
- Normal saccadic function – symptom resolution[14]

Picture Reference: US Army article;
https://www.army.mil/article/220879/179th_military_police_company_national_training_center_prep

Concussion Rehab

- Under-researched
  - Several Case, pilot, trial
  - Few with a large sample size and control group
- 90% w/TBI improved[16]
- Improvements in vergence, accommodative, and visual attention[17]

Picture Reference: myrecordjournal.com article; http://www.myrecordjournal.com/News/Wallingford/Wallingford-News/Wallingford-police-receive-active-shooter-training.html

Application

- EBP
  - Qual study w/ goalies[5]
- Placebo or Hawthorne effect
- Police/Fire/Military
- Exercises
- Programming[4]

Picture Reference: News and Media article; https://news.cfa.vic.gov.au/-/our-commitment-to-firefighter-wellbeing?redirect=%2Fcfa-categories%2Fhealth-safety%3Fp_p_id%3Dcom_liferay_asset_publisher_web_portlet_AssetPublisherPortlet_INSTANCE_l0LxgKKhuWgw%26p_p_lifecycle%3D0%26p_p_state%3Dnormal%26p_p_mode%3Dview%26_com_liferay_asset_publisher_web_portlet_AssetPublisherPortlet_INSTANCE_l0LxgKKhuWgw_delta%3D10%26p_r_p_resetCur%3Dfalse%26_com_liferay_asset_publisher_web_portlet_AssetPublisherPortlet_INSTANCE_l0LxgKKhuWgw_cur%3D1

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Thank you!!