

# Military Medicine & the Modern Woman: A Pelvic Health Perspective

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- Dr. Katherine Miles currently serves as the Lead Pelvic Health Physical Therapist at Walter Reed National Military Medical Center, faculty of the Female Pelvic Medicine and Reconstructive Surgery Fellowship Program, Assistant Professor of Obstetrics and Gynecology at the Uniformed Services University of the Health Sciences, as well as a selected White House Medical Unit Consultant.
- She earned her Doctor of Physical Therapy degree from Washington University in St. Louis School of Medicine and is a Board-Certified Clinical Specialist in Women's Health Physical Therapy and Credentialed Clinical Instructor through the American Physical Therapy Association.
- Dr. Miles has a particular interest in the clinical application of the biopsychosocial model for pelvic and sexual pain conditions as it relates to the neuromuscular and movement systems.





#### **Disclosures**

- Dr. Katherine Miles has no relevant financial or non-financial relationships to disclose relating to the content of this activity.
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## **Learning Objectives**

At the conclusion of this activity, participants will be able to:

- 1. Summarize the recent history of women's service in the United States Armed Forces.
- 2. Describe unique challenges faced by women in the military as it relates to pelvic health and physical fitness.
- 3. Explain the role and function of Pelvic Health Physical Therapy (PHPT) in the multidisciplinary care of women's health and wellness.





#### **Outline**

- Women's service in the US Armed Forces
  - Historical Significance
  - Musculoskeletal Implications
- Pelvic Health Physical Therapy (PHPT)
  - Introduction
  - Considerations for Active Duty (AD) female service members and veterans
- Q & A





#### Women's Service in the US Armed Forces

#### Women in the US Armed Forces

- Unofficially
  - ✓ Revolutionary & Civil War
- Officially 1901

✓ World War I: > 12,000 US Navy (USN), US Marine Corps (USMC)

✓ World War II: 350,000

#### 1948: Women's Armed Services Integration Act

- Allow women to serve as full and permanent members of the Army, Navy, Marine Corps, and Air Force
  - ✓ Law capped women's total military membership at 2%
  - ✓ Limited occupations, roles, and promotions
  - ✓ Prohibited service in combat positions
  - ✓ Allowed for involuntary discharge due to pregnancy or parenthood

(Duester & Tepe, 2016)





#### Women's Service in the US Armed Forces

- 1951: Defense Advisory Committee on Women in the Services (DACOWITS)
  - Recommendations on recruitment, treatment, employment, integration, and well-being of women in the military

- 1967: Women's Armed Services Integration Act lifted restrictions on the number and ranks of women in the military
  - Removed 2% ceiling

(National Center for Veterans Analysis and Statistics, 2011)





#### Women's Service in the US Armed Forces

- 1991: Congress modified exclusions of women from the USN and USMC assignments
  - Repealed prohibitions that prevented women being assigned to combat aircraft
- 1994: Department of Defense (DoD) Adopted the Direct Ground Combat Definition and Assignment Rule
  - Excluding women from assignments/co-location with units whose primary mission was to engage in direct combat
  - Difficult to apply in Afghanistan & Iraq wars where enemy tactics obscured traditional distinction between combat and noncombat environments
    - ✓ 24% of post-1990 female veterans have been exposed to combat (Duester & Tepe, 2016)





# HEALTH AGENCY.

#### 2013: Ground Combat Exclusion Rule Rescinded

- Joint Chief of Staff (JCS) recommendations
  - Implementation of integration plan no later than January 1<sup>st</sup>, 2016
  - Additional 14,000
     additional occupations
     and assignments
     involving exposure to
     direct ground combat
  - Removing genderbiased barriers to service

(Duester & Tepe, 2016)

- Ensure the success of our nation's warfighting forces by preserving unit readiness, cohesion, and morale.
- Ensure all service men and women are given the opportunity to succeed and are set up for success with viable career paths.
- Retain the trust and confidence of the American people to defend this nation by promoting policies that maintain the best and most qualified people.
- Validate occupational performance standards, both physical and mental, for all military occupational specialties, specifically those that remain closed to women. Eligibility for training and development within designated occupational fields should consist of qualitative and quantifiable standards reflecting the knowledge, skills, and abilities necessary for each occupation. For occupational specialties open to women, the occupational performance standards must be gender-neutral as required by Public Law 103-160, Section 543 (1993).
- Ensure that a sufficient cadre of midgrade/senior women enlisted and officers are assigned to commands at the point of introduction to attain success in the long run. This may require an adjustment to our recruiting efforts, assignment processes, and personnel policies. Assimilation of women into heretofore "closed units" will be informed by continual in-stride assessments and pilot efforts.





## 1994: Defense Women's Health Research Program

- To address problems of specific concern for the health and performance of military women
- "bring protection of the health and performance of military women on a par with men, after more than a century of research based solely on males."

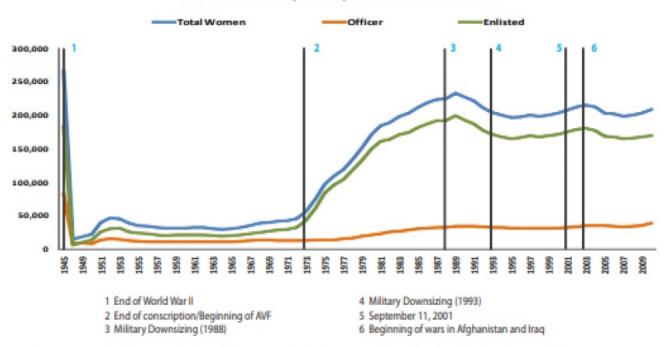
(Duester & Tepe, 2016)





## Female Active-Duty Military Personnel: 1945 - 2010

Figure 2.
Female Active-Duty Military Personnel: 1945 to 2010



**Source:** Department of Defense, Defense Manpower Data Center, Statistical Information Analysis Division. Prepared by the National Center for Veterans Analysis and Statistics.





## Musculoskeletal Injuries (MSKi) Female Active Duty Service Members (ADSMs) (Barbeau et al., 2021)

- 2017: Women represent approximately 16% of the overall US AD force
- Over 280,000 US military service women have been deployed to war zones
- Injury has been recognized as leading health problem of US military
  - More than 2 million outpatient medical encounters among ADSM
- Musculoskeletal Injuries (MSKi) have been identified as the primary cause of medical discharge and medical downgrade among both men and women
  - Accounting for >80% injuries in ADSM and 65% of medically non-deployable active soldiers from the USA





#### Musculoskeletal Injuries (MSKi) Female ADSM

(Barbeau et al., 2021)

- Women are at increased risk of MSKi and specifically stress fractures > men
- Differences between men and women that can affect both performance outcomes and risk of injury
  - Anthropometric
    - ✓ Body size, shape, composition
      - † Injury risk with ill fitting personal protective equipment (PPE) during training & deployment
  - Physiologic
    - ✓ Cardiorespiratory and metabolic fitness
  - Biomechanical
    - ✓ Musculoskeletal, lifting technique, movement efficiency





## Musculoskeletal Injuries (MSKi) Female ADSM

(Barbeau et al., 2021)

- MSKi risk factors for female ADSM
  - Lifting heavy objects
  - Longer hours wear body armor, carrying back-packs
  - Lower physical test scores
  - Running >4 miles per day
- Stress fracture risk for female ADSM
  - Late menarche
  - Irregular menses
  - Amenorrhea
  - Being less physically fit
    - ✓ Increased fractures of pelvis, hips, thighs





#### Female ADSM & Readiness

- Gap in the literature:
  - Perinatal & Postpartum female ADSM
    - ✓ Quantitative epidemiological studies assessing female injuries during basic military training have not included perinatal and post partum women in their study samples
- Government Accountability Office (GAO)
  - Female attrition may harm DoD readiness
    - ✓ Women-specific reasons for ending military careers
      - Sexual Assault
      - Difficulty reconciling pregnancies & parenthood with career advancement

(Barbeau, 2021; Ryan, 2020)





## **Pelvic Health Physical Therapy**



(army.mil, n.d.)





#### **Women's Health Physical Therapy**

- Subspecialty established since 1977
  - Approximately 3,700 members (and growing!)
- Scope of PHPT practice:
  - Bladder/bowel incontinence
  - Pelvic girdle, perineal, bladder, vaginal, sexual pain
  - Prenatal and postpartum musculoskeletal pain
  - Fibromyalgia & chronic pain
  - Rehabilitation following breast surgery & lymphedema
  - Conditions specific to the female athlete
  - Osteoporosis
- Rehabilitation, wellness, physical conditioning and performance





#### **Pelvic Health Physical Therapy**

2019: Academy of Pelvic Health Physical Therapy

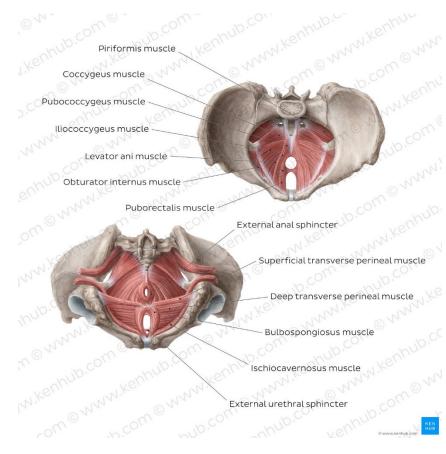
- Assessing <u>musculoskeletal</u> and <u>neuromuscular</u> components of pelvic health including:
  - Bladder, bowel, sexual dysfunction and pain
  - Pelvic organ prolapse
  - Chronic pelvic pain





#### **Pelvic Floor Structure and Function**

- Skeletal Muscle
- Four Main Functions
  - Sphinteric
    - ✓ Bladder & bowel control
  - Supportive
    - ✓ Pelvic organs
  - Sexual
    - ✓ Arousal
    - ✓ Erection
  - Force Regulation



(kenhub.com, n.d.)





- Davis 1996: Urinary Incontinence (UI) in Females Airborne Infantry Training
  - 563 female soldiers surveyed ages 21-34
  - 31% indicated UI during training +/- duty
    - √ 2% with acute onset after 6 weeks of training
  - All with good pelvic floor muscle (PFM) tone and overall strength
    - ✓ Attributed UI to repetitive traumatic and mechanical overload of PFM and support
  - Reported effects
    - ✓ Interfered with job performance
    - ✓ Hygiene complaints
    - ✓ Socially embarrassing

(Davis et al., 1996)





- Larsen 2007: Incidence of Pelvic Organ Prolapse (POP) and UI
  - 144 nulliparous women at US Military Academy
    - √ 50% had stage I-II Pelvic Organ Prolapse (Mild POP)
      - Paratroop training with ↑ likelihood for stage II POP
    - √ 19% reported UI
      - Running associated with UI
    - ✓ Relationship between forces transmitted through the pelvis and pelvic support defects

(Larsen et al., 2007)





- Criner 2001: Increased UI risk in AD women
  - 30% reporting UI with exercise, ambulation, two mile run
    - ✓ Environmental barriers
      - Uneven terrain
      - Bathroom Access
        - » Limited access & privacy
        - » Unhygienic
      - Self-dehydration strategies
    - ✓ Duties
      - Long road marches
      - Heavy field backpacks
      - Clothing & equipment designed for men
    - ✓ Side effect of integration into a male environment?

(Criner, 2001)





- Rogo-Gupta 2020: Incidence of Pelvic Floor Disorder (PFD) in US Army Female Soldiers
  - Stanford Military Data Repository (SMDR)
  - 2011-2014 Surveyed 102,105 women (18-64 yo)
    - √ 6.4% of USA Women with PFD over 2.5 year period
  - PFD defined by diagnosis code
    - ✓ May not generalize to women with PFD who do not seek treatment!

## Statistical significant increase in PFD diagnoses

- Age >36
- Body Mass Index (BMI) >25 v. recent weight gain
- Number of child dependents >3
- Service time >10 years
- Deployments 0>3
- Lower physical training (PT) scores
- Serving in medical, dental, veterinary medical occupations > administrative roles

(Rogo-Gupta et al., 2020)





- Anecdotal Occurrence
  - Deployment and Voiding Dysfunctions
    - √ Symptoms
      - Retention Patterns + Stress
    - √ Common Diagnosis
      - Post-traumatic Stress Disorder (PTSD), Traumatic Brain Injury (TBI),
         Disordered Sleep
  - Blast Injuries
    - ✓ Sacral Nerve Damage
      - Bowel
      - Bladder
      - Sexual function





## **My Clinical Practice**

#### Pain

- Bladder
- Abdominal
- Pelvic/Girdle
- Vulvovaginal
- Sexual
  - ✓ Oncologic

## Vaginismus

#### Post-operative

- Rehabilitation
- Pain
- Voiding dysfunction

## Voiding dysfunctions

- Incontinence
- Retention/Constipation
- Dyssynergia

## Post-partum > Pregnancy

- Pelvic girdle pain
- Bladder/Bowel dysfunction
- Pelvic organ prolapse
- Conditioning
  - ✓ Return to Run





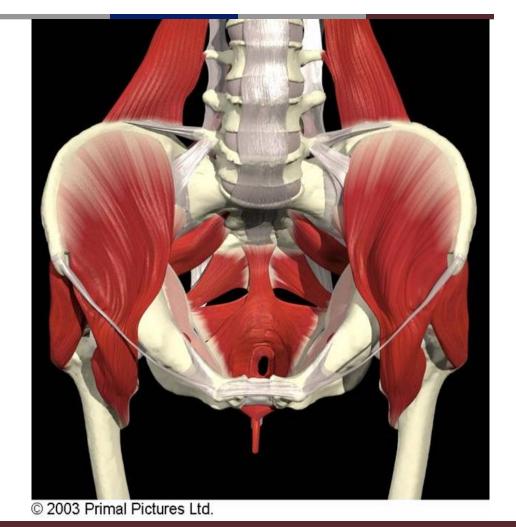
## **Pelvic Health Physical Therapy**



(huffingtonpost.com, n.d.)



(istockphoto.com, n.d.)







## **Pelvic Health Physical Therapy**

## Postural alignment and Orthopedic Tests

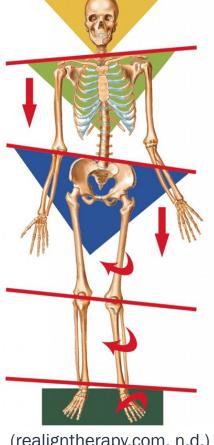
- Pelvic Girdle
- Lumbar Spine
- Femoral acetabular joint

## **Movement System Impairments**

- **Body Mechanics**
- Gait analysis

## **Neurological Screening**

- Dermatomes
- **Nerve Tension Tests**
- Balance/ Coordination

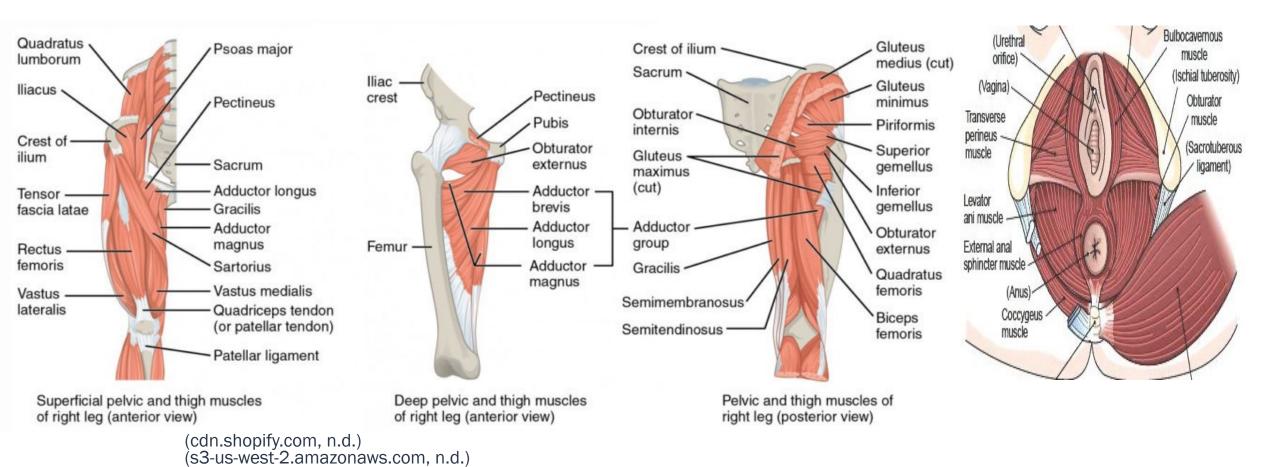








## **Anatomy**







## **PHPT: Rehabilitation & Conditioning**

- Rehabilitation & Fitness
  - Pregnancy
  - Post-partum
    - ✓ "Fourth Trimester"
- Return-to-Run & Physical Fitness Testing \*
  - Loading assessments
  - Strength & conditioning progressions
  - Injury prevention & management
    - ✓ MSKi
    - ✓ PFD





#### **PHPT: Voiding Dysfunctions**

- ID & Eliminate bowel/bladder irritants
  - Treat constipation first
- Diaries \*
  - Bowel, Bladder, Pain, Physical Activity, Mood
- Timed voiding
- Urge suppression techniques
- PFM relaxation
- Consider
  - Behavioral Health referral
    - Phobias, anxiety, trauma





#### **Other Treatments**



- Body and Breathing Mechanics
  - Load Transfers
  - Defecatory Posture
  - Extrinsic Supports
- Nutritional, fiber, hydration status
- Muscle strengthening and coordination
- Manual and Dilator Therapy for over-activity & pain

(stressnomore.co.uk, n.d.) (imgcdn.mckesson.com, n.d.)





## **Special Topic**



(militarytimes.com, 2019)

- Gastrointestinal Disorders
- Chronic and Pelvic Pain
- Dysmenorrhea
- Headaches
- Dissociation and Memory Loss
- Non-specific Immune System Disorders
- Chronic Fatigue Syndrome, Lupus, Fibromyalgia
- Impaired Quality of Life (QoL)/ Health satisfaction





#### **Sexual Trauma**

- Incidence: Rape & sexual trauma (>12 years old)
  - Annually in the US: 293,066
  - 1 sexual assault occurs every 107 seconds
- People with disabilities are more than twice as likely to be sexually assaulted \*

- Childhood sexual abuse
  - 60% perpetrated by someone the child knows (non-familial)
  - 30% are assaulted by family members



(nsopw.gov, n.d.)

(Bureau of Justice Statistics, 2017; Sexual Violence Myths and Facts, 2021)





#### **Sexual Trauma**

- Trauma Begets Trauma ....
  - 35% of Women who were raped as minors are also raped as adults
    - ✓ Compared to 14% of women without an early rape history
  - Twice as likely to develop PTSD during military service after initial sexual assault

- The Sexual Violence is Different
  - Women: 1 in 4

Chain of Command

- Men: 1 in 100
- Military survivors often live, work and rely on their perpetrators
- "Military sexual trauma is an insider threat since it happens within the military and poses a threat to the military's mission."

(Black et al., 2011; Independent Review Commission on Sexual Assault in the Military, 2021; Matthews et al., 2018; Munsey, 2009)





## **Military Sexual Trauma (MST)**



(gijosie.org, n.d.)

#### DoD estimates only 25% report MST

2004: 1,7002012: 3,374

2013: 5,061 - 376 Convictions \*

• 2016: 5,200

#### Reported Cases

85% "Acquaintance Rape" \*
58% Workplace Retaliation
4% Result in Conviction

(IRC on Sexual Assault in the Military, 2021; Morral et al., 2015; Veterans Affairs, 2021)





## Military Medicine & #MeToo

#### Survivors of MST Experience More:

- Gastrointestinal Disorders
- Chronic & Pelvic Pain
- Dysmenorrhea
- Headaches
- Dissociation & Memory Loss
- Non-specific Immune System Disorders
  - ✓ Chronic Fatigue Syndrome, Lupus, Fibromyalgia
- Impaired QoL/ Health satisfaction



(twitter.com/namimass, n.d.)

(Kimerling, 2007; Suris, 2008)





#### **Survivors of MST**

- 50-60% of MST Survivors develop PTSD
  - +/- Latent Triggers



(Kimerling, 2007; Suris, 2008)

- Cues that your patient may be experiencing PTSD Symptoms
  - Highly anxious, agitated, "jumpy"
  - Tearful during interview with no obvious cause
  - Withdraws, becomes very quiet, or "frozen"
  - Minimizes symptoms
  - Cancels appointments
  - Does not commit to ongoing services





#### First, Do no Harm...



(nsvrc.org, n.d.)

## Helpful Responses

- Respect
- Empathy
- Support
- Education
- Accept Veteran's perceptions
- Triage—Assess for safety





## **Key Takeaways**

- Women in the U.S. Armed Forces
  - ✓ Growing demographic
  - ✓ Increased risk for MSKi and PFD
  - ✓ Importance of screen for PFD and MST
    - Safety
    - QoL
    - Readiness
- PHPT as a part of comprehensive women's healthcare





Barbeau, P., Michaud, A., Hamel, C., Rice, D., Skidmore, B., Hutton, B., Garritty, C., da Silva, D. F., Semeniuk, K., & Adamo, K. B. (2021).

Musculoskeletal injuries among females in the military: A scoping review. *Military*Medicine, 186(9-10). <a href="https://doi.org/10.1093/milmed/usaa555">https://doi.org/10.1093/milmed/usaa555</a>

Black, M.C., Basile, K.C., Breiding, M.J., Smith, S.G., Walters, M.L., Merrick, M.T., Chen, J., & Stevens, M.R. (2011). The National Intimate Partner and Sexual Violence Survey (NISVS): 2010 Summary Report. Atlanta, GA: National Center for Injury Prevention and Control, Centers for Disease Control and Prevention.

Bureau of Justice Statistics. (2017, July). *Crimes against persons with disabilities, 2009-2015*. U.S. Department of Justice Office of Justice Programs. Retrieved November 15, 2021, from <a href="https://bjs.oip.gov/content/pub/pdf/capd0915st.pdf">https://bjs.oip.gov/content/pub/pdf/capd0915st.pdf</a>.

Criner, J. A. (2001). Urinary Incontinence in Vulnerable Populations: Female Soldiers, 21(2), 120–124.

Davis, G. D., & Goodman, M. G. (1996). Stress urinary incontinence in nulliparous female soldiers in Airborne Infantry training. *Journal of Pelvic Surgery*, 2(2), 68–71.





Deuster, P. A., & Tepe, V. (2016). Why a "Women in combat symposium"? *Military Medicine*, 181(1S), 1–3.

https://doi.org/10.7205/milmed-d-15-00353

The Independent Review Commission (IRC) on Sexual Assault in the Military. (2021, July). Hard Truths and the Duty to Change:

Recommendations from the Independent Review Commission on Sexual Assault in the Military.

https://media.defense.gov/2021/Jul/02/2002755437/-1/-1/0/IRC-FULL-REPORT-FINAL-1923-7-1-21.PDF.

Kimerling, R., Gima, K., Smith, M. W., Street, A., & Frayne, S. (2007). The Veterans Health Administration and military sexual trauma. *American Journal of Public Health*, 97(12), 2160–2166. https://doi.org/10.2105/AJPH.2006.092999

Larsen, W. I., & Yavorek, T. (2007). Pelvic prolapse and urinary incontinence in nulliparous college women in relation to paratrooper training.

International Urogynecology Journal, 18(7), 769–771. <a href="https://doi.org/10.1007/s00192-006-0226-3">https://doi.org/10.1007/s00192-006-0226-3</a>





Matthews, M., Morral, A.R., Schell, T.L., Cefalu, M., Snoke, J., Briggs, R.J. (2018). Organizational Characteristics Associated with Risk of Sexual Assault and Sexual Harassment in the U.S. Army. *RAND Corporation*.

https://www.rand.org/pubs/research\_reports/RRA1013-1.html

Morral, Andrew R., Kristie L. Gore, Terry L. Schell, Barbara Bicksler, Coreen Farris, Bonnie Ghosh-Dastidar, Lisa H. Jaycox, Dean Kilpatrick, Steve Kistler, Amy Street, Terri Tanielian, and Kayla M. Williams. (2015). Sexual Assault and Sexual Harassment in the U.S. Military:

Highlights from the 2014 RAND Military Workplace Study. Santa Monica, CA: *RAND Corporation*https://www.rand.org/pubs/research\_briefs/RB9841.html

Munsey, C. (2009, September). Women and war. Monitor on Psychology. Retrieved November 15, 2021, from <a href="http://www.apa.org/monitor/2009/09/women-war.aspx">http://www.apa.org/monitor/2009/09/women-war.aspx</a>.

National Center for Veterans Analysis and Statistics. America's Women Veterans: Military Service History and VA Benefit Utilization Statistics.

National Center for Veterans Analysis and Statistics, Department of Veterans Affairs, Washington, DC. November 2011.





- Rogo-Gupta, L. J., Nelson, D. A., Young-Lin, N., Shaw, J. G., & Kurina, L. M. (2020). Incidence of pelvic floor disorders in US army female soldiers.

  Urology, 150, 158–164. <a href="https://doi.org/10.1016/j.urology.2020.05.085">https://doi.org/10.1016/j.urology.2020.05.085</a>
- Ryan, M. (2020, May 20). *Presence of women in military has grown only slightly in recent years, study finds*. The Washington Post. Retrieved November 15, 2021, from <a href="https://www.washingtonpost.com/national-security/presence-of-women-in-military-has-grown-only-slightly-in-recent-years-study-finds/2020/05/20/5088b4ac-9aa8-11ea-b60c-3be060a4f8e1\_story.html">https://www.washingtonpost.com/national-security/presence-of-women-in-military-has-grown-only-slightly-in-recent-years-study-finds/2020/05/20/5088b4ac-9aa8-11ea-b60c-3be060a4f8e1\_story.html</a>.
- Sexual Violence Myths and Facts. Resilience Empowering Survivors ending Sexual Violence. (2021, February 24). Retrieved November 15, 2021, from <a href="https://www.rapevictimadvocates.org/what-you-need-to-know/myths-and-facts/">https://www.rapevictimadvocates.org/what-you-need-to-know/myths-and-facts/</a>.
- Suris, A., & Lind, L. (2008). Military sexual trauma: a review of prevalence and associated health consequences in veterans. *Trauma, Violence, & Abuse*, 9(4), 250–269. <a href="https://doi.org/10.1177/1524838008324419">https://doi.org/10.1177/1524838008324419</a>
- Veterans Affairs. (2021, May). *Military Sexual Trauma Fact Sheet Veterans Affairs*. Retrieved November 15, 2021, from <a href="https://www.mentalhealth.va.gov/docs/mst\_general\_factsheet.pdf">https://www.mentalhealth.va.gov/docs/mst\_general\_factsheet.pdf</a>.





## Questions?

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- 2. Search for your course using the Catalog, Calendar, or Find a course search tool.
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  - b. If you have not previously used the CEPO CMS click register to create a new account.
- 4. Follow the onscreen prompts to complete the post-activity assessments:
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  - b. Complete the Evaluation
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- 5. After completing the posttest at 80% or above, your certificate will be available for print or download.
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- 7. If you require further support, please contact us at: <a href="mailto:dha.ncr.j7.mbx.cepo-cms-support@mail.mil">dha.ncr.j7.mbx.cepo-cms-support@mail.mil</a>



