

# Research agenda for physical activity promotion to enhance health and performance in the military community

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## BACKGROUND

The Military Settings Sector of the National Physical Activity Plan (NPAP) was officially launched on 18 July 2022, at a Congressional briefing on physical activity and national security. General officers and distinguished scientists conveyed the consequences of physical inactivity across the US population. The panel advocated for solutions that would maximise the health and readiness of our nation's current, future and former service members.<sup>1</sup>

The US national security implications of inadequate physical activity have become increasingly grave. At a time when mission success depends on physical and mental strength,<sup>2</sup> recruiting and retaining healthy service members is a widespread challenge.<sup>3</sup> Just two in five young adults aged 17–24 years—a group comprising 88% of enlisted applicants—are adequately physically active and body weight-eligible for initial military training.<sup>4</sup> The aperture of recruitment standards may widen during periods of geopolitical instability and military expansion, to allow accession of individuals who have unhealthy body composition, suboptimal physical fitness levels and increased susceptibility to musculoskeletal injury. These injuries,

common in military training, have significant operational and fiscal costs. In US Air Force Basic Military Training, trainees who sustained a musculoskeletal injury were 3.0 times as likely to be discharged and 2.9 times as likely to graduate late, compared with their uninjured peers.<sup>5</sup> During fiscal year 2017, more than a third of recruits in US Army Initial Military Training sustained a musculoskeletal injury, accruing a total direct medical cost of nearly \$15 million. Injury incidence was higher among recruits from the South<sup>6</sup>—an important region for recruitment, but one that has historically produced recruits with lower cardiorespiratory fitness than their counterparts from other regions.<sup>7</sup>

Within the active duty force, unhealthy body composition is a major determinant of lost workdays and medical costs,<sup>8</sup> and the increasing incidence of obesity, pre-diabetes and type 2 diabetes only accelerated during the COVID-19 pandemic.<sup>9</sup> Unhealthy behaviours developed before and during military service often transfer to post-service life, especially when service members incur chronic illness or significant injury.<sup>10</sup> Veterans report a higher prevalence of leisure-time physical inactivity and poor self-reported physical health compared with demographically similar civilians.<sup>11</sup> The problem is compounded when chronic neuromusculoskeletal injury incurred during service limits future physical activity, as this leads eventually to poorer cardiovascular health.<sup>10</sup> The fiscal outlays are manifest: Appropriations to the US Department of Veterans Affairs (VA) grew by 53% from 2019 to 2023—mostly driven by medical care and disability compensation provided to over 9 million enrolled Veterans.<sup>12</sup>

Since its inception in 2010, the NPAP has provided comprehensive guidance on policies, programmes and initiatives that create activity-friendly communities where all Americans, regardless of age or ability, can be physically active. The NPAP is organised around societal sectors, such as mass media, business and industry, and faith-based settings. As the tenth

and newest sector, the Military Settings Sector focuses on the military community broadly defined, comprising service members and their families, Veterans and civilian employees of the US Department of Defense and VA. To promote physical activity across this wide segment of the population, the Military Settings Sector is organised along six strategies: leadership; education and employment of qualified personnel; surveillance and technology; physical activity and physical training programmes; partnerships; and communication. Each strategy contains specific objectives and tactics.<sup>1</sup> As scientists researching the impacts of physical activity on the military and Veteran communities, some of whom are also members of the NPAP Military Settings Sector Committee, we submit this commentary as a call for physical activity research so we can start filling critical evidence gaps and identify actionable public health opportunities and solution sets.

## CALL FOR RESEARCH

This call for research is structured on three priority areas: (1) recruitment of new service members; (2) retention and readiness of current service members; and (3) health promotion of former service members.

## Childhood physical activity and military recruitment

Dating at least to President-Elect John F. Kennedy's 1960 *Sports Illustrated* editorial, 'The Soft American',<sup>13</sup> policy-makers have worried that sedentary US youth would be unfit for military service. Answering key research questions would clarify the contemporary situation and might steer public health efforts toward the most receptive populations. Critical and time-sensitive questions include: Is the prevalence of physical inactivity among youth changing at the state and county level? If so, which jurisdictions are having the greatest success at promoting physical activity? What factors are driving that success, and can their accomplishments be replicated elsewhere? What are the priorities of physical education policies across the country? Is receiving adequate funding a key barrier or constraint? Have funding changes for Safe Routes to School affected childhood physical activity before and after school? Quantitative data could be sought from nationally representative surveys, such as the Youth Risk Behavior Surveillance System, the National Survey of Children's Health and the National Health and Nutrition Examination Survey

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(NHANES). Local qualitative and quantitative data may be available from recipients of Centers for Disease Control and Prevention funded programmes, such as the High Obesity Program and the State Physical Activity and Nutrition Program.<sup>14</sup> Such data are critical for moving forward in an evidence-led fashion.

It is also important to understand the physical fitness level of the nation's youth by granular age categories—not just the young adult population who are currently eligible to enlist, but also among younger adolescents, school-aged children and toddlers. If the Presidential Youth Fitness Program were reinstated, data could be collected to provide a nationally representative sample of youth fitness.

### Service member fitness optimisation and retention

The US Department of Defense espouses a culture of health and fitness to enhance 'mission readiness (and) unit performance'.<sup>15</sup> Despite many important studies regarding physical activity promotion and outcomes in the armed forces, important questions remain unanswered in the peer-reviewed scientific literature. Are initial fitness assessment scores (ie, the first physical fitness test taken by a recruit, either at the start or end of initial military training) becoming better or worse predictors of operational outcomes during military training and during active or reserve service? Outcomes of interest might include medical and mental health discharge from training, medical or duty limitation profiles, early attrition from service, and clinical diagnoses, such as incidence of chronic illnesses.<sup>16</sup> Do self-reported physical activity levels and objectively measured physical fitness levels change throughout a service member's career—and, if so, how and at what career points are the largest changes occurring? Does geographic assignment location influence this trajectory? Have any recent policy changes—such as the creation of the Future Soldier and Future Sailor Preparatory Courses, the expanded body fat percentage allowance for US Air Force recruits, the 'one-time reset' for US Navy physical fitness assessment failures and implementation of combat fitness tests—affected musculoskeletal injury rates, lost duty days, medical costs and operational outcomes? These and other questions could be tackled through existing data sources, including the Medical Data Repository, periodic health assessments, the Services' physical fitness assessment

systems and other Department of Defense and VA databases.

Another broad area of inquiry involves formal evaluation of existing programmes and initiatives. Although the Total Force Fitness framework is intuitively sound and embraced by policy,<sup>15</sup> systematic evaluations are required to determine which contributing activities are effective and warrant ongoing funding. From design through implementation, researchers should consider using published human performance optimisation metrics<sup>17</sup> to evaluate the effectiveness of these activities. A 'commitment to research and programme evaluation' is a stated priority in the 2022 Health of the Force report.<sup>18</sup>

### Veteran health

Research is also needed on the physical activity level of those who formerly served. Are Veterans more or less likely than their civilian peers to meet national recommendations<sup>19</sup> on aerobic and muscle-strengthening activity? Does guideline adherence vary based on time periods of military service? Is Veteran physical activity, both during and after military service, associated with health and fiscal outcomes within the VA? Are there psychosocial barriers that preclude participation in physical activity following military separation? If so, have any initiatives effectively addressed these barriers? These questions might be answered using data from the Million Veteran Program, Millennium Cohort Study, electronic health records, and nationally representative surveillance systems (eg, NHANES and the National Health Interview Survey) that are linked to VA administrative data.

### CONCLUSION

The strategic landscape demands an emphasis on whole-person human performance optimisation,<sup>2</sup> which includes physical activity and other lifestyle factors that establish a stable and healthy baseline. Routine physical activity—with its extensive benefits for cardiometabolic health, muscular strength, psychological wellness and mental acuity<sup>19</sup>—is a vital component of optimising performance of all service members, regardless of military occupational specialty. By creating a culture of physical activity and physical fitness across the USA, we aim to support the readiness of current and future service members, while simultaneously promoting the well-being and longevity of those who served before them. To accomplish this goal, the evidence base must be strengthened. On behalf of the NPAP Military Settings

Sector, we urge scientists across government, academia and industry to tackle the questions posed herein. The answers may yield public health action and enhance national security.

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