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Occupational health and aging among American veterans: integrated strategies for reducing functional disability and improving work retention.

Occupational health and aging among US veterans: integrated strategies for reducing functional disability and staying at work

Occupational health and aging among American veterans: integrated strategies to reduce functional disability and permanence at work

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SUMMARY

The aging of American veterans poses a challenge to occupational health, as conditions related to military service can coexist with chronic diseases, frailty, functional limitations, and the demands of civilian work. This study aimed to analyze factors associated with reduced functional capacity in aging American veterans and to discuss integrated strategies for disability prevention, preservation of autonomy, and job retention or reintegration. A narrative literature review was conducted, covering the period from 2019 to September 20, 2024. The analytical corpus included 12 publications, among them observational studies, narrative reviews, an occupational intervention, a randomized clinical trial, and a conference abstract; two additional works were used exclusively for historical context. The findings indicate that multimorbidity, persistent pain, amputation, frailty, chronic obstructive pulmonary disease, mental disorders, and difficulties in transitioning to civilian life are associated with functional or occupational limitations. The evidence supports the need for functional assessment, management of chronic diseases and pain, mental health care, rehabilitation, and workplace support. However, some of the strategies discussed—such as ergonomic adaptations, assistive technologies, and longitudinal integration of care—derive from plausible clinical implications, but were not directly tested by all included studies. It is concluded that functional disability in this population is multifactorial and requires an interdisciplinary approach; the heterogeneity of sources, the presence of indirect evidence, and the absence of formal risk of bias assessment prevent estimating the effectiveness of a single intervention model.

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Keywords: Occupational health; American veterans; Aging; Functional capacity; Functional disability.

ABSTRACT

The aging of US veterans is an occupational health challenge because service-related conditions may coexist with chronic disease, frailty, functional limitations, and the demands of civilian work.
This study aimed to analyze factors associated with reduced functional capacity among aging US veterans and to discuss integrated strategies for disability prevention, autonomy preservation, and job retention or return to work. A narrative literature review was conducted, covering publications from 2019 through September 20, 2024. The analytical corpus comprised 12 publications, including observational studies, narrative reviews, an occupational intervention, a randomized clinical trial, and a conference abstract; two additional works were used exclusively for historical context. The findings indicate that multimorbidity, persistent pain, amputation, frailty, chronic obstructive pulmonary disease, mental disorders, and difficulties during transition to civilian life are associated with functional or occupational limitations. The evidence supports functional assessment, chronic disease and pain management, mental health care, rehabilitation, and workplace support. However, some strategies discussed—such as ergonomic accommodations, assistive technologies, and longitudinal care integration—are clinically plausible implications but were not directly tested by all included studies. Functional disability in this population is therefore multifactorial and requires an interdisciplinary approach. Heterogeneous sources, indirect evidence, and the absence of a formal risk-of-bias assessment preclude estimating the effectiveness of a single intervention model.

Keywords: Occupational health; US veterans; Aging; functional capacity; Functional disability.

1 INTRODUCTION

The aging of American veterans poses a significant health challenge.

occupational, given the physical and psychological consequences that can last for decades after the

End of military service. Experience in armed conflict and the physical and psychological demands.

A career in the military can be associated with musculoskeletal injuries, chronic pain, and illnesses.

respiratory diseases, cardiovascular diseases, mental disorders, amputations, and other conditions that can

to compromise functional capacity throughout life.

The repercussions of military service are not limited to the period of service in the Armed Forces.

occupational demands related to physical fitness, exposure to traumatic situations, and

Combating conditions can lead to long-term consequences that interact with diseases.

chronic conditions and age-related changes. Studies demonstrate an association between

Physical and psychological conditions and occupational impairments during career transition.

The transition from military service to civilian life can be related to difficulties in adjustment and health problems.

mental health issues, reduced life satisfaction, and financial difficulties.

Aging introduces new vulnerability factors. Injuries acquired during service.

Military personnel can coexist with chronic illnesses, frailty, and a progressive reduction in strength and capacity.

Mobility, endurance, balance, and functional independence. Among veterans, the presence

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multimorbidity, chronic pain, respiratory diseases, and musculoskeletal impairments
It can increase the risk of disability and make it difficult to maintain social and professional participation.
Functional disability, in this context, should be understood as a phenomenon.
multidimensional. Its manifestation results from the interaction between clinical conditions, physical capacity,
mental health, environmental characteristics, occupational demands, social support and resources
available for rehabilitation. Therefore, maintaining the ability to work depends on
Early identification of limitations, prevention of functional loss, rehabilitation, and adaptation.
from activities to individual capabilities.
The literature describes strategies related to preserving functionality, including training.
Physical therapy, rehabilitation, pain management, psychological support, and workplace support.
The combination of resistance and aerobic training is discussed in studies on performance.
Active duty military personnel, while interventions aimed at supervisors seek to support veterans in
civil service work. These sources, however, assess different populations and outcomes and do not demonstrate that
A single package of interventions is effective for all older veterans.
This study adopts a narrative and interdisciplinary perspective. The selected literature encompasses...
aging, functional capacity, physical disability, mental health, chronic diseases,
Rehabilitation, transition to civilian life, and occupational participation. Studies were differentiated with
veterans, studies with active-duty military personnel, indirect evidence in older adults, protocols of
Research and historical sources. This distinction is essential because association, recommendation, protocol
The results of an intervention do not have the same probative value.
Given this context, it becomes necessary to understand the occupational health of veterans in the process of rehabilitation.
of aging from an integrated perspective, considering disease prevention and control,
the preservation of functional capacity, mental health, rehabilitation, and environmental conditions.
professional. Staying in the job, when possible, is a component related to
autonomy, professional identity, social interaction, and quality of life.
Thus, the present study aims to analyze, through a narrative analysis of the literature,
The main factors associated with reduced functional capacity among North American military veterans.
Americans experiencing an aging process and identifying integrated occupational health strategies.
capable of contributing to the prevention of disability, the preservation of autonomy, and the permanence
or reintegration into the workforce.

2 METHODOLOGY

A narrative literature review was conducted, aimed at the critical integration of publications with

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different designs. Publications released between January 2019 and 2020 were considered.
September 2024, the deadline set for the inclusion of the analyzed sources.
Publications in English or Portuguese related to US veterans or military personnel were considered.
Americans, aging, functional capacity, disability, chronic diseases, pain, health
Mental health, rehabilitation, transition to civilian life, and occupational participation. Studies with military personnel.
Active or older adults without identification as veterans were retained only when
They offered clearly identified indirect evidence. Protocols, conference abstracts, reviews.
Narratives and historical sources were classified separately from empirical studies with results.
The analytical corpus consisted of 12 publications: Betancourt et al. (2021), Bamonti et al. (2022),
Baria et al. (2019), Bond et al. (2022), Dunbar et al. (2022), Hammer et al. (2019), Houck et al.
(2024), Judd et al. (2024), Kline et al. (2022), Orkaby et al. (2019), Resnik et al. (2019) and Vaara et al.
(2022). Theisen (2024) and Fitzharris (2022) were used exclusively for contextualization.
historical and were not included in the analytical corpus.
From each publication, the year, type of source, population or subject, and the main data were extracted.
results and relevance to the objective. The synthesis was organized along the following axes: multimorbidity and
chronic diseases; pain, amputation and frailty; mental health and transition; ability and rehabilitation
functional; and organizational working conditions. The conclusions were calibrated according to the
Design: observational associations were not treated as causality; protocols did not
These were treated as outcomes; and indirect evidence was not generalized to older veterans.
No formal assessment of methodological quality or risk of bias was reported. Due to...
Due to the heterogeneity of the sources, no meta-analysis or pooled effect estimation was performed.
A review should therefore be interpreted as a critical narrative synthesis, not as a systematic review.
nor as a guideline for clinical practice.

3. THEORETICAL FRAMEWORK

Healthcare for people involved in armed conflict has historically transformed...
as the organization of care and survival after serious injuries increased.
The journey from emergency care to long-term rehabilitation helps to understand why.
that the veteran's health does not end with the treatment of the acute injury. In this review, this dimension
The historical context is merely contextual and does not form part of the corpus used to support clinical associations or
occupational.
Theisen (2024) analyzed the performance of the Brazilian Red Cross, Rio Grande do Sul branch, in
support for victims of the Second World War between 1946 and 1956. The study contributes to

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to understand the humanitarian organization in the postwar period, but does not investigate American veterans. Americans, aging, functional capacity, or job retention. Therefore, their Its use should be limited to historical contextualization, without attributing to it any evidence about health. contemporary occupation.

Fitzharris (2022) describes the evolution of reconstructive surgery applied to soldiers with facial injuries. in World War I. The work illustrates how medical advances increased survival and They created new needs for rehabilitation and social reintegration. This is, however, a historical book. and not from an epidemiological or intervention study; its information does not allow for frequency estimation. disability, functional prognosis, or the effect of occupational strategies.

Although these advances have transformed medical care for the military, the expansion of The extended lifespan brought another challenge: the need to manage the consequences throughout life. Physical, functional, and psychological problems resulting from military service. This issue becomes more pronounced. as veterans age and begin to exhibit interactions between injuries acquired during their careers. service, age-related chronic diseases, and new functional limitations.

In the North American context, this reality is significant. Psychiatric and related disorders Substance use is highly prevalent among United States military veterans. Individual characteristics and experiences related to trauma and combat may be associated with different patterns of health service utilization in this population (Kline et al., 2022). Military experience, therefore, can produce effects that extend beyond the period of service. active and have repercussions on health, functional capacity, social participation and trajectory. professional life throughout adulthood and old age.

The physical and psychological demands on the U.S. Armed Forces are relevant to Understanding exposures that can impact health throughout life. Active duty military personnel are subjected to requirements of body composition, fitness, and functional performance. However, Betancourt et al. (2021) compared self-reported health outcomes of veterans and non-veterans. and did not directly assess the physical demands of military service. Thus, this publication argues The discussion concerns morbidities, but it should not be cited as causal proof that military assessments... periodic events cause injury or disability.

The relationship between health and occupational performance can also be observed during the process itself. Military service. Absenteeism and presenteeism related to health among active duty military personnel may compromise deployment readiness, troop morale, and the ability to respond to The physical and operational demands of a military career (Dunbar et al., 2022). However, the effects of these Conditions do not disappear after leaving the Armed Forces. In many cases, physical limitations, Chronic pain, respiratory illnesses, mental disorders, and other conditions may persist over time.

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of civil life, affecting the ability to perform professional activities and to maintain the participation in the labor market.

In this sense, the transition from a military career to civilian life represents a fundamental step for Occupational health of veterans. A structured transition can contribute to better outcomes. physical and psychological outcomes and promote adaptation to new social and professional demands (Hammer et al., 2019). However, Bond et al. (2022) identified lower satisfaction among veterans. with life, worse perception of mental health, greater presence of depressive symptoms and disorder. post-traumatic stress and increased financial difficulties. These factors can act together, increasing vulnerability to loss of autonomy, difficulty in professional reintegration, and alienation from work.

The health of American veterans is marked by multiple comorbidities. Betancourt et al. (2021), using data from the Behavioral Risk Factor Surveillance System, identified prevalences Self-reported higher scores in veterans for various conditions, including obesity, diabetes, Stroke, skin cancer, cancer, COPD, and other morbidities. How is the study structured? Based on observation and self-reporting, it does not demonstrate that military service caused these issues. conditions. Even so, the coexistence of diseases reinforces the need to assess functionality and work capacity, which was not directly measured in this research.

Among chronic diseases relevant to functionality, COPD is associated with limitations. Respiratory problems, dyspnea, reduced exercise tolerance, and systemic manifestations. Bamonti et al. (2022) reviewed studies with American veterans and highlighted physiological outcomes, physical and psychological well-being, as well as interventions carried out in the veterans' health system. Because Regarding narrative review, the publication identifies gaps and directions for care, but does not provide... joint effectiveness estimate.

Non-cancer chronic pain constitutes another factor of functional impairment, in which the Veterans have a high risk of musculoskeletal injuries, trauma, and stressors. Psychological factors stemming from military experience, which can contribute to development. and the maintenance of chronic pain and amplify its impact on daily and professional activities (Baria et al., 2019). When persistent, pain can reduce mobility, physical endurance, and capacity. concentration and tolerance to occupational demands become an important determinant. of participation in the work.

The consequences of serious injuries can be even more evident among veterans with amputations. Resnik et al. (2019), in evaluating 808 veterans with upper limb amputation, identified moderate impairment of physical function, in addition to musculoskeletal problems, phantom pain and pain in the residual limb, which demonstrates that anatomical recovery or the use of

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Assistive devices do not represent a full recovery of functional capacity. Autonomy
It also depends on adapting to daily activities, the ability to perform professional tasks and
the possibility of using accessibility resources and appropriate assistive technologies.
Among older veterans, injuries acquired during military service can coexist with illnesses.
chronic conditions and physiological changes associated with aging, which increases the likelihood of
Reduction in strength, mobility, endurance, balance, and functional independence. Orkaby
et al. (2019), in a cohort of approximately three million regular users of the Department
Veterans Affairs (VA) officials demonstrated the relevance of vulnerability in this population and its
A strong association with survival. Early identification of frailty, therefore, may constitute
an important tool for planning interventions aimed at preserving the
autonomy and functional capacity.
Limitations may also persist after orthopedic procedures. Judd et al. (2024)
They conducted a randomized clinical trial with 95 participants undergoing total arthroplasty of the
hip, comparing the integration of functional strength with a rehabilitation control program.
Both groups showed functional improvement, but there was no statistically significant difference.
Significant differences between them in the primary outcome, nor in subsequent assessments. Thus, the integration of
Functional strength did not demonstrate superiority over the control program.
In this context, the occupational health of the aging veteran should be...
understood in a multidimensional way. Maintaining capacity depends on the interaction between
clinical conditions, physical capacity, mental health, work environment, demands
Occupational health, accessibility, social support, and rehabilitation resources. This perspective shifts...
The focus shifts from a disease-centered approach to a preservation-oriented strategy.
functionality and social and professional participation.
Among preventive strategies, physical conditioning occupies a relevant position. Vaara et al.
(2022) reviewed attributes and training required for the performance of essential military tasks,
such as cargo transport, material handling, and victim evacuation. The focus of the work is
The focus is on the performance of military personnel in operational tasks, not the rehabilitation of elderly veterans.
Extrapolation to aging should therefore be cautious: programs for veterans need
Consider age, injury history, comorbidities, cardiorespiratory capacity, strength, and balance.
and individual occupational goals.
The integrated approach should also include the management of chronic diseases. Veterans Health
The Administration establishes a comprehensive system of care for eligible veterans, in which
Ongoing monitoring and care coordination can promote clinical control and...
identification of functional changes. Bamonti et al. (2022) also describe experiences of

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management of COPD and they warn of the need to assess safety and effectiveness: the existence of A multidisciplinary intervention, by itself, does not guarantee benefit. This point discourages... categorical recommendations without evaluation of outcomes and adverse events.

Preventing functional disability therefore requires an interdisciplinary approach that combines... clinical assessment, physiotherapy, occupational therapy, adapted physical activity, pain management, Psychological support, vocational rehabilitation, and environmental adjustments. In this model, the Functional capacity should be monitored, allowing changes to be identified before they result in... significant loss of autonomy or absence from work.

Houck et al. (2024) presented, in a conference abstract included in a supplement of the Journal of Geriatric Physical Therapy: Associations between physical health, capacity, activity, and performance. Social roles in older adults. The source was not a complete article, it was not limited to... veterans and the DOI corresponds to the set of abstracts from the congress. Thus, your contribution is Indirect and exploratory: it reinforces the importance of social roles in functional assessment, but not It supports specific recommendations for American veterans.

From an occupational perspective, assistance should not be limited to rehabilitation after disability. Installed. Job requirements assessment, task adaptation, accessibility, technologies. Assistive and flexible approaches can be considered according to individual needs.

However, it is important to recognize that these measures are recommendations derived from rehabilitation principles and inclusion; the corpus of this review did not directly test the effectiveness of all of them in retention. labor of elderly veterans.

Job security can be an important component of quality of life. aging, contributing to financial autonomy, professional identity, and interaction social and perceived usefulness. For veterans, this dimension can take on additional importance. since the transition between a military career and the civilian job market can involve changes significant factors related to function, environment, occupational identity, and physical requirements.

Therefore, strategies aimed at the American veteran population should consider the Health trajectory throughout life. Exposure to combat and military demands can lead to consequences that last for decades, while aging adds new factors. risk factors for chronic diseases, frailty, and reduced functional capacity. These elements make A preventative and integrated approach is needed, one capable of supporting the veteran from the transition onwards. for civilian life up to the different stages of aging.

Thus, promoting occupational health among American veterans requires integration between disease prevention, comorbidity control, physical activity, rehabilitation, management of pain, mental health, functional assessment, ergonomics, assistive technologies, and rehabilitation

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professional. More than prolonging survival, the goal should be to extend the years lived with autonomy, functionality, and social and professional participation.

In this sense, the reduction of functional disability should be understood as a process. continuous, as early identification of risk factors, longitudinal monitoring and the The connection between health services and occupational environments can contribute to preserving Functional capacity and promoting job retention for aging veterans. Health Occupational care, therefore, constitutes a strategic dimension of comprehensive veteran care, in light of progressive aging of this population and the need to guarantee autonomy, Independence and active participation in society.

4. RESULTS AND DISCUSSION

The analytical corpus comprised 12 publications from 2019 to September 20, 2024. Studies were included. observational studies, narrative reviews, an occupational intervention, a randomized clinical trial, and a conference summary. Theisen (2024) and Fitzharris (2022) were retained as sources only. Contextual historical contexts. Almeida Júnior's thesis, present in the previous version, was removed because it addressed... national defense and international drug trafficking in the Amazon, without direct relation to aging, functionality, or work of American veterans. The heterogeneity of The sources prevent us from treating them as equivalent evidence.

Betancourt et al. (2021) analyzed data from the Behavioral Risk Factor Surveillance System from 2003 to 2019, totaling approximately 7.18 million observations. Between 2011 and 2019, veterans They presented higher self-reported prevalences for obesity than non-veterans (72% versus 60%), diabetes (19% versus 16%), heart disease (13% versus 8%), stroke (6%) versus 5%), skin cancer (16% versus 11%) and cancer (13% versus 11%), in addition to other morbidities. These results describe population differences, but do not establish causality. They are limited to elderly veterans and do not directly measure functional disability or length of stay in the hospital. work.

Multimorbidity can reduce resilience, mobility, and tolerance to occupational demands, but This implication should be formulated with caution. The study by Betancourt et al. (2021) did not evaluate Work capacity, clinical severity, and the temporal sequence between military service and illness were not considered. Therefore, it justifies the need for clinical and functional monitoring, but does not allow attribution to Military service, the observed morbidities, and its impact on employment cannot be quantified.

In the field of chronic pain, Baria et al. (2019) demonstrated that veterans constitute a vulnerable population at risk of non-cancer chronic pain due to a combination of lesions

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musculoskeletal disorders, trauma, psychological stressors, and social factors. The study proposed a
Adapting the biopsychosocial model for this population reinforces the idea that pain should be...
understood as a result of the interaction between physiological, psychological, and social factors.
The results of Resnik et al. (2019) reinforce the magnitude of functional limitations among veterans.
with serious injuries. In a national sample of 808 veterans with upper limb amputation,
The average scores for perceived disability on the QuickDASH were 49.5 for amputees.
unilateral and 34.7 for bilateral amputees. Participants also showed high
frequency of pain in the contralateral limb, musculoskeletal problems, phantom limb pain, and
pain in the residual limb. The authors concluded that veterans with amputations presented with
moderate impairment of physical function and identified gaps in access to training.
Prosthetic and specialized amputation services.
Aging adds another dimension to the problem. Orkaby et al. (2019), using data from
approximately 3 million users of the Department of Veterans Affairs health system,
They investigated the burden of frailty among veterans and its association with mortality. The results
They demonstrated a significant association between frailty and survival. This finding is relevant to
Occupational health, since frailty implies a reduction in physiological reserve and can compromise...
Mobility, strength, resilience, and independence.
Regarding respiratory health, Bamonti et al. (2022), in a narrative review of North American veterans,
Americans with COPD have identified the need for strategies that address the dimensions
physiological, physical, and psychological factors. The review shows that COPD is not limited to
Respiratory impairment, but it can also be related to a reduction in physical capacity,
Systemic changes and psychological impact reinforce the need for interventions.
multidimensional.

The psychological dimension also appears consistently in the studies. Bond et al. (2022)
They assessed 229 military personnel and veterans with service-related disabilities during the transition to
civil life and identified worse outcomes in five of the six standardized measures when
Compared to reference norms, lower life satisfaction and poorer health were observed.
mental health issues, more symptoms of depression and post-traumatic stress disorder, and increased suffering.
financial. The results demonstrate that the transition to civilian work should be considered part of
integral part of the care for veterans with disabilities.
This relationship between health and work is corroborated by Dunbar et al. (2022), who analyzed 11,055
Active duty U.S. military personnel based on *Department of Defense Health Related* data.
Behaviors Survey of 2015. The study investigated the association between physical and mental conditions and
occupational impairments, highlighting that different health conditions are related.

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to a reduction in the ability to perform professional activities.

Hammer et al. (2019) evaluated, in an organization-randomized trial, the Veteran-Supportive Supervisor Training, involving 35 organizations, 928 supervisors and 497 veteran or experienced employees. military personnel. No direct overall effects of the intervention on health outcomes were observed. work; benefits appeared in conditional analyses, especially according to prior support. of supervisors and colleagues. The study supports the relevance of the organizational context, but not This allows us to affirm the uniform effectiveness of the training for all veteran workers.

Vaara et al. (2022) discussed physical training to optimize essential military tasks. The work contributes to identifying physical attributes relevant to performance and injury prevention during active service. Its application to aging veterans is indirect, as the review did not assess geriatric rehabilitation, functional disability, or continued employment in civilian jobs. The principle of Combined training can guide hypothesis formulation and individual planning, but it does not constitute proof. of effectiveness in this population.

Houck et al. (2024) linked physical health, capacity, activity, and social roles in older adults. old. The available source is a conference abstract, not a full article, and the sample was not presented as being composed of veterans. Therefore, the study was classified as indirect evidence. and of low sufficiency for the central objective. Its use is limited to supporting the notion that the Functionality should include social participation, without extrapolation to occupational outcomes. veterans.

Judd et al. (2024) evaluated, in a randomized clinical trial, techniques for integrating functional strength. after total hip arthroplasty. Although both groups improved, the intervention was not The study was superior to the control program in both the primary outcome and subsequent assessments. It provides direct evidence of functional recovery, but does not allow conclusions about return or job security.

Fitzharris (2022) and Theisen (2024) were used only to contextualize the historical evolution. of conflict-related assistance and survivor care. None of these sources evaluated elderly American veterans, functional disability, or inability to work. They were excluded from the analytical synthesis of factors and strategies, preventing historical contextualization from being confused with clinical or occupational evidence.

The critical review also led to the exclusion of Almeida Júnior, previously presented as Contextual contribution. The work addresses the National Defense Policy and the fight against trafficking. International drug trade in the northern Brazilian Amazon. Its population, its problems, and its... The outcomes do not correspond to the objective of this article. Maintaining this reference would artificially broaden the scope. The corpus would reduce thematic coherence without adding evidence about North American veterans.

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Americans.

Kline et al. (2022), in turn, identified a significant gap in access to healthcare.
mental health services. In the representative sample of 4,069 veterans, only 12% reported having used mental health services.
mental health. Among the 924 participants who presented with a possible mental disorder or disorder
Regarding substance use, 27% were receiving some type of care. The study also
It has been shown that functional difficulties, PTSD symptoms, sleep disorders, and the use of VA (various devices) are linked.
being the primary source of care was among the factors associated with the use of services.

Table 1 – Characterization and critical reading of the publications considered.

Author(s) Year	Source type	Population/object	Main result and limitation	Relevance
Betancourt et al. 2021	population observational study	Veterans versus non-veterans; BRFSS 2003 2019	Veterans reported a higher prevalence of various morbidities, self-reported, without causality or direct occupational measurement.	Multimorbidade; direct evidence in veterans
Baria et al. 2019	Review/mod conceptual link	Veterans with non-cancer chronic pain	Adapts the biopsychosocial model; does not estimate the effect of the intervention.	Functional pain of
Resnik et al. 2019	National survey	808 veterans with upper limb amputation	Documents perceived disability, pain, and prosthetic needs; cross-sectional study.	Specific functional limitation
Orkaby et al. 2019	Retrospective cohort	Nearly 3 million VA users	Frailty was associated with mortality; it did not assess employment or intervention.	Aging nto prognosis
Judd et al. 2024	Randomized clinical trial	95 participants after total hip arthroplasty	Both groups improved; integration of functional strength was not the superior primary outcome.	Functional rehabilitation; direct evidence, without superiority. between approaches.
Hammer et al. 2019	Randomized trial by organizations	35 organizations, 928 supervisors and 497 employees	No direct global effects; results are conditional upon prior support.	Occupational support, without uniform effectiveness.
Vaara et al. 2022	Narrative review	Performance in essential military tasks	It discusses physical attributes and training; it focuses on military personnel, not elderly veterans.	Indirect evidence

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Author(s) Year	Source type	Population/object	Main result and limitation	Relevance
Bamonti et al.	2022	Narrative review	American veterans with COPD	It integrates physiological, physical, and psychological outcomes; and without a combined effect estimate.	Chronic disease and physical capacity
Bond et al. 2022		Descriptive study	229 military/veteran with service-related disabilities to the	Worse results in 5 out of 6 measures versus norms; sample in transition and without a contemporary group.	Transition, mental health and work
Dunbar et al.	2022	Cross-sectional study	11,055 active duty military personnel	Mental and physical health were associated with absenteeism and presenteeism; did not study. veterans.	Indirect occupational evidence
Kline et al. 2022		National survey	4,069 veterans	12% used mental health care; among those with probable disorders, 27%; data self-reported.	Access to mental health
Houck et al. 2024		Summary of congress	Older adults; no focus on veterans.	It links ability, activity, and social roles; incomplete information on summary.	Indirect exploratory and evidence

Source: prepared by the authors (2024).

Table 1 shows that functional disability among veterans should be understood in a way...
multidimensional, but it also shows the limits of the corpus. Only part of the sources studied
directly involved veterans; one of them evaluated active-duty military personnel, another involved older adults without
Focusing on veterans, two are narrative reviews, one is a randomized clinical trial, and the other is an abstract.
of a congress. Therefore, thematic convergence does not equate to methodological homogeneity.

In the biological and functional axis, Betancourt et al. (2021) described differences in morbidity
self-reported limitations among veterans and non-veterans; Resnik et al. (2019) documented limitations and pain in
veterans with upper limb amputation; and Orkaby et al. (2019) demonstrated an association between
Frailty and mortality in users of the VA system. These studies support the relevance of
multimorbidity, amputation, and frailty, but they do not uniformly measure the capacity to
work or the effect of interventions.

In the area of pain and mental health, Baria et al. (2019) proposed an adaptation of the model.
biopsychosocial aspects of chronic pain; Kline et al. (2022) identified low utilization of care among
veterans with probable mental or substance-related disorders; and Bond et al. (2022)
They described difficulties in the transition of people with disabilities related to the workplace.

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Associations and descriptions predominate, rather than tests of integrated return-to-work strategies.
In the occupational field, Dunbar et al. (2022) showed associations between physical and mental conditions,
Absenteeism and presenteeism among active-duty military personnel, a distinct population from aging veterans.
Hammer et al. (2019) tested supervisor training in a civilian environment, but did not observe
Direct global effects, and the results depended on the support context. Thus, support
Organizational efficiency is relevant, but its effectiveness should not be presented as universal.
Regarding physical strategies, Vaara et al. (2022) focused on military performance; Judd et al. (2024)
They compared two rehabilitation approaches after total hip arthroplasty and found no
superiority of functional strength integration in the primary outcome; Bamonti et al. (2022) conducted
A narrative review on COPD; and Houck et al. (2024) provided indirect evidence through
Conference abstracts with older adults. These sources contribute to the conceptual model.
but they do not allow for the definition of a single program or the estimation of the effect on job retention.
The synthesis supports an integrated model that articulates clinical and functional assessment, mental health,
Rehabilitation, pain management, and working conditions. This formulation should be understood as
The implication lies in combining evidence, not in being a validated protocol. The main limitations
These include the absence of fully reproducible research, the failure to assess the risk of bias, and the diversity of...
populations and the lack of studies that directly measure aging and functional disability.
and remaining in the job on the same design.

FINAL CONSIDERATIONS

The literature reviewed up to September 20, 2024, indicates that the occupational health of North American veterans...
The aging process in Americans is influenced by physical, psychological, and clinical factors.
social and organizational. Studies with veterans have documented self-reported multimorbidity,
Frailty, limitations related to amputation, chronic pain, COPD, mental health needs.
and difficulties in transitioning to civilian employment. Not all studies, however, have assessed veterans.
elderly people or the ability to work directly.
Functional disability cannot be attributed to a single disease or injury. Pain, frailty,
Physical conditions and mental disorders are associated with distinct outcomes and have been studied with
different methods. Most sources are observational or narrative; therefore, the results
They allow us to identify associations, needs, and care hypotheses, but not to prove that a
Specific integrated intervention reduces disability or increases work retention.
Aging adds complexity because of injuries and conditions acquired during service.
They can coexist with chronic diseases and age-related changes. Longitudinal assessment of

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The functionality is clinically justifiable, but the corpus does not allow for defining an instrument.
unique periodicity or cutoff point. Decisions should consider medical history, physical capacity,
Mental health, job demands, and veteran preferences.

An interdisciplinary approach can link the control of chronic diseases and physical activity.
Individualized care, rehabilitation, pain management, and mental health attention. Assistive technologies.
Accessibility and occupational adaptations may also be considered when indicated.

However, not all of these measures have been directly tested in the included publications; they should be
presented as plausible components of care and not as a package of proven effectiveness.

Staying in or returning to work is a relevant goal when it is compatible with the
clinical and functional conditions, and the individual's choice. The study by Hammer et al. (2019) suggests
that the support context modifies the effects of an intervention directed at supervisors, while
Dunbar et al. (2022) demonstrate an association between health and occupational impairment in
Active duty military personnel. This data does not guarantee a return to work, but it reinforces the
The need to assess organizational barriers in addition to individual limitations.

The integration between health services, rehabilitation professionals, mental health, and the environment of
This work can favor individualized plans and continuity of care. This recommendation should
to be accompanied by monitoring of safety, adherence, function, participation and outcomes.
Occupational. Future studies should compare integrated models, specify components,
To record adverse events and monitor the return, retention, and quality of work of veterans.
of different ages and clinical conditions.

It is concluded that reducing functional disability among American veterans requires...
health promotion, prevention, rehabilitation and occupational adaptation, but the evidence available to date
The cutoff date does not validate a single model. The main contribution of this review is to organize factors.
and relevant strategies, distinguishing between empirical results, indirect evidence, reviews, and clinical trials.
and historical context.

It is recommended to expand the research with longitudinal studies and pragmatic trials that include
For aging veterans, use standardized measures of functional capacity and assess
participation and retention in the workplace. Until more robust evidence is available, the
Interventions should be individualized, interdisciplinary, and continuously evaluated for
benefits, risks and suitability for the veteran's goals.

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