



# LEADER GUIDE

# THE IMPACT OF SLEEP ON TOTAL FORCE FITNESS

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Human Performance Resources by CHAMP (HPRC) brings the best and most recent evidence-based information on human performance optimization (HPO) to the military community. This Leader Guide offers strategies for unit leaders, trainers, providers, and practitioners seeking to share performance-based information with the Service Members they work with. The guide includes an HPO tool, research that supports it, and strategies for implementing the tool in a 1:1 session, hip-pocket training, formal presentation, or casual conversation with those you lead. If you have questions about using this guide, reach out to our subject-matter experts through HPRC’s **Ask the Expert** portal at [www.hprc-online.org/ask-the-expert](http://www.hprc-online.org/ask-the-expert).



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## WHAT IS HUMAN PERFORMANCE OPTIMIZATION (HPO) AND TOTAL FORCE FITNESS (TFF)?

HPO is the process of achieving and sustaining a state of readiness that helps Service Members bring their best selves to any goal or mission—both in and out of uniform. Total Force Fitness (TFF) represents all of the dimensions that contribute to health and performance. TFF serves as a “holistic” compass that helps guide Service Members’ efforts to focus on the domains that are key to maintaining health and sustaining HPO. HPO enables Service Members with different goals, jobs, and responsibilities to work toward reaching and maintaining an optimal level of performance and sustain health and readiness.

This Leader Guide summarizes available evidence of the importance of sleep hygiene for military health and performance. It also provides tips and suggestions for leaders on how to use the self-check tool effectively.



**Sleep is essential to military health and performance. During sleep the mind loses consciousness, and the body rests and relaxes.<sup>1</sup> But the benefits of sleep to health, wellness, and performance go far beyond simply recovering from daily activities.<sup>2-4</sup> Sleep is a rich and complex process that actively impacts your ability to think, sustain attention, learn new information, balance emotions, fight infections, regulate hormones, and heal from injuries, among many other important functions.<sup>2, 5-13</sup>**

Many in our modern society and many Service Members believe that sleep is a luxury. But evidence shows that sleep duration and quality is indispensable and irreplaceable.<sup>14-16</sup> Becoming aware that sleep impacts health, performance, and wellness is the first step to implementing changes that make sleep a priority. For this reason, HPRC created a self-reflection tool illustrating the impact of sleep on Total Force Fitness. This tool guides Service Members through each domain of TFF and helps identify how sleep (and lack of sleep) impacts performance. When used correctly, this sleep and TFF self-reflection tool can help motivate Service Members to prioritize sleep.

## **OBJECTIVES**

- Summarize the impact of sleep on performance across the TFF domains.
- Describe how to use HPRC's sleep and TFF self-reflection tool.
- Identify effective strategies to help other Service Members use HPRC's sleep and TFF self-reflection tool.

## SLEEP AND PERFORMANCE: A TFF PERSPECTIVE

Sleep benefits the whole body: The brain, heart, lungs, muscles, hormones, digestive system, and immune system.<sup>2, 5-13</sup> As a result, sleep supports performance across all domains of TFF.



### PHYSICAL FITNESS

- Sleep promotes deep muscle relaxation. This leads to physical rest and recovery from any level of activity, including strenuous exercise.<sup>1, 5, 17</sup>
- Sleep is important in storing memories of any kind, including muscle memory. Getting enough sleep helps with learning and improving motor skills, such as the ones required for excellent marksmanship.<sup>18-21</sup>

- Lack of sleep prevents adequate physical recovery and increases the risk of musculoskeletal injury.<sup>5, 14, 22-24</sup>
- Getting more than the recommended hours of sleep can have a positive impact on physical performance. Athletes who get additional snooze time show improvement in speed, accuracy, reaction time, and endurance.<sup>25-27</sup>
- During sleep the body releases hormones that promote muscle recovery and repair. These changes are essential to maintaining and growing muscle mass.<sup>5, 17, 27</sup>

## MENTAL FITNESS

- Sleep helps stabilize emotional responses and improve self-regulation. The brain continuously balances emotional input (desires, impulses, feelings) and executive function (judgment, reasoning, self-control) to regulate behavior. Getting enough sleep is essential for keeping both components of behavioral control in balance. For example, when frustration levels are high it's easy to quit a challenging situation. But once frustration is out of the equation, one might decide that persevering is the best approach. "Sleep on it" is wise advice when it comes to minimizing the impact of unbalanced emotions on decision-making or behavior.<sup>6, 7, 11-13, 28-31</sup>
- Sleep deprivation can lead to impulsive behavior, the inability to self-regulate, and increased reward-seeking and risk-taking behaviors.<sup>6, 7, 32</sup>
- Sleep brings the stress response system back to baseline. For example, long hours of work might raise levels of the stress hormone cortisol to help one perform better. While a temporary rise in cortisol increases energy and sharpens focus, consistently high levels of cortisol are detrimental to health, wellness, and performance. During sleep, cortisol levels go back to baseline.<sup>33, 34</sup>
- Sleep promotes mental rest. Two components of the cognitive system, working memory and the attention system, work together to support the ability to sustain attention, think clearly, process information, make plans, and make decisions.<sup>29, 35-39</sup>
  - ➔ Working memory is similar to a whiteboard where information is temporarily "written down" to help execute a task. The more tired one is, the less effective they are at holding information on the whiteboard.
  - ➔ The attention system works like a flashlight that illuminates the whiteboard. Sustaining attention during a particular task is similar to holding the flashlight steady and at a specific target. When the mind wanders from the task at hand, the flashlight beam wanders, too, and one is no longer paying attention. This results in increased reaction time and memory lapses.
  - ➔ Sleep refreshes both working memory and the attention system and thus improves cognitive performance.

- Staying awake longer than 18 hours and getting fewer than 7 hours of sleep seriously impairs working memory, ability to concentrate, situational and battlefield awareness, focus, hand-eye coordination, reaction time, decision-making, and multitasking abilities.<sup>29, 35-40</sup>
- Lack of sleep is equivalent to being drunk. In fact, after being awake for 24 hours, one functions as though they had a blood-alcohol content of around .1% (about 4 drinks for a 150-pound person).<sup>41</sup>
- Sleep is essential to learning and memory formation. The information acquired throughout the day is stored as memory during sleep. Not every piece of acquired information is stored as memory, even when you get adequate sleep. But sleep deprivation can reduce your ability to learn by about 40%.<sup>10, 28, 42</sup>

## **SOCIAL FITNESS**

- The impact of quality sleep on mental fitness has a direct, positive impact on social fitness.
- Sleep loss reduces trust and increases aggressiveness, the tendency to blame others, and unethical behavior. These changes affect one's ability to communicate effectively, to solve conflicts, and negatively impact personal and professional relationships.<sup>43-49</sup>
- People who regularly get enough sleep show increased empathy, openness to others, and willingness to solve conflicts. In contrast, sleep-deprived people have a reduced ability to read people's facial expressions. It is harder for them to infer others' feelings (sadness, happiness, anger, frustration) and respond accordingly.<sup>49-57</sup>
- Studies in military settings show that sleep deprivation has a negative effect on group performance, unit morale, and cohesion.<sup>58, 59</sup>
- Self-regulation is improved when people get adequate sleep, and this results in better communication and conflict resolution.<sup>13, 28, 43, 47</sup>

## **NUTRITIONAL FITNESS**

- Sleep balances many factors that help control hunger including hormones, circulating glucose, and the gut microbiome.<sup>3, 33, 60-62</sup>
- Sleep deprivation increases the hormone that makes you feel hungry and decreases the hormone that inhibits appetite. As a result, sleep-deprived people can consume more than 300 extra calories a day.<sup>60-63</sup>
- Sleep deprivation can affect the quality of the food one eats, making them crave junk food.<sup>64-66</sup>
- Chronic lack of sleep also changes how the body processes sugars. Research studies show that people who slept fewer than 4 hours a day for several days developed changes in their blood and insulin levels similar to people with pre-diabetes.<sup>67-69</sup>

- All these changes, in addition to increased levels of cortisol, can increase risk of developing diabetes and gaining unwanted weight. In the long run, weight gain can cause sleep apnea and other issues that hurt sleep.<sup>67-69</sup>

## SPIRITUAL FITNESS

- Getting enough sleep is essential for self-regulation and **living out individual values**. The benefits of sleep on mental health directly impact relationships and strengthen an individual's **spiritual core**.<sup>32, 51, 55</sup>
- In short, individuals are not themselves when sleep deprived and might find that their actions don't correspond to their values and beliefs.

## MEDICAL AND DENTAL FITNESS

- Sleep replenishes the immune system and helps prevent infection and fight malignancies. For example, immune cells that remove cancerous cells from the body increase during sleep.<sup>2, 3, 6</sup>
- When individuals don't get enough sleep they might struggle from slowed injury recovery, increased sensitivity to pain, a weakened immune system, and frequent infectious diseases.<sup>2, 3, 6, 70, 71</sup>
- The amount of sleep one gets correlates to how well their body responds to immunization.<sup>72</sup>
- Chronic sleep deprivation increases the risk for hypertension, cardiovascular disease, metabolic imbalances, obesity, type 2 diabetes, and cancer.<sup>3, 4, 30</sup>

## FINANCIAL FITNESS

- The impact of sleep on financial health is secondary to its impact on self-regulation and decision-making. When sleep deprived, a bigger reward might not seem worth it if it requires greater effort.<sup>40, 73-76</sup>
- A person might want to increase the percentage of their income allocated to long-term investments. But to hit this goal, they might need to cut down on current expenses. This might require effort and discipline. Sleep-deprived people are less likely to commit to these changes than people who get adequate sleep.

## HPO TOOL: THE IMPACT OF SLEEP ON TFF—A SELF-REFLECTION TOOL

HPRC's sleep and TFF self-reflection tool lists potential impacts of sleep deprivation on TFF areas of performance. This isn't a comprehensive list but a compilation of common ways sleep deprivation can impact Service Members.

## HOW IT WORKS

- The goal of the self-reflection tool is to help participants become aware of the specific ways sleep impacts their performance so they will prioritize sleep in the future. Many Service Members believe the myth that they can train their brain and body to sustain performance with less sleep, that they don't need to prioritize sleep.
  - ➔ The worksheet is broken down into 2 sections. The first section, **“Poor sleep traps: Surprising ways a lack of sleep can hurt your performance,”** lists many consequences of sleep deprivation under each TFF domain. The worksheet enables participants to reflect and identify which of the common poor sleep traps they experience when they don't get enough sleep. Then, it provides them the opportunity to list any core values or meaningful goals that poor sleep negatively impacts.
  - ➔ A goal of this activity is to help Service Members become aware that these “poor sleep traps” can be caused or made worse by a lack of sleep. For example, experiencing reduced quickness, increased impulsive behavior, increased desire for fatty foods, decreased ability to learn, unwanted weight gain, feeling lonely, or not saving for long-term goals might result from poor sleep. Further, participants might not realize that getting regular, good sleep can help those aspects of health and performance.
  - ➔ Participants then name specific examples of how sleep loss has impacted their readiness, performance, and well-being. This helps them see real-world costs of not getting sleep. If possible, participants should discuss their experiences with others to further increase awareness of the consequences of sleep loss.
  - ➔ The second section, **“Sleep as a TFF tool: Performance-enhancing benefits of sleep,”** helps participants identify how they perform when they get the sleep they need and are rested and energized. This second section helps them contrast their overall performance of when they sleep well vs. when they don't. Then it provides them the opportunity to summarize 1–3 insights about the importance of sleep to increase their motivation to prioritize sleep in the future.

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Total Force Fitness | Physical Fitness | Nutritional Fitness | Mental Fitness | Social Fitness

### The impact of sleep on Total Force Fitness— A self-reflection tool

Sleep is a foundational block of health and military performance. If you compare your performance on the days you sleep well vs. those you don't, you can probably list at least one difference. Most people notice changes in their level of alertness and their ability to focus. But the impact of sleep on performance goes beyond that. Sleep deprivation can affect your health and performance in negative ways you don't see or might take a long time to notice. And when you get enough sleep, it supports your performance across all areas of Total Force Fitness (TFF).

**Poor sleep traps: Surprising ways a lack of sleep can hurt your performance**

Use this sleep traps self-reflection tool to learn how sleep impacts your health and performance. Read the sentences below describing the impact of sleep deprivation on each TFF domain. Think about how you usually feel when you don't get enough sleep. Then, review the list of poor sleep traps to identify how a lack of sleep might have negatively impacted you. Check each poor sleep trap you fell into. Write any specific ways you remember experiencing that trap so you're more mindful in the future about getting more sleep.

**Physical Fitness**

- A lack of sleep accelerates my fatigue and decreases my stamina.
- A lack of sleep impacts my ability to learn new motor skills.
- A lack of sleep might have contributed to my past and current injuries.
- A lack of sleep decreases my coordination, speed, reaction time, or endurance.
- A lack of sleep is impacting my physical fitness goals (e.g., muscle gains).

**Mental Fitness**

- A lack of sleep makes it harder for me to regulate my mood.
- A lack of sleep reduces my ability to control my impulsive behaviors.
- A lack of sleep increases my stress levels.
- A lack of sleep makes it harder for me to focus, think critically, and make decisions.
- A lack of sleep makes it easier for me to make mistakes.
- A lack of sleep impairs my attention and alertness.
- A lack of sleep reduces my ability to learn and remember things.

**Social Fitness**

- A lack of sleep increases my aggressive behavior.
- A lack of sleep increases my tendency to blame others for problems.
- A lack of sleep increases my feelings of loneliness.
- A lack of sleep reduces my ability to accurately read others' emotions.
- A lack of sleep decreases my willingness to solve conflicts.



- Once participants recognize the importance of sleep on their readiness, performance, and well-being, the worksheet provides tools to help them adjust their behavior to get the sleep they need. Awareness is an important step in behavioral change, but developing the right habits is key to improving sleep.

## STRATEGIES FOR SUCCESS

Review these tips for presenting the TFF sleep self-reflection tool in ways to help participants see the value of, fully engage with, and receive the full benefits of the activity.

**Why should they care? Start with a hook!** Service Members are ready to learn when they understand that the material will help them deal with real-life situations that can range from mission-essential tasks to events in their personal lives, interests, or hobbies.



### PLAN & PREPARE

- How can you grab participants' interest and make them curious to learn more about the importance of sleep? Many Service Members might believe that sleep is overrated or not mission critical. Grabbing their attention before engaging in the activity should help them to not check out.
- Review the research above and consider discussing different facts that might surprise your audience about the impacts of sleep.
- Brainstorm any personal stories, relatable experiences, or anecdotes that your participants might be familiar with to highlight the impact of sleep on something your participants value.



### EXECUTE

- Share your most attention-grabbing personal story, relatable experience, or anecdote that highlights the impact of sleep on something your participants value.
- Point out that we are often unaware of how sleep might be impacting our performance. Similar to when one is drunk and think they're fine.
  - ➔ Lack of sleep can impact performance in ways similar to being drunk. After being awake for 24 hours, you function as if your blood-alcohol content is about 0.1%. This is considered legally drunk in most states.
- Share one or two examples from the research on how sleep impacts performance that might surprise them.
  - ➔ Self-regulation: How they eat, drink, or live out their values.

- Communication: With kids, spouse, friends, co-workers, or battle buddies.
  - Focus: On work, driving, or mission-essential tasks.
  - Performance: Their strength, endurance, or speed.
- Encourage participants to share examples of how they've witnessed the impacts of sleep deprivation.

**How would this have helped in the past?** Service Members learn best when topics are provided with clear, real-world examples for application.



### PLAN & PREPARE

- The first section of the worksheet, **“Poor sleep traps,”** helps participants reflect on past experiences where lack of sleep might have damaged their performance.
- This reflection is only effective if participants really examine the different aspects of their life and ways they might not realize sleep impacts their performance. This will not be accomplished if participants rush through the “poor sleep traps” and simply check the boxes of what comes to mind. It’s important to help the participants to slow down and really consider how each trap might be impacting them in different domains of their life.
- To help participants reflect deeper, come up with common cues, examples, or metaphors for each **TFF domain**.



### EXECUTE

- Explain that “poor sleep traps” are common ways poor sleep might impact performance that they might not realize.
- First, help participants reflect on times they were sleep deprived. Then, go through the list and provide 1 or 2 cues of examples or metaphors for how poor sleep might impact performance, well-being, or readiness for each TFF domain.
- For example, when reviewing the Social Fitness Poor Sleep Traps, you could say, “Poor sleep can make you communicate with others like you have emotional sunburn. Sunburned skin makes even a gentle touch painful. In the same way, emotional sunburn can make you feel pain and overreact, even in neutral situations. You might mistake a neutral comment for a criticism and end up starting an argument.”
- Encourage participants to discuss their own, specific examples of how they’ve fallen into poor sleep traps. Help them reflect on how those situations could have gone differently if they’d gotten **the sleep they needed**.

**How will this help them achieve future goals?** Service Members are ready to learn when they understand that the material will help them deal with real-life situations that can range from mission-essential tasks to events in their personal lives, interests, or hobbies.



## PLAN & PREPARE

- The second section of the worksheet, **“Sleep as a TFF tool: Performance-enhancing benefits of sleep,”** helps participants see the benefits of sleep and capture insights to motivate them to prioritize sleep in future.
- Reflect on why your audience should care about prioritizing sleep. How will it help them improve things they deeply value? Or what might be the potential cost of not prioritizing sleep to what they deeply value?
- Which of the benefits do they care about most? How can you help them see how prioritizing sleep can bring about these benefits?
- Be sure to do the TFF sleep self-reflection tool yourself. Note any *wake-up calls* or *aha* moments. Also, address any barriers you’ve faced and how you overcame them.



## EXECUTE

- Share your experiences doing the TFF sleep self-reflection tool and any *wake-up calls* or *aha* insights you realized that helped you to prioritize sleep. This will help the participants understand the importance of the activity.
- For example, if you have a child, you realize that the long-term impacts of sleep loss on your mind might not enable you to be fully, mentally present for them when they are older.
- Help the participants to reflect on what they value most. Maybe that’s their career, their health, their relationships. Help them reflect on how poor sleep prevents them from living out their values. Provide some common examples to help them see how sleep might impact them in the future. For example:
  - When I’m sleep deprived I don’t have the energy to invest in relationships and often ignore my child.
  - Sleep deprivation is making me drift away from my spouse.
  - When I don’t sleep well my bench press and other exercises one-rep maximums decrease.
- Have participants write down any core values or meaningful goals that poor sleep might be negatively impacting. Help them explore ways beyond the listed “poor sleep traps” that might be impacting them. For example, when sleep deprived:
  - Do they waste more time on social media?

- ➔ Have they noticed they make more errors when responding to emails?
- Help them reflect on common excuses for not getting good sleep. Discuss if these excuses are worth overcoming to live out their identified values and goals.

**How can they do this activity in their current lives?** Service Members learn best when topics are provided with clear, real-world examples for application.



## PLAN & PREPARE

- Reflect on ways you can help participants determine how they can prioritize sleep in their current lives.
- Some questions to consider are:
  - ➔ What are their current work and family demands that might impact sleep?
  - ➔ Are there upcoming deployments or other challenges to consider?
  - ➔ How can they prioritize sleep? What might need to change? Try to be as specific as possible.
  - ➔ Are there ways you or others can help them to prioritize sleep?
- **Check out HPRC's sleep readiness article** for additional strategies to help Service Members improve their sleep in military environments.



## EXECUTE

- Share examples of how you or others make sleep a priority in real life, despite all the challenges of serving in the military.
- Lead a discussion about the barriers they face in prioritizing sleep and how they can overcome those barriers. Be sure to address cultural beliefs or peer pressure regarding lack of sleep.
- Propose different cues or reminders to help them remember that they want to prioritize sleep. For example, setting an alarm to remember it's time to wind down and get ready for sleep.
- Ask them if there are ways you, their peers, or family members can help them make sleep a priority. Help them think through how they can get the support they need.
- Have them write down 1–3 benefits of sleep that might increase their motivation to prioritize sleep. Give them some examples and allow them time to identify their personal motivators.

- ➔ I choose to prioritize sleep because I want to become a better parent.
- ➔ Getting adequate sleep each night will make me a better warfighter.
- ➔ Sleep can prevent chronic diseases and help me live longer.

**How can they create their own sleep strategy?** Service Members are more likely to follow through with a task when they have autonomy for their own decisions. To help participants take ownership of the activity, guide them to develop their own strategies for prioritizing sleep in ways that work for them.



### PLAN & PREPARE

- Empower participants to develop their own strategies to prioritize sleep in ways that work for them might help them take ownership of their sleep behaviors.
- Review HPRC's sleep tools and provide them to the participants.



### LINKS:

20 Holistic Sleep-Optimization Tips for Better Performance, Mental Health, and Resilience

10-Day Sleep Diary

Sleep vacation: One way to transform your sleep for military wellness and performance optimization



### EXECUTE

- Encourage participants to discuss ideas for what they can do as a group or individually to better prioritize sleep.
- Present any of **HPRC's sleep tools** you feel would be helpful for your audience.
- If possible, have them write out their strategy during the session to get them started.

**What's working? What isn't? Don't forget to follow up!** Make sure to check in after participants have started trying to prioritize sleep to help them review their progress and troubleshoot.



## PLAN & PREPARE

- Help participants to reflect on the benefits of prioritizing sleep since using the TFF sleep self-reflection tool.
- What benefits have they noticed?
- What barriers, if any, are they facing? What can they adjust to improve?
- Help them reflect on any new “poor sleep traps” they’ve noticed that they or others fall into since using the TFF sleep self-reflection tool.



## EXECUTE

- After they’ve had some time to try to improve their sleep, ask them how it’s been going so far.
- Ask them if they’ve noticed any new “poor sleep trap.” they or others fall into since using the TFF Sleep Self-Reflection Tool.
- Ask them if they’ve been able to start prioritizing sleep. Try to get them to be specific with what they’re doing differently.
- Ask them to reflect on how sleep has impacted them since doing the TFF sleep self-reflection tool. Ask them about specific work tasks, relationships, or their overall moods and energy based on what they value the most.
- Ask them what they have found difficult about prioritizing sleep?
- Help them to brainstorm how they can continue to improve prioritizing sleep.

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