



FAA

**Welcome
To the
Fatigue Countermeasure Workshop:
Fatigue Management Strategies
Module**

Audio Companion

Welcome to the Fatigue Countermeasure Workshop. This audio companion has been designed to be used in conjunction with the online course for learners that do not have audio or need additional resources in completing the course.

Section 1 – Welcome

1 Welcome

This lesson describes how you can effectively prevent or manage fatigue. The goal of this course is to provide you with the fundamental knowledge you need to prevent and manage fatigue so you can improve your personal and work-related safety.

2 Lesson Objectives

Now you will learn about fatigue management strategies. Read through the lesson objectives listed here. Then click next to continue.

Section 2 – Fatigue & Driving

3 Fatigue & Driving

One of the most dangerous things you can do is drive fatigued. When you're fatigued you become a road hazard and according to the National Highway Traffic Safety Administration, drowsiness is the single most frequent cause of highway accidents. It contributes to over 100,000 crashes, 71,000 injuries, and 1,500 deaths per year. A poll by the National Sleep Foundation revealed that in the past year, 60% of Americans have driven while sleepy and 37% have actually fallen asleep at the wheel at some point! Commuting may be a fact of life, but commuting tired doesn't have to be!

4 Maggie's Law

Experts believe drowsy driving has some of the same effects as driving under the influence.

It impairs judgment and drowsy drivers often miss road signs or stoplights and misjudge distances.

Drowsy driving slows reaction time and makes it harder for drivers react to events going on around them.

It also impairs coordination and drowsy drivers can't handle a vehicle as they normally would.

It also increases aggressiveness. Tired, cranky drivers often react differently to other drivers and may be more prone to road rage and speeding.

In New Jersey, it is illegal to knowingly drive a vehicle while impaired by lack of sleep. Click on the Maggie's Law button below to learn more about the law in New Jersey.

5 Driving Tips

If you are fatigued you shouldn't drive. Driving fatigue can have dire consequences and put your life and the lives of others at risk. If you are drowsy, there are some things that you can do to help increase your level of alertness before you begin your commute.

Move the car along the road to learn some tips to help you make your commute safely. When you are finished, click next to continue.

Section 3 – Family and Social Life

6 Effects of Fatigue on Your Family and Social Life

A healthy family and social life is important for maintaining personal well-being. Unfortunately, working non-traditional hours can make it difficult to spend time with friends and family. Most social events and activities take place when you may not be available. The lack of involvement within social networks can lead to feelings of social isolation.

Personal relationships may also suffer— especially family relationships. This is primarily because it's difficult to spend time together. You may be working when a spouse and children are at home and at home when the family is not. It's also more difficult to take part in normal household routines.

The lack of time spent with family at home can worsen conflicts and lead to marital difficulties.

7 Managing Sleep Around Your Family and Social Life

Balancing family and social responsibilities with your need for sleep is difficult. It often seems to be an issue where you have to make a choice between the two. Rather, it's important to try to strike a balance between the two. If you don't, the resulting fatigue or social isolation can have very negative implications for you and your family.

Here are some tips that can help you achieve a better balance. To see each tip, just move the puzzle pieces into its place by clicking on each piece and dragging and dropping it into the correct position.

Section 4 – Sleep Habits

8 Sleep Habits

Establishing good sleeping habits is one of the best things you can do to fight fatigue. Here are some strategies that may help you maximize your sleep time. Remember, it's important that you stick to your established bedtime routine and sleep schedule even on your days off. This helps to adapt your body to the schedule so that you don't have to fight so hard to get up or to stay awake.

Click on each item to learn more. When you are finished, click next to continue.

9 Sleep Habits

A good sleep environment is essential for quality sleep so it's important to properly prepare your bedroom. Move your mouse around to explore this bedroom and find tips for getting a good night's sleep. When you are finished, click next to continue.

Section 5 – Strategic Napping

10 Strategic Napping

When used appropriately, napping can be a very useful tool for maintaining alertness. However, napping should not be used to replace your primary sleep period, but rather as a supplement for too little or poor quality sleep. In comparison to napping, a continuous block of sleep is more restorative. Over-reliance on napping can interfere with regular sleep times.

Consider taking a nap to improve alertness if your last sleep period was less than 6 hours, if your last sleep period had multiple periods of wakefulness lasting 30 minutes or more, if you felt as though you were drifting in and out of sleep all night, or if you awoke unusually tired and lethargic.

11 Strategic Napping

How can you time a nap to get the most benefit? Here are some Frequently Asked Questions (FAQs) related to napping. Roll over each FAQ listed to learn more. When you are finished, click Next to continue.

Section 6 – Exercise

12 Exercise

Exercise has many benefits including a long list of health benefits. For instance, it improves cardiovascular health including reduced risk of heart disease and lowering blood pressure and cholesterol. It strengthens immune functioning and improves muscle tone and strength. It also improves energy levels and stamina which guard against fatigue. Exercise is also beneficial for mental health because it causes the body to release endorphins. This improves mood, relieves stress, and can even help those suffering from depression. Exercise also leads to improved sleep – people often find it easier to get to sleep and tend to experience longer lasting and more restful sleep.

These are guidelines that will help you understand good exercising habits. Use the slider to select your answer to each question. Click the Check My Answer button to continue.

13 Exercise

Stretching and relaxation techniques can also help fight the effects of fatigue. Relaxing means choosing the technique that's right for you. Click on each technique to learn more about it. When you are finished, click Next to continue.

Section 7 – Nutrition & Hydration

14 Nutrition & Hydration

Good nutrition is another key component in managing fatigue. Although nutrition does not cause notable increases in alertness, it is an area that is very essential for preventing fatigue. Here are some good eating habits that should be a part of your overall fatigue-fighting countermeasures. Click each section to learn more. When you are finished, click Next to continue.

15 Nutrition & Hydration

Besides eating the right foods, it is also important to eat at the right times. Here are some tips to keep in mind:

Tip 1: Avoid Late Night Meals. The digestive system is controlled by the circadian rhythm which slows down at night. This makes it more difficult to digest food that is eaten late at night or in the early morning hours – especially foods that are high in fat. Foods eaten at night take much longer to digest and are more likely to lead to gastrointestinal complaints such as acid reflux or heartburn, constipation, or indigestion.

Tip 2: Try to keep eating patterns aligned with regular daytime activity. For instance, eat your largest meals during the day and then maybe a lighter meal later at night. Be sure to avoid large or heavy meals before bedtime as they can interfere with sleep.

Tip 3: Don't go to bed hungry because that can delay sleep. Instead, try eating a light snack or a small meal to satisfy your hunger.

Click next to continue.

16 Nutrition & Hydration

Hydration is also key to maintaining alertness. Drinking fluids regularly throughout the day will help to ensure that you remain hydrated. If you aren't getting enough fluids you're likely to feel sleepy or sluggish, become irritable, become unable to concentrate, or experience frequent headaches. Dehydration can also affect cognitive abilities such as math skills, short-term memory, and visual tracking.

There are several factors that are likely to contribute to dehydration. For starters, very hot, dry, or air-conditioned environments can lead to dehydration as can working at night. Even drinking alcoholic or caffeinated beverages or eating very salty foods can be problematic. Alcohol and caffeine are diuretics and flush water from the body, and salty or fatty foods require more water to digest.

To stay hydrated, drink 8 glasses of water each day and don't wait until you're thirsty to drink. Remember to reduce your liquid intake before bed to minimize the number of times that you have to get up to use the restroom.

Section 8 – Strategic Caffeine

17 Strategic Caffeine

Caffeine is a popular stimulant that is often used to increase alertness or performance. This can be a very useful countermeasure if used appropriately and is safe if used in moderation.

Caffeine is found most commonly in coffee, tea, soft drinks, and chocolate, but is also found in “alertness aids” such as No Doz or Vivarin and over-the-counter cold medications such as pain relievers, appetite suppressants, and cold medications.

18 Strategic Caffeine Use

Keep these tips in mind to maximize the use of caffeine as a fatigue-fighting countermeasure.

Tip 1: Try to use caffeine only when you actually need it. This generally means consuming caffeine in the late afternoon, late night, or early morning hours when your circadian rhythm is dipping and you’re naturally feeling more fatigued.

Tip 2: It’s important to avoid caffeine several hours before bed because it can lead to difficulty falling asleep. Even if you do fall asleep, it’s more likely to be lighter and more disturbed.

Tip 3: Don’t be fooled by the temporary effects of caffeine. Caffeine can be very effective if used correctly for short-term improvements in performance and alertness. But remember, caffeine only masks fatigue. The only cure for fatigue is sleep!

Click next to continue.

Section 9 – Other Substances

19 Other Substances

In addition to caffeine, there are other commonly consumed substances that have a direct influence on your ability to sleep and therefore affect fatigue. Click on each substance below to learn more about how it affects sleep and fatigue. When you are finished, click next to continue.

20 Sleep Log

Keeping a sleep log is another technique that you can use to fight fatigue. A sleep log can help you determine the amount of sleep you are actually getting and you may be surprised to learn that you are not getting as much sleep as you think.

We all overestimate our actual hours of sleep but as an aviation worker, you are particularly vulnerable to having poor sleep habits because of shiftwork and long commutes to work. To help you accurately track your sleep and assess your sleep habits, you can choose from a variety of sleep logging tools at the FAA website.

Here is a sample sleep log. Roll over each highlighted area to learn more about tracking your time with a sleep log. If your adjusted average sleep time is less than 8 hours, you should re-evaluate your plan for sleep. You should revisit your sleep schedule every 3 months.

When you are finished, click Next to continue.

Section 10 – Countermeasures

21 Countermeasures at Work

Now that you've learned about general fatigue-fighting countermeasures, you will learn about job-specific stressors that affect most aviation personnel and strategies to help you fight fatigue. You'll learn more about fighting fatigue stressors related to workload, work environment, schedules and traveling.

22 Workload

Workload is a key job-related factor that can contribute to fatigue in multiple ways.

Physical workload refers to the physical activities that are involved in work such as lifting, pushing, or carrying.

Cognitive workload refers to the mental activity that is required to perform the job. Cognitive workload might include a planning task or an operation that simply requires monitoring.

Emotional workload refers to the effort it takes to work with other people. For instance, if you have to deal with a difficult coworker or boss, it would be considered emotional workload.

A high workload is when a task is physically, mentally, or emotionally taxing. High workload essentially depletes your available resources, you become fatigued, and you are unable to perform as well as you should. This can be dangerous if the job requires quick actions or fast decision-making.

Low workload, on the other hand, can be thought of as a lack of stimulation, which makes it possible for sleepiness and fatigue to emerge. You may not realize that fatigue has set in. Low workload can be dangerous in a monitoring task where you merely watch and make sure nothing goes wrong. What often happens is that fatigue sets in and makes you less effective if something happens that requires you to respond.

Click next to continue.

23 Beating Workload-Related Fatigue

You learned several general techniques in the previous section that can help fight fatigue. Click to see to see what techniques can specifically help beat workload-related fatigue.

24 Countermeasures at Work

There are a variety of work environment factors that can have an impact on fatigue, such as temperature, lighting and noise. These conditions can exacerbate the effects of sleep loss and

circadian rhythm disruption. Click on each work environment factor to learn more. When you are finished, click Next to continue.

25 Beating Work Environment-Related Fatigue

These cards represent the techniques that can help beat the work environment related fatigue factors you just learned about. Now click each card to view the recommended techniques.

26 Countermeasures at Work

There are four schedule-related factors that determine whether fatigue will be an issue on the job:

The **first factor** is the time of day when work is performed. Because the sleep-wake schedule is controlled by the circadian rhythm, you are more likely to suffer performance decrements and make mistakes when you are working during circadian lows – the late night and early morning hours. Time of day also influences the sleep opportunities you have. Sleep during the day is likely to lead to shorter and less restful sleep. Work that involves crossing time zones intensifies these issues.

The **second factor** is the number of hours on duty. It is clear that the longer people work the less alert they become. It's also the case that the longer you work, the less time you have to do everything else *and* get rest each day. This often means that rest and sleep are what get left out on a day to day basis and ultimately leads to increasing levels of fatigue. Being on standby can also contribute to fatigue, interfering with your normal schedule even when you are not called in, and specifically if you are called in towards the end of the shift.

The **third factor** is the number of consecutive shifts worked. You are often not able to fully recover between shifts, leading to sleep loss and fatigue. The more consecutive shifts, the greater the cumulative effects. In fact, research shows that the risk of an accident increases significantly with each night shift worked.

The **fourth factor** is variability in start time. When your shift starts at varied or unpredictable times, it is difficult to get an adequate amount of sleep and your quality of sleep may be compromised because you will likely be sleeping at different times each day. Constantly changing shifts doesn't allow your body the opportunity to adapt.

27 Countermeasures at Work

Alternative schedules include any shift that does not start and finish between the hours of approximately 8:00am and 5:00pm. For example, early morning shifts where you report at 6:00am, evening shifts beginning at 3:00pm, and overnight shifts would all be considered alternative work schedules. While alternative schedules often come with benefits to employers and employees they can lead to increased fatigue and associated safety and performance issues. In fact, if you work alternative schedules, you're more likely to suffer from insomnia and excessive daytime sleepiness.

When you work alternative schedules, you may have a difficult time changing your waking and sleeping schedule to match your work schedule because it requires working against your natural body clock. If kept on a regular schedule, the human body can adapt to some extent, however

people often go back to a “normal” schedule on their days off making it difficult for their body clock to fight the circadian rhythm and adapt to a different schedule. Research shows that people who sleep during the day are estimated to get 1.5 to 2 hours less sleep *each period* compared to night sleepers – that’s as little as 6.0 to 6.5 hours.

28 Countermeasures at Work

Click to see what techniques can help beat schedule-related fatigue.

29 Traveling

If traveling is a big part of your job, you face many factors that can lead to fatigue. Click on each travel factor to learn more about its impact on fatigue. When you are finished click Next to continue.

30 Beating Travel-Related Fatigue

Now that you’ve learned about some of the factors that make fatigue an issue when traveling, practice identifying fatigue-fighting strategies. Indicate which of the following techniques you think would best help manage the effects of fatigue by positioning each of the listed techniques in the order you consider most important. When you are finished, click the Check My Answer button.

Section 12 – Summary

35 mxfatigue.com

If you would like additional resources to help you prevent or manage fatigue, please visit the FAA’s maintenance fatigue website at MXFATIGUE.COM

36 Summary

Well done! You have completed the Fatigue Management Strategies lesson. Before moving on to the Course Exam, here’s a summary of what you have learned.

If you are ready to move onto the Course Exam, click next to continue.