

RIPPLE ENGLISH

ACTIVE LEARNING PROGRAM

Workbook for:

“When You Are Sleep-Deprived”

問題は解きっぱなしにしないで！

英語資格試験の学習は、**解いた後の復習**をしなければほとんど効果はありません。答え合わせをしておしまいせず、**テキストの音読練習やリスニング、多読学習などのインプット学習**を何度も反復して記憶に定着させましょう。ホームページからダウンロードできる音読練習用のテキストをぜひご活用ください。また、数日置いてから再度解き直すのも効果的です。答えを記憶してしまっているかもしれませんが、回答の根拠をなぞりながら繰り返し解くことで有効な復習になります！

When You Are Sleep-Deprived

1. Previously, working overnight in front of a computer or playing around until dawn was often considered cool. Today, thank goodness, this is already a thing of the past. More recently, sleep deprivation is regarded as unprofessional and bragging about it rather unintelligent. Chronic sleep deprivation **deteriorates** your physical and mental health, and even intellectual performance. In fact, some people have short sleep genes, but they are less than one in ten thousand. Some historical figures, such as Napoleon Bonaparte and Thomas Edison, were often named as short sleepers, but some records suggest that they were actually habitual daytime nappers. Essentially, the body and brain of Homo sapiens are not designed to function well without sufficient sleep. Having enough sleep is never an act of laziness. It is, in fact, an act full of kindness and responsibility. Sometimes we cannot sleep well for various reasons, including diseases and concerns, but those who willingly reduce their sleep and boast about it are merely advertising their stupidity and irresponsibility. Why do we have to sleep enough?

- (1) The word “deteriorate” in the passage is closest in meaning to
 - A. worsen
 - B. improve
 - C. measure
 - D. accelerate
- (2) According to paragraph 1, which of the following statements is true regarding sleep deprivation?
 - A. It is a sign of dedication and hard work.
 - B. It enhances intellectual performance over time.
 - C. It is considered an act of irresponsibility and foolishness.
 - D. Most people have genes that allow them to function well on little sleep.

2. Lack of sleep is bad for our health. You may think it is so obvious that we don't have to repeat this warning here, but the effect is perhaps much greater than you might have expected. There is a global experiment in which 1.5 billion people are forced to cut their sleep by one hour for a single night every year. We call it "daylight savings time." In the Northern hemisphere, the switch to daylight savings time in spring automatically makes people lose an hour of sleep. Surprisingly, we see a sudden 24-percent increase in heart attacks exclusively that following day. We see the same pattern with the number of traffic accidents and suicide rates. In autumn, the exact opposite happens. When daylight savings time ends and they gain an hour of sleep opportunity time, heart attacks significantly decrease.
3. During sleep, particularly non-REM stage 3 in the first 2 to 3 hours, our heart rate and blood pressure level goes down, reducing the burden on our cardiovascular system. This is a great opportunity for vital organs to recover from and repair damages. The same is true for our immune functions. During the day, our immune system is very busy dealing with various potential threats. In a safe and comfortable bedroom, the immune system is freed from its busy state and thus, devoted to resolving inflammation and recharging itself. There are a **multitude** of things your body can only do during sleep.

- (3) What is the primary health impact mentioned in the passage related to the loss of an hour of sleep due to daylight savings time?
- A. Increased focus and alertness
 - B. Decrease in mental health issues
 - C. Sudden increase in heart attacks
 - D. Improvement in physical health
- (4) According to paragraph 3, which of the following is true regarding the body's functions during non-REM stage 3 sleep?
- A. The immune system continues to work at the same pace as during the day.
 - B. The body performs unique recovery processes that it does not do when awake.
 - C. Blood pressure levels significantly increase to support the body's recovery processes.
 - D. Heart rate acceleration is a common occurrence to prepare the body for the next day.
- (5) The word "multitude" in the passage is closest in meaning to
- A. limited
 - B. important
 - C. numerical
 - D. lot

4. A number of studies have shown that our attention, concentration, and other cognitive capacities decline under sleep deprivation. Obviously we have to sleep enough so that you can be the best version of yourself the following day. Besides, if you are in a managerial position, your sleep conditions will matter even more because your lack of sleep affects not only your personal performance but also the entire team. You make decisions involving your team or project. If you are sleep-deprived, all members suffer from the poor quality of your decision making.
5. In addition, research shows that sleep deprivation reduces the display of positive emotional expressions, diminishing potential influence as a leader. Also, lack of sufficient REM sleep undermines our abilities to read emotional signals, especially faces, which can have a negative impact on managing team atmosphere and motivation.
6. Moreover, subordinates model themselves after their boss in their attitudes and behaviors. When they receive an email from their boss at 3 a.m. or hear him boasting about 4 hours of sleep, they are being told overtly or covertly that sleep should not be prioritized. Research shows that workers tend to cut their sleep by around 25 minutes when they are supervised by a boss who disregards the importance of sleep. Put simply, the entire department has to pay the price for the sleep deprivation of its manager. Securing sufficient sleep is an indispensable, professional duty.

(6) According to paragraph 4, why is sufficient sleep especially crucial for managers?

- A. It only influences their personal efficiency.
- B. It impacts both their own and their team's performance.
- C. It enables them to work more hours.
- D. Its main benefit is improving their physical health.

(7) According to paragraph 5, why is REM sleep important for leaders?

- A. It enhances the ability to display positive emotions.
- B. It improves team management by enhancing emotional signal reading.
- C. It increases the potential to influence as a leader.
- D. It directly impacts the leader's motivational speeches.

(8) According to paragraph 6, what is the impact of a boss disregarding the importance of sleep on their subordinates?

- A. Subordinates feel encouraged to prioritize work over sleep.
- B. Subordinates become more efficient in their work.
- C. The boss is seen as more committed and dedicated.
- D. Subordinates gain a better understanding of professional duties.

7. As widely known, sufficient sleep is indispensable for consolidating memories. Needless to say, studying overnight before an examination is not recommended. The ultimate purpose of learning should be cultivation of our skills, intelligence, and personality in the long term. If you short-sightedly study all night long for tomorrow's test, you will lose in the long run. However, overnight cramming is not even effective for tomorrow.
8. If you take a closer look into the brain functions, you will learn that memory consolidation is a close cooperation between non-REM and REM sleep. Neurologically speaking, a memory involves a synaptic connection between neurons, and the brain has a finite capacity for synapses. During Non-REM sleep, the brain sorts out and removes unnecessary synaptic connections, followed by REM sleep which reconstructs new connections and strengthens existing ones.
9. If you think of the brain as a warehouse, before you sleep, the space is disorganized with a flood of items you brought in during the day. As you fall asleep, Non-REM sleep identifies which items are similar, relevant, and redundant, and throws away unimportant ones, creating a space. After the clearance by non-REM sleep, REM sleep rearranges items into the shelves based on their relevance and significance so that you can quickly pick out one when it's necessary.
10. This is how the brain makes the most of its limited storage capacity, and this task can only be done during sleep. Without sufficient Non-REM and REM sleep, what you learned during the day cannot be organized, fixed, and refined. Also, you will end up having no cerebral space for other information the following day. Learning can never be achieved only by reading books and listening to lectures during the day. It has to come along with remodeling and optimization of our neural circuits by non-REM and REM sleep.

(9) According to paragraph 7, why is overnight cramming before an exam discouraged?

- A. It significantly improves long-term retention.
- B. It is an effective method for enhancing intelligence.
- C. It does not effectively aid in immediate test preparation.
- D. It deteriorates our mental health.

(10) According to paragraph 8, how do non-REM and REM sleep contribute to memory consolidation?

- A. Non-REM sleep removes unnecessary synaptic connections, and REM sleep strengthens them.
- B. Non-REM and REM sleep both work to remove unnecessary memories.
- C. REM sleep eliminates weaker synaptic connections, while non-REM sleep creates new ones.
- D. Both non-REM and REM sleep are responsible for creating new synaptic connections.

(11) According to paragraph 9, what roles do non-REM and REM sleep play in memory processing?

- A. Non-REM sleep clears unimportant items, while REM sleep organizes the remaining ones.
- B. Both non-REM and REM sleep remove redundant memories.
- C. Non-REM sleep organizes all memories, and REM sleep removes unnecessary ones.
- D. REM sleep floods the brain with memories, and non-REM sleep organizes them.

(12) According to paragraph 10, what happens if one does not get sufficient Non-REM and REM sleep?

- A. The brain optimizes its storage capacity more efficiently.
- B. Information learned during the day is properly organized and fixed.
- C. There is no space in the brain for new information the following day.
- D. The brain suffers the deficiency of energy during the day.

11. After all, how many hours should we sleep? The answer is unknown. It depends on genetics, the quality of sleep, daily conditions, and even seasonal differences. So, the best advice has to be as follows; We should sleep as long as we can to spend the following day without feeling sleepy during the day, period. There is no one-size-fits-all answer. If you search on the Internet, you will find various sources of information. For example, the most popular idea is 7 to 9 hours of sleep. It is indicated that our mortality rates increase either when we sleep more or less than this range. This is quite reliable information supported by the Center of Disease Control, but we need to be a little cautious.
12. First, we need shorter sleep as we grow older, but elderly people naturally have a higher risk of dying. Second, people with serious diseases are more likely to need longer sleep for recovery. In addition, they often suffer from poor quality of sleep due to illness, leading to longer sleep to **compensate** for the quality. There is a correlation between sleep duration and mortality rates, but we cannot assert that they are in a causal relationship. In other words, we cannot conclude that a shorter or longer sleep is the cause of increased mortality. Yet, 7 to 9 hours of sleep still remains a very reliable benchmark.
13. If you expected a clear answer, you might be disappointed, but that is what science is. It is quite difficult to draw a definite conclusion, and so is to provide sufficient evidence to prove a theory. Realizing our ignorance is one of the most important insights in scientific endeavors. When it comes to sleep duration, the current conclusion seems that we should trust our own senses while referring to science.

- (13) According to paragraph 11, what is the recommended amount of sleep for most people?
- A. Exactly 8 hours every night, regardless of personal differences.
 - B. As long as needed to avoid feeling sleepy the next day.
 - C. A minimum of 10 hours to ensure optimal health.
 - D. No more than 6 hours to maintain low mortality rates.
- (14) The word “compensate” in the passage is closest in meaning to
- A. alter or move something slightly in order to achieve the desired fit, appearance, or result
 - B. persist in an activity or process
 - C. be a part of a whole
 - D. give someone something, typically money, in recognition of loss, suffering, or injury
- (15) According to paragraph 12, what is the relationship between sleep duration and mortality rates?
- A. Longer sleep directly causes higher mortality rates.
 - B. There is a correlation, but it is not necessarily causal.
 - C. Elderly people need less sleep, which decreases mortality rates.
 - D. Serious diseases are cured by adhering to the 7 to 9 hours sleep benchmark.
- (16) According to paragraph 13, what should one consider when determining how much sleep is necessary?
- A. Ignore scientific evidence and trust only personal feelings.
 - B. Trust only clear, scientific conclusions about sleep.
 - C. Combine personal experience with scientific recommendations.
 - D. Disregard personal senses and follow strict scientific guidelines.

Answers

- (1) A
- (2) C
- (3) C
- (4) B
- (5) D
- (6) B
- (7) B
- (8) A
- (9) C
- (10) A
- (11) A
- (12) C
- (13) B
- (14) D
- (15) B
- (16) C

(1) 文中の“deteriorate”と意味が最も近いのは

- A. worsen (悪くする)
- B. improve (改善する)
- C. measure (測定する)
- D. accelerate (加速する)

(2) 段落1によると、睡眠不足に関して正しいのは？

- A. It is a sign of dedication and hard work. (それは献身と勤勉の表れだ)
- B. It enhances intellectual performance over time. (時間の経過とともに知的パフォーマンスが向上する)
- C. **It is considered an act of irresponsibility and foolishness.** (それは無責任かつ愚かな行為であると考えられる)
- D. Most people have genes that allow them to function well on little sleep. (ほとんどの人は、少しの睡眠でも十分に機能できる遺伝子を持っています)

(3) 夏時間による睡眠時間の1時間の減少に関連する文章で言及されている主な健康への影響は？

- A. Increased focus and alertness (集中力と注意力の向上)
- B. Decrease in mental health issues (メンタルヘルス問題の減少)
- C. **Sudden increase in heart attacks** (心臓発作の突然の増加)
- D. Improvement in physical health (身体的健康の改善)

(4) 4段落によると、ノンレム睡眠ステージ3中の身体の機能に関して正しいのは次のうちどれですか？

- A. The immune system continues to work at the same pace as during the day. (免疫システムは日中と同じペースで働き続ける)
- B. **The body performs unique recovery processes that it does not do when awake.** (身体は、覚醒時には行わない独特の回復プロセスを実行する)
- C. Blood pressure levels significantly increase to support the body's recovery processes. (体の回復プロセスをサポートするために血圧レベルが大幅に上昇する)

D. Heart rate acceleration is a common occurrence to prepare the body for the next day. (翌日に備えて体を準備するために心拍数が上昇するのはよくあることだ)

(5) 文中の“multitude”と意味が最も近いのは

- A. limited (限られた)
- B. important (重要な)
- C. numerical (数の、数に関する)
- D. **lot** (多量)

(6) 4段落によると、十分な睡眠がマネージャーにとって特に重要なのはなぜ？

- A. It only influences their personal efficiency. (個人の仕事の効率にのみ影響を与える)
- B. **It impacts both their own and their team's performance.** (自分自身とチームの両方のパフォーマンスに影響を与える)
- C. It enables them to work more hours. (より多くの時間働くことができるようになる)
- D. Its main benefit is improving their physical health. (身体的健康を改善できるという利点がある)

(7) 5段落によると、リーダーにとってレム睡眠が重要な理由は？

- A. It enhances the ability to display positive emotions. (ポジティブな感情を表現する能力を高め)
 - B. **It improves team management by enhancing emotional signal reading.** (感情的なシグナルの読み取りを強化することで、チーム管理を改善する)
 - C. It increases the potential to influence as a leader. (リーダーとしての影響力が高まる)
 - D. It directly impacts the leader's motivational speeches. (リーダーのやる気を引き出すスピーチに直接影響する)
- A、Cも本文中では言及されているが、レム睡眠の作用として言及されているのはBのみである。

(8) 6段落によると、上司が睡眠の重要性を無視することは部下にどのような影響を与えますか？

- A. **Subordinates feel encouraged to prioritize work over sleep.** (部下は睡眠よりも仕事を優先するよう奨励されていると感じる)
- B. Subordinates become more efficient in their work. (部下の仕事の効率が向上する)
- C. The boss is seen as more committed and dedicated. (上司はより献身的で献身的であると見なされる)
- D. Subordinates gain a better understanding of professional duties. (部下がプロとしての責任についてより深く理解できるようになる)

(9) 7段落によると、試験前の詰め込みが奨励できない理由は？

- A. It significantly improves long-term retention. (長期保持力が大幅に向上する)
- B. It is an effective method for enhancing intelligence. (知性を高める効果的な方法だ)
- C. **It does not effectively aid in immediate test preparation.** (眼の前のテスト準備の助けにならない)
- D. It deteriorates our mental health. (精神的な健康を損ねる)

(10) 8段落によると、ノンレム睡眠とレム睡眠は記憶の固定にどのように寄与しますか？

- A. **Non-REM sleep removes unnecessary synaptic connections, and REM sleep strengthens them.** (ノンレム睡眠は不要なシナプス接続を除去し、レム睡眠はシナプス接続を強化する)

B. Non-REM and REM sleep both work to remove unnecessary memories. (ノンレム睡眠とレム睡眠はどちらも不要な記憶を除去する働きがある)

C. REM sleep eliminates weaker synaptic connections, while non-REM sleep creates new ones. (レム睡眠は弱いシナプス接続を排除しますが、ノンレム睡眠は新しいシナプス接続を作り出す)

D. Both non-REM and REM sleep are responsible for creating new synaptic connections. (ノンレム睡眠とレム睡眠の両方が、新しいシナプス接続を作成する役割を果たす)

(11) ノンレム睡眠とレム睡眠は記憶処理においてどのような役割を果たしますか？

A. Non-REM sleep clears unimportant items, while REM sleep organizes the remaining ones. (ノンレム睡眠では重要でないものが消去され、レム睡眠では残されたものが整理される)

B. Both non-REM and REM sleep remove redundant memories. (ノンレム睡眠とレム睡眠の両方で、冗長な記憶が削除される)

C. Non-REM sleep organizes all memories, and REM sleep removes unnecessary ones. (ノンレム睡眠はすべての記憶を整理し、レム睡眠は不要な記憶を削除する)

D. REM sleep floods the brain with memories, and non-REM sleep organizes them. (レム睡眠は脳に記憶を溢れさせ、ノンレム睡眠は記憶を整理する)

(12) ノンレム睡眠とレム睡眠が十分に取れないとどうなるか？

A. The brain optimizes its storage capacity more efficiently. (脳は記憶容量をより効率的に最適化する)

B. Information learned during the day is properly organized and fixed. (一日に学んだ情報が適切に整理され、定着している)

C. There is no space in the brain for new information the following day. (翌日には新しい情報を入れる余地が脳になくなってしまう)

D. The brain suffers the deficiency of energy during the day. (脳は日中エネルギー不足に陥る)

(13) ほとんどの人にとって推奨される睡眠時間はどれくらい？

A. Exactly 8 hours every night, regardless of personal differences. (個人差に関係なく、毎晩ちょうど8時間)

B. As long as needed to avoid feeling sleepy the next day. (翌日眠くならない程度に)

C. A minimum of 10 hours to ensure optimal health. (最適な健康状態を確保するには最低10時間は必要)

D. No more than 6 hours to maintain low mortality rates. (低い死亡率を維持するためには6時間以下が望ましい)

(14) 文中の”compensate”と意味が最も近いのは

A. alter or move something slightly in order to achieve the desired fit, appearance, or result (望ましいフィット感、外観、または結果を達成するために、何かをわずかに変更したり動かしたりすること)

B. persist in an activity or process (活動またはプロセスを継続する)

C. be a part of a whole (何かの全体の一部を構成する)

D. give someone something, typically money, in recognition of loss, suffering, or injury (損失、苦しみ、損害を認識し、埋め合わせる)

(15) 12段落によると、睡眠時間と死亡率の関係として正しいのは？

A. Longer sleep directly causes higher mortality rates. (睡眠時間が長いと、死亡率が高くなる)

B. There is a correlation, but it is not necessarily causal. (相関関係はあるが、必ずしも因果関係があるわけではない)

C. Elderly people need less sleep, which decreases mortality rates. (高齢者は必要な睡眠時間が短くなり、死亡率が低下する)

D. Serious diseases are cured by adhering to the 7 to 9 hours sleep benchmark. (重篤な病気は、7～9時間の睡眠基準を遵守することで治癒する)

(16) 必要な睡眠時間を決めるとき、何を考慮すべきか？

A. Ignore scientific evidence and trust only personal feelings. (科学的証拠を無視し、個人的な感情のみを信頼すべき)

B. Trust only clear, scientific conclusions about sleep. (睡眠に関する明確な科学的結論のみを信頼すべき)

C. Combine personal experience with scientific recommendations. (個人的な経験と科学的な推奨事項を組み合わせるべき)

D. Disregard personal senses and follow strict scientific guidelines. (個人の感覚を無視し、厳格な科学的ガイドラインに従うべき)