ENGLISH LEARNING FOR CURIOUS MINDS



Episode #107
Sleep
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Transcript

[00:00:00] Hello, hello hello, and welcome to English Learning for Curious Minds, by Leonardo English.

[00:00:12] The show where you can listen to fascinating stories, and learn weird and wonderful things about the world at the same time as improving your English.

[00:00:22] I'm Alastair Budge and today we are going to be talking about How We Sleep.

[00:00:29] Sleep is something that everyone in the world does, every single day, or at least we should do it every single day.

[00:00:37] Indeed, we will all spend anywhere from a quarter to a third of our entire lives asleep.

[00:00:45] Yet there is still quite a lot of mystery about what actually happens when we sleep, and why we sleep.

[00:00:53] So, that is what we're going to be talking about today, I hope it'll be an interesting one.

[00:00:59] Sleep is an activity that has **mystified**[1] people throughout the course of human history.

[1] confused because it could not be understood or explained

[00:01:08] Not just every human, but also every animal, needs to sleep, at least once every 24 hours.

[00:01:16] Humans normally sleep in one go, all at once, while other animals, dogs for example, tend to sleep in shorter periods, multiple times a day.

[00:01:28] We are **hardwired**[2] to do this, we need to sleep, there's no way of getting around the fact that after a certain period of time, no matter how much coffee you might have drunk or other **stimulants**[3] that you might have consumed, your body is going to need to sleep.

[00:01:46] But why do we need to do this?

[00:01:49] What biological reason is there that causes us to need to sleep?

[00:01:55] In fact, the answer to this question has **eluded**[4] scientists for centuries.

[00:02:01] We still don't know exactly what function sleep plays, we don't know exactly why we sleep.

[00:02:09] We do know that there must be a very good reason for it.

[2] naturally built from birth

[3] substances, such as caffeine, that make you feel more awake and active

[4] stayed impossible for them to find or understand

[00:02:13] Firstly, from an evolutionary point of view, sleeping is when an animal is most **vulnerable**[5] to attacks, if you're asleep you have a limited ability to defend yourself or even realise that a predator is **creeping up**[6] on you.

[00:02:31] So if there weren't a very good reason to do it, animals wouldn't have developed the biological requirement to sleep.

[00:02:40] Secondly, we know that we normally feel a lot better after we sleep. We feel refreshed, **re-energised**[7], and ready for the day.

[00:02:50] So something good must be happening.

[00:02:53] Conversely, if you haven't had enough sleep you feel tired, **grumpy**[8], unable to think clearly, and just generally, not very well.

[00:03:04] So if not sleeping is bad, and sleeping makes you feel better and refreshed, then it clearly plays an important role in our general **wellbeing**[9], even if we don't know exactly what role that is.

[5] easily hurt or attacked; unable to protect itself

[6] moving slowly and quietly closer without being noticed

[7] full of strength and life again

[8] in a bad mood and easily annoyed

[9] health and happiness

[00:03:19] Before the 1950s, people used to think that the function of sleep was just for you to be completely still, completely passive, with your brain almost on **standby**[10], not doing anything.

[00:03:35] While people didn't know why this was important, they thought that a period of **switching off**[11] was important, because of course everyone knows that you feel better after sleeping.

[00:03:49] As scientists started to do more research into why we sleep, it became clear that the brain is far from **switched off**[12], there is actually a lot of activity that is going on while we sleep, even though it may not look like it.

[00:04:06] If you see someone asleep, it certainly doesn't seem like there's a lot going on - their eyes are closed, they aren't moving, their heartbeat and breathing is slow.

[00:04:17] But beneath the surface, there's a lot of activity happening.

[00:04:22] While we don't know exactly what function sleep plays, it's now believed that the brain is engaging in a number of different activities that are **crucial**[13] for our quality of life.

[10] a resting state, ready to start working again when needed

[11] stopping all activity and resting completely

[12] inactive and doing nothing

[13] extremely important

[00:04:34] While it's hard to say exactly what sleep is doing just by analysing people sleeping, it's easier to study the consequence of people not getting enough sleep and **hypothesise**[14], well, sleep must be doing something that stops people developing these problems.

[00:04:54] And as I'm sure you know, not getting enough sleep is linked to **all manner**[15] of different negative health consequences, from heart problems to a risk of **obesity**[16], from a weakened **immune system**[17] to depression and anxiety.

[00:05:10] It's clear that we need to sleep to avoid these kinds of health conditions, but scientists still don't know exactly why.

[00:05:20] What we do have some idea about though, is what happens to our bodies when we sleep, and the different stages of sleep.

[00:05:30] To an outside observer, it might seem like you just close your eyes and wake up several hours later, refreshed and **re-energised**.

[00:05:40] But our sleep is divided into two different categories of sleep, what's called Rapid Eye Movement, or REM, sleep and non-REM sleep, and you can split this further to give four **distinct**[18] stages of sleep, which are repeated throughout a normal night.

[00:06:01] The first stage of non-REM sleep is when you go from being awake to being asleep.

[14] suggest a possible explanation that has not yet been proved

[00:06:08] This normally isn't an immediate process, you feel yourself fall towards sleep, and you **drift off**[19].

[00:06:17] What's happening to your body is that your brain is beginning to slow down, your muscles are starting to relax, and your eyes stop moving.

[00:06:28] This part normally lasts less than 5 minutes. This isn't that it takes everyone only 5 minutes from when they start trying to go to sleep to falling asleep, for lots of people it takes a lot longer, but this period of actually falling asleep typically takes around 5 minutes.

[00:06:50] The second stage of non-REM sleep is the period of light sleep before you start to sleep deeply.

[00:06:58] By this time your heartbeat and your breathing have slowed, your muscles have relaxed even more, and your eyes have completely stopped moving.

[00:07:09] This stage normally lasts about an hour, and is the longest of the four stages of sleep.

[00:07:17] Then it's on to stage 3, we're still in the non-REM type here, and this is when everything slows to its slowest during the night.

[15] many different kinds

[16] the condition of being very overweight in an unhealthy way

[17] the body's natural defence against illness and infection

[18] clearly different and separate

[19] gradually fall asleep

[00:07:28] It's thought to be the part when you are most deeply asleep, it's hardest to wake you, and if you are woken up during this part you won't feel particularly refreshed.

[00:07:40] This stage only lasts for around 20 minutes in general.

[00:07:45] The final stage of sleep, stage 4, is REM sleep, rapid eye movement sleep.

[00:07:52] If you've been adding up the numbers now, this normally happens around 90 minutes after you fall asleep.

[00:08:00] Even though your eyes are still closed and you're still very much asleep, your brain activity starts increasing again, and your eyes move around quickly, hence the name, Rapid Eye Movement.

[00:08:13] Your breathing becomes faster and less regular, and your muscles start to tighten, to be almost **paralysed**[20], unable to move.

[00:08:23] It's during this phase of sleep that we dream.

[00:08:27] Now, dreaming is too large a subject to **cram**[21] into this one episode, so I think we'll need to do another episode just on dreaming, but here's an overview of some of the theories about why we dream, and what happens when we dream.

[00:08:46] If sleep is still mysterious to us, dreaming is even more so.

[20] completely unable to move

[21] force or squeeze into a space that is too small

[00:08:52] There's no obvious biological reason why we dream, and it's a magical experience that all humans share.

[00:09:01] The current theories about why we dream are mainly based around the fact that it helps us process our emotions.

[00:09:11] Throughout history people have tried to **interpret**[22] their dreams, and while most people now don't believe that our dreams show us what's going to happen in the future, they are a way of processing what has happened during the day, and often reflect emotions that we felt during that day.

[00:09:32] It's thought that dreams happen because the brain creates random electrical activity, and the **analytical**[23] part of our brain, the part that processes and **interprets**[24] information, tries to process what's going on.

[00:09:51] We don't normally have any control over how our brains **interpret** this activity, which is why you can't control what you want to dream about, it just happens.

[00:10:03] In a normal night's sleep of between 7 and 9 hours we normally spend around 2 hours dreaming, but the most intense periods of the dream might only take a few minutes, with the most **vivid**[25] and longest dreams normally taking place at the

[22] work out the meaning of

[23] using careful, logical thinking

[24] works out the meaning of

[25] very clear and detailed, as if real

very end of our sleep, which is why we often wake up in the morning from a dream and it seems very real.

[00:10:30] Indeed, unless you wake up immediately after a dream, it's normally forgotten.

[00:10:37] 95% of dreams are believed to be forgotten, and there are some people who say that they never remember any dreams.

[00:10:47] So, dreams are complicated, both evolutionarily speaking why we dream, if indeed there is an evolutionary reason, and what actually happens when we dream.

[00:10:59] One thing you might be left wondering though is how do we know when we need to go to sleep?

[00:11:06] This is actually something that we do know, unlike why we sleep or why we dream.

[00:11:12] Our bodies regulate our sleep in two ways.

[00:11:15] Firstly, something called **homeostasis**[26].

[00:11:18] It's a technical term, but it's essentially an internal **timer**[27] on how long we've been awake for.

[26] the body's natural way of keeping things balanced, such as its need for sleep

[27] a device that measures how much time has passed

[00:11:26] As you know, the longer you've been awake, the more you need to go to sleep.

[00:11:30] Our bodies need a certain amount of sleep, depending on factors like our age, and **homeostasis** is what makes us feel tired if we haven't slept enough, and eventually what sends our bodies to sleep if we are seriously sleep **deprived**[28].

[00:11:47] The other factor that regulates our sleep is the **circadian**[29] alerting system, your body's daily biological clock.

[00:11:57] Our bodies are naturally programmed to be awake when it's light outside, and we fall asleep more naturally when it's dark outside.

[00:12:07] There are, of course, lots of things that can **alter**[30] this - from **stimulants** like caffeine and cigarettes to being exposed to light in the night time, there are lots of things that can **disrupt**[31] our body's natural rhythms, but we are **hardwired**, we are biologically programmed, to feel tired at certain times of the day, and having a sleep pattern that's **radically**[32] different to this, for example working night shifts, can be very difficult to adjust to.

[28] lacking enough of something that is needed

[29] relating to the body's natural 24-hour cycle

[30] change

[31] disturb or upset the normal pattern of

[32] in a very big and basic way

[00:12:41] We're going to end this episode with an idea about sleep that I became really interested in when I was a student, and it's the concept of **polyphasic**[33] sleep, of sleeping multiple times during the day, for short periods.

[00:12:58] As I said at the start of the episode, humans generally sleep all in one go. Other animals, such as dogs, sleep in smaller **batches**[34] throughout the day.

[00:13:10] But what would happen if we slept in small **batches**, like dogs do?

[00:13:16] Indeed, this isn't just a theory, it's not just a 'what if' situation.

[00:13:21] It's called **polyphasic** sleep.

[00:13:24] There are some famous people from history who were reportedly **polyphasic** sleepers, and the people who do it today claim that it's an incredibly liberating life change, and it has a **devoted**[35] following.

[00:13:40] The idea is that you can sleep for short periods of time throughout the day, meaning you end up sleeping a lot less than you would do if you slept just once during the night.

[00:13:51] To give you a working example, one idea of **polyphasic** sleep is to sleep once every 4 hours, but only for 20 minutes at a time.

[33] with sleep split into several short periods across the day

[34] separate amounts or periods

[35] very loyal and enthusiastic

[00:14:02] This means that you end up sleeping for just 120 minutes, 2 hours, during every 24 hour period, which obviously means that you have a lot more time to do other things.

[00:14:16] **Proponents**[36] of **polyphasic** sleep point at people such as Napoleon, Leonardo Da Vinci, and Nikola Tesla, who were all supposed **polyphasic** sleepers.

[00:14:28] The theory goes that if you get into the rhythm of sleeping **polyphasically**[37] you can go to sleep immediately, and wake up feeling refreshed 20 minutes later, then have another 4 hours of being awake, then sleep again, wake up feeling refreshed, and this just goes on forever, **in perpetuity**[38].

[00:14:49] Although it's quite an interesting concept, especially for those of us who think that there are never enough hours in the day, most serious sleep scientists are pretty **wary**[39] of this, and there haven't been any long term studies on the health effects of living and sleeping in this way.

[00:15:09] Indeed, if you end up having 6 more waking hours every day but you **drop dead**[40] 20 years earlier, I wonder how many people would still be interested in becoming **polyphasic** sleepers.

[36] people who support an idea and argue in favour of it

[37] in several short periods across the day

[38] for all time, without ever ending

[39] careful and not fully trusting

[40] die suddenly

[00:15:25] OK then, that is it for this little look at How We Sleep.

[00:15:30] I hope it's been an interesting one, that it's **shone a little light**[41] onto this **crucial** part of being a human, although it's clear that there is a lot that we still don't know.

[00:15:42] As always, I would love to know what you thought of this episode.

[00:15:46] Do you remember your dreams?

[00:15:47] Have you ever dreamt in English, or in a foreign language? Have you tried **polyphasic** sleep?

[00:15:54] I'd love to know. The place to go for all of that is our community forum, which is at community.leonardoenglish.com

[00:16:02] You've been listening to English Learning for Curious Minds, by Leonardo English.

[00:16:07] I'm Alastair Budge, you stay safe, and I'll catch you in the next episode.

[END OF PODCAST]

[END OF EPISODE]

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[41] helped you understand a bit more about

Key vocabulary

Word	Definition
Mystified	confused because it could not be understood or explained
Hardwired	naturally built from birth
Stimulants	substances, such as caffeine, that make you feel more awake and active
Eluded	stayed impossible for them to find or understand
Vulnerable	easily hurt or attacked; unable to protect itself
Creeping up	moving slowly and quietly closer without being noticed
Re-energised	full of strength and life again
Grumpy	in a bad mood and easily annoyed
Wellbeing	health and happiness
Standby	a resting state, ready to start working again when needed

Switching off	stopping all activity and resting completely
Switched off	inactive and doing nothing
Crucial	extremely important
Hypothesise	suggest a possible explanation that has not yet been proved
All manner	many different kinds
Obesity	the condition of being very overweight in an unhealthy way
Immune system	the body's natural defence against illness and infection
Distinct	clearly different and separate
Drift off	gradually fall asleep
Paralysed	completely unable to move
Cram	force or squeeze into a space that is too small
Interpret	work out the meaning of

Analytical	using careful, logical thinking
Interprets	works out the meaning of
Vivid	very clear and detailed, as if real
Homeostasis	the body's natural way of keeping things balanced, such as its need for sleep
Timer	a device that measures how much time has passed
Deprived	lacking enough of something that is needed
Circadian	relating to the body's natural 24-hour cycle
Alter	change
Disrupt	disturb or upset the normal pattern of
Radically	in a very big and basic way
Polyphasic	with sleep split into several short periods across the day
Batches	separate amounts or periods

Devoted	very loyal and enthusiastic
Proponents	people who support an idea and argue in favour of it
Polyphasically	in several short periods across the day
In perpetuity	for all time, without ever ending
Wary	careful and not fully trusting
Drop dead	die suddenly
Shone a little light	helped you understand a bit more about

Language spotlight

1. Creep up on someone

- **Meaning**: To move slowly and quietly towards someone so that they do not notice you coming.
- **Synonyms**: sneak up on, steal up on, approach silently
- **Antonyms**: approach openly, announce yourself, back away
- **Examples**:
    - The cat **crept up on** the bird, but it flew away just in time.
    - My little brother loves to **creep up on** me and shout "Boo!"

2. Switch off

- **Meaning**: To stop thinking about work or problems and relax completely.
- **Synonyms**: unwind, relax, wind down
- **Antonyms**: stay alert, concentrate, focus
- **Examples**:
    - I find it hard to **switch off** after a busy day at work.
    - On holiday, she leaves her phone in the hotel so she can really **switch off**.

3. All manner of

- **Meaning**: Many different kinds of something.
- **Synonyms**: all sorts of, every kind of, a wide variety of
- **Antonyms**: just one kind of, a single type of, very few kinds of
- **Examples**:
    - The market sells **all manner of** fruit and vegetables.
    - We talked about **all manner of** things, from football to philosophy.

4. Drift off

- **Meaning**: To fall asleep slowly and gently.
- **Synonyms**: nod off, doze off, drop off
- **Antonyms**: wake up, stay awake, lie awake
- **Examples**:
    - I usually **drift off** within a few minutes of starting to read in bed.
    - He **drifted off** during the film and missed the ending.

5. Shine a light on

- **Meaning**: To help people understand something better by giving information about it.
- **Synonyms**: shed light on, explain, clarify
- **Antonyms**: confuse, obscure, cover up
- **Examples**:
    - This book **shines a light on** the lives of factory workers in the 19th century.
    - The report **shone a light on** problems that had been hidden for years.

Quiz

Listening Comprehension Multiple Choice Questions

1. Why does the podcast say there must be a very good reason for sleep, from an evolutionary point of view?

a) Animals only ever sleep when they are completely safe

b) Sleep helps animals become stronger and better hunters

c) Sleep leaves animals open to attack, yet they still do it

d) Animals that sleep less tend to live much shorter lives

2. Before the 1950s, what did people think the function of sleep was?

a) To let the brain carry out a lot of important work

b) To be completely still, with the brain doing almost nothing

c) To give the body time to process the day's emotions

d) To allow the body to grow and repair its muscles

3. Which stage of sleep is the longest of the four?

a) The first stage, when you go from being awake to asleep

b) The second stage, a period of light sleep before deep sleep

c) The third stage, when you are most deeply asleep

d) The fourth stage, the rapid eye movement (REM) stage

4. According to the current theories mentioned in the podcast, why do we dream?

a) To show us what is going to happen in the future

b) To let the analytical part of the brain rest completely

c) To help the body recover from the day's physical activity

d) To help us process our emotions from the day

5. What is the attitude of most serious sleep scientists towards polyphasic sleep?

a) They are cautious, as there are no long-term studies on it

b) They recommend it to people who work night shifts

c) They have proved that it leads to heart problems

d) They believe it explains the success of Napoleon

True or False

6. Dogs tend to sleep in shorter periods, several times a day. (True/False)

7. The first stage of non-REM sleep, the period of actually falling asleep, typically lasts about an hour. (True/False)

8. REM sleep normally starts around 90 minutes after you fall asleep. (True/False)

9. Around 95% of dreams are believed to be forgotten. (True/False)

10. Our bodies are naturally programmed to be awake when it is dark outside. (True/False)

Fill in the Blanks

11. If you’re asleep you have a limited ability to defend yourself or even realise that a predator is _____ up on you.

12. Not getting enough sleep is linked to all _____ of different negative health consequences.

13. Dreaming is too large a subject to ____ into this one episode.

14. Wake up feeling refreshed, and this just goes on forever, in _____.

15. If you end up having 6 more waking hours every day but you drop ____ 20 years earlier, I wonder how many people would still be interested in becoming polyphasic sleepers.

Vocabulary Practice

16. What does "**eluded**" mean when the podcast talks about why we need to sleep?

a) Stayed impossible for them to understand

b) Been studied very closely by them

c) Been explained clearly to them

d) Seemed boring and unimportant to them

17. In the podcast, what does "**grumpy**" mean when describing how you feel without enough sleep?

a) Hungry and in need of food

b) Slow and unable to get up

c) Worried about the coming day

d) In a bad mood and easily annoyed

18. What does "**vivid**" mean in the description of the dreams at the end of our sleep?

a) Short and quickly forgotten

b) Frightening and unpleasant

c) Very clear and seeming real

d) Strange and hard to explain

19. What does "**devoted**" mean when the podcast says polyphasic sleep has a "devoted following"?

a) Small but slowly growing

b) Very loyal and enthusiastic

c) Mainly made up of scientists

d) Critical and full of doubt

20. In the podcast, what does "**wary**" mean when describing how sleep scientists feel about polyphasic sleep?

a) Excited and keen to try it

b) Bored of hearing about it

c) Careful and not fully trusting

d) Angry and openly against it

Answers

1. c) Sleep leaves animals open to attack, yet they still do it
2. b) To be completely still, with the brain doing almost nothing
3. b) The second stage, a period of light sleep before deep sleep
4. d) To help us process our emotions from the day
5. a) They are cautious, as there are no long-term studies on it
6. True
7. False
8. True
9. True
10. False
11. creeping
12. manner
13. cram
14. perpetuity
15. dead
16. a) Stayed impossible for them to understand
17. d) In a bad mood and easily annoyed
18. c) Very clear and seeming real

19. b) Very loyal and enthusiastic

20. c) Careful and not fully trusting