



SLEEP

We think that we sleep to rest and repair our bodies...but we do it to help our brains recover. The front part of our brain, the frontal cortex, is what does our thinking all day long. Our brains need a rest from all that thinking.

We can actually go a whole week without sleep before we show physical strain, but just a night without sleep can make us feel pretty rotten. It also affects our reaction times and our ability to deal with new information, which is why it's not a good idea to drive when you're sleepy, or you find you can't play computer games that well when you're tired.

How much sleep?

How many hours of sleep do you have each night? Think about what time you went to bed last night...and then what time you woke up this morning? How many hours of sleep is that? Did you have any naps inbetween?

We need around 10 hours of sleep when we're at school. Most adults should have 7-8 hours of sleep.

Food and Drink

We usually eat, drink, sleep and poo at certain times – these activities are all linked to our daily rhythm – our circadian rhythm.

Do you know of anything that can help you sleep better? How many of you have heard that a glass of warm milk can help you sleep better at night?



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Dairy products are high in tryptophan, an amino acid (protein building block) that converts to serotonin (neurotransmitter) and melatonin (hormone) in the brain. These chemicals help us sleep.

Coffee isn't good for helping us sleep. The caffeine in coffee stimulates our central nervous system and can keep us awake.

Reaction times

How good is your reaction time? Do you think you might be a little tired, and perhaps need more sleep?

This activity is designed to measure your reaction time in catching a dropped ruler. Do this in groups or with a friend.

You will need:

- A ruler.
- A friend.
- Distance-reaction time chart (also available on the Physoc website, see below).

The activity:

- Ask all participants to get into pairs. One person in the pair will be the test-subject, and we're going to find out their reaction time.
- The test-subject needs to sit with their forearm on a table surface so their hand sticks out over the edge.
- Ask the friend to hold the ruler with the zero end just above, but not touching, the test-subject's thumb and fingers.



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- Ask the friend to release the ruler without telling the test-subject when they are going to let the ruler go.
- The test-subject must catch the ruler as quickly as they can between their thumb and fingers, and record the centimetre-mark where they caught the ruler.

Participants can repeat this (to find the average), with their friends changing the waiting time before each drop. Everyone can swap partners and find out their friend's reaction times too.

Ask everyone to convert the distances into reaction times with the chart given below. Who has the better reaction time (i.e. who is the most alert)?

Catch distance (cm)	Reaction time (seconds)	Catch distance (cm)	Reaction time (seconds)
1	0.05	16	0.18
2	0.06	17	0.19
3	0.08	18	0.19
4	0.09	19	0.20
5	0.10	20	0.20
6	0.11	21	0.21
7	0.12	22	0.21
8	0.13	23	0.22
9	0.14	24	0.22
10	0.14	25	0.23
11	0.15	26	0.23
12	0.16	27	0.24
13	0.16	28	0.24
14	0.17	29	0.24
15	0.18	30	0.24



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**Further information:**

- The Physiological Society Reaction Ruler experiment: <http://www.understanding-life.org/reactions> (and where to get your own Reaction Ruler, and to submit your data).
- What sleep is and why all kids need it: http://kidshealth.org/kid/stay_healthy/body/not_tired.html



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