



What's Work Got To Do With Sitting?

Guest: Dr. Andrew McHill, Ph.D.

Host: Sam Greenspan, M.P.H.

- Sam Greenspan:** [00:00](#) Before we discuss how sleep can affect your health and productivity, we wanted to find out how much sleep people in our Portland community get, and what strategies they use. To find out, we sent our very own Helen Schuckers.
- Helen Schuckers:** [00:11](#) So how much sleep did you get last night, and why?
- Community:** [00:14](#) Five hours, 'cause I stayed out late with some friends and I had to get up early for work.
- Community:** [00:18](#) I usually sleep about four and a half hours. What happens is I'll wake up and I'll start thinking about work and about other things. And then I have a real difficulty getting back to sleep.
- Community:** [00:28](#) I got about eight and a half hours of sleep because I fell asleep with my child, putting him down. But I usually get about six hours of sleep because I try to get a lot of housework done or other projects that I'm working on after the kids are in bed.
- Community:** [00:43](#) I'd say about seven hours.
- Helen Schuckers:** [00:45](#) Well, that's a pretty good amount. So on the days you don't get enough sleep, what do you do to stay awake?
- Community:** [00:52](#) I try to just drink one cup of coffee a day, so I drink my coffee in the morning. But then if I didn't get enough sleep I'll add tea or some kind of other caffeinated beverage to keep me awake in the afternoon cause that's really where I start to plummet.
- Helen Schuckers:** [01:02](#) So did you have caffeine today?
- Community:** [01:04](#) I haven't had any caffeine yet.
- Community:** [01:06](#) I had one cup of coffee, which is about 12 ounces, today.

- Helen Schuckers:** [01:11](#) Have you ever gone to work after a bad night of sleep? How productive were you at work the next day? Did it make you eat any differently? Drink more coffee? How about more than one night of bad sleep? Do you work the night shift? How does it affect you at work and outside of it? Sure, sleep happens at home, but doesn't your work affect it too? So what's work got to do with it?
- Helen Schuckers:** [01:36](#) Today, we'll be speaking with Dr. Andrew McHill to learn more about how sleep can impact our health, our health habits, and the implications this may have for the workplace. Andrew will help us understand what happens to our bodies when our sleep patterns are disrupted, and what we can do to help improve our sleep schedules.
- Helen Schuckers:** [01:53](#) Dr. Andrew McHill is a scientist at the Oregon Institute of Occupational Health Sciences. He has a PhD in Integrated Physiology with a focus on sleep and Circadian Physiology from the University of Colorado at Boulder. Before joining us here at the institute, Andrew was a Postdoctoral fellow at the Brigham and Women's Hospital in Harvard Medical School in the division of sleep and circadian disorders. Dr. McHill is interested in understanding the mechanisms of which insufficient sleep and disruptive circadian rhythms can lead to adverse health effects and more cognitive performance.
- Sam Greenspan** [02:26](#) Andrew, thank you so much for joining us this morning. So what drew you to study sleep?
- Andrew McHill:** [02:30](#) Well, I actually kinda stumbled into it when I was an undergrad. I saw an advertisement to work at a sleep lab, and I thought, "This would be a great idea", you know to be able to work at night and then go to school during the day. So I started the job, and I realized that, when I was working at night, I actually felt pretty terrible and wondered how people could do it and it really got me into studying what happens when you work at night and what are the consequences. And I just love it because everybody has a sleep story, everybody knows somebody with a sleep problem, so it's really easy to talk to people about, you never have an awkward haircut, because they can always talk to you about something about sleep. And it's just really neat to be able to engage people with your research that way.
- Sam Greenspan:** [03:11](#) That's really interesting. You started to study sleep, but you really inspired to continue studying because of the impact that studying sleep at night had on you.

Andrew McHill: [03:18](#) Yeah, exactly, and how I felt the next day, trying to do class and realize that, might not have been a great idea, but then I kept doing it for the rest of my life. So, I don't know I'm a hypocrite, I guess [Laughs]

Sam Greenspan: [03:30](#) Well, you work during the day here, right?

Andrew McHill: [03:32](#) Well, sometimes. It all depends. [Laughs]

Sam Greenspan: [03:35](#) So you've also done some research on camping, and how camping can affect sleep. Will you tell our listeners a little bit more about that study?

Andrew McHill: [03:41](#) Yeah sure, so it was when I was a grad student in Colorado, my advisor had always wanted to study the impact of artificial light on the clock. So, we know that artificial light can impact your internal, biological clock, but no one knew to what extent it really did, because we can change our light/dark cycle just by flipping the switch. So, we had this idea since we were all very outdoorsy in Colorado, to go out backpacking for a week without using any artificial light. No cell phones, no flashlights, anything that emitted light, we didn't use, except for a campfire, which actually emits very little light, it's just really dark all around.

Sam Greenspan: [04:16](#) Would the light from the fire be the same as the artificial light, in terms of the impact it has on your brain?

Andrew McHill: [04:21](#) No, it doesn't, because it's a different wave length of light, and it's actually a very small amount of light. So, it seems really bright when you're out there because there's no other light around besides the moon, which also has very little light, so it doesn't impact your clock.

Sam Greenspan: [04:35](#) Okay. So, what was the result?

Andrew McHill: [04:37](#) So, we compared the week of camping without any artificial light to a week of just living in your modern day electrical light/dark cycle, and we found that when you went camping without artificial light, it actually advanced your clock by about two hours. It really synced you up to the timing of sundown and then also sunrise. So the only time you had additional light during the electrical light/dark cycle was after sundown, so in that two hours, and that's when it can really disrupt your clock and disrupt your sleep. We did that in the summer, and we also did that in the winter, which wasn't as much fun, because it's really cold to go winter camping in Colorado.

- Sam Greenspan:** [05:14](#) And there's less light, right?
- Andrew McHill:** [05:15](#) Yeah, and there's less light. So we wanted to see what seasonal effects had, and we found that it actually elongated your night, so you went to sleep during the winter earlier by about two hours, and your clock was longer by about two hours as well, and so, midnight really fell right at midnight.
- Sam Greenspan:** [05:30](#) Would there be a difference between whether someone camped for a week, or for the night?
- Andrew McHill:** [05:35](#) Yeah. Well during our winter camping study, we also had individuals do it for a weekend, because most individuals probably aren't gonna be able to go camping for a week, especially during the winter. So, we also wanted to test the effects of camping for just a weekend without any artificial lighting. And we found just two days of camping without artificial lighting had 70% of the effect of a week. So, we don't know how much one day does versus two days, but we do know that two days does lead to a 70% effect. That's still a pretty dramatic shift in your clock, it does improve your sleep by quite a bit. Just that weekend getaway could really be beneficial.
- Sam Greenspan:** [06:09](#) In a natural setting you'd sleep a little bit more than, in the winter time?
- Andrew McHill:** [06:12](#) Yeah, in the winter time for sure, because your internal night is actually longer because humans are actually seasonal, but we kind of mask our seasonality by being able to flip the switch during the winter.
- Sam Greenspan:** [06:22](#) Was there any impact or any measurement of the exercise that you might get when you're camping versus just kinda commuting in the city?
- Andrew McHill:** [06:28](#) Yeah, we did measure that as well, we measured activity, and our activity levels did go up during camping because we were hiking during the day, and we took all of our participants on these pretty crazy hikes, because we needed to do things while we were camping because there's no electronic devices, so what do you do? You go hiking. So, that definitely could have played a role in how well the individual slept during camping, but it wouldn't have influenced the clock, because light is the major synchronizer of the clock, and so light is really what was driving that.
- Sam Greenspan:** [06:58](#) So it wouldn't have affected the quantity of the sleep and maybe the quality?

- Andrew McHill:** [07:02](#) Potentially, yeah. We didn't really measure that, we didn't have a great measurement of that sleep, we'd have to do that in the laboratory to really get a great measurement of the sleep. But, it definitely influenced sleep.
- Sam Greenspan:** [07:13](#) It sounds like the modern environment isn't very conducive for healthy sleep.
- Andrew McHill:** [07:17](#) Well not particularly, I mean the problem with sleep is that we only go to sleep when we are sleepy and if there are all these other things to do, going to drive us to stay awake later. You know, you can always watch another episode on Netflix or you can, you know be scrolling through your phone and seeing what's going on, on Instagram, so your priorities do kinda shift to being able to do something while awake rather than going to sleep.
- Sam Greenspan:** [07:40](#) Yeah, it sounds like the environment has a huge impact, but then we also have all this access to apps on our phones, so the artificial light from our phone might be making our sleep worse, but then is the app helping. What is your opinion on those things?
- Andrew McHill:** [07:51](#) Yeah, it is kinda a double edge sword because if you are using your phone to look at this apps then you are getting exposed to that light, which could disrupt sleep and your clock. What you can do is put a filter on your phone to help kinda block the blue wavelength light, which tends to be the most powerful light to shift your clock or disrupt your sleep. So you can do that. But the apps, the jury is still out of on a lot of those apps, but I think if they make you feel better about how you are sleeping that has to account for something, So, if you are feeling better the next day because your app is telling you, you're getting sufficient sleep or you're getting enough sleep then I think there is definitely a benefit to that. But as far as it helping to promote good sleep and so on, I don't think the data is out on that.
- Sam Greenspan:** [08:36](#) If you're in a work place where you work non-traditional hours, it sounds like using the app may or may not help, but if these work places are more aware of the screen that you are talking about blocking the blue light that might be helpful to them?
- Andrew McHill:** [08:47](#) Yeah, potentially, but you have to be careful with that as well cause if you are working a night shift and you are doing a safety sensitive job such as flying an airplane or performing a surgery or something, you do want those people to be alert, so the light might not be such a bad thing if it has an alerting effect. So, it's kinda, a little bit of a case to case basis which I think is what

makes it so hard because as sleep professionals, we are trying to help people in the workplace there is no just cut and dry solution. Not everyone needs to go to sleep at the same time or needs to wake up at the same time. So, it is very much on a case to case basis.

Sam Greenspan: [09:24](#)

Yeah and so what are some of the consequences that our modern environment might have on non-traditional hours at work?

Andrew McHill: [09:30](#)

Yeah, so not getting enough sleep leads to performance [inaudible 9:34] the next day and chronically, so we shown that just getting about five and a half hours of sleep a night and just three-week lead to a five-fold increase in the number of attentional lapses during daytime wakefulness.

Andrew McHill: [09:46](#)

So just chronically not getting enough sleep can have impacts. Memory isn't as good, so other studies have shown that if you learn something new, if you don't get sleep the next night, you don't continue learning. Were as if you get sleep, you have these very dramatic increases in your ability to perform the task again. There are metabolic consequences, so we know that insufficient sleep and eating at the wrong time, so eating when your body is supposed to be asleep leads to weight gain, trouble with glucose metabolism, which done for enough time could lead to diseases such as diabetes. There is various evidence showing that eating during the night can even cause certain types of cancer. So, we are really on the cutting edge of learning all of this stuff. I know just you and the organization of occupational sciences, we really are just on the edge of looking at some of this stuff, so it really is just an exciting time for sleep researchers.

Sam Greenspan: [10:35](#)

I think I saw your name on a study at our institute's summer intern poster presentation that looked at the impact of diet on sleep, right?

Andrew McHill: [10:43](#)

Yeah, so we didn't really look at it in so much as how it influenced sleep, but we looked at how the timing of which you eat your meals could impact your metabolism in your body compensation. So, when I was in Boston, we did a study where we looked at college undergraduates and how the timing of the meals in reference to their internal clock would influence their body compensation and we found that people that ate later or more towards the time that they go to sleep had a higher percent body fat than those who ate earlier. And so over the summer, I had an intern look into this further and see if eating very early in the morning, how that influenced body

compensation and she found that the earlier that the individuals ate that it tended to have a potential protective affect to eating high body fat percentage.

Sam Greenspan: [11:29](#) Oh wow so that really puts the emphasis on eating more in the morning, really trying to limit your intake at night?

Andrew McHill: [11:35](#) Yeah and even interestingly, I didn't mention this before, but when we did it in Boston we found that it didn't matter what the participants were eating or how much they were eating, what matter was when they were eating. The time of your clock may influence your body compensation.

Sam Greenspan: [11:50](#) Sleep has impacts on the health of workers, as well as their ability to be productive and be effective workers.

Andrew McHill: [11:55](#) Exactly, so both cognitively and metabolically.

Sam Greenspan: [11:59](#) Are there some other ways we can get around these health and productivity affect without getting more sleep? I know a lot of folks tend to compensate with caffeine, but is it a healthy solution over time? Are you able to catch up on the weekend or by taking naps?

Andrew McHill: [12:11](#) Well this is a tough question because it's definitely a lot of ongoing research. If you are feeling tired there a lot of things you can do, such as taking caffeine, but it's kinda like putting a bandage on a really big wound where it will help for a little bit, but eventually that sleep driver or sleep pressure is going to catch up on you. By taking caffeine, you may be disrupting future sleep, so we have a study that we published that shows that taking caffeine, the size of about a double shot of espresso from Starbucks, five hours before sleep could still disrupt sleep. You will have less of the deep sleep, restorative sleep and more awakenings during the night. Also, we've shown that caffeine during the late night can also influence your clock, so that can further exacerbate problems.

Andrew McHill: [12:52](#) Naps are very good. I suggest naps especially if you are feeling tired while driving. If you can pull over to a nice safe stop and just take about a twenty minute nap that should help to be restorative. Because if you are starting to fall asleep while you are driving, there is no real way to recover that besides going to sleep for a little bit. That's the only safe way even if home is not that very far away, it's probably a good idea to just pull over to a safe spot and just take a quick power nap. But naps are good, but you also have to be careful when you nap, when you wake up you might feel somewhat groggy, so you might want to give

yourself a couple minutes before you start to drive again or you are doing something that requires lots of attention. To give yourself a couple minutes.

Sam Greenspan: [13:27](#)

Yeah and I noticed you said you recommend twenty-minute nap, as opposed to a longer nap because maybe it wouldn't be as restorative?

Andrew McHill: [13:35](#)

Well, it might be more restorative, but you're more likely to wake up groggier if you take a longer nap, so we think twenty minutes is kind of, a good duration to restore some of that sleep pressure, you're not gonna knock all of it down, you're trying to just catch up just a little and then you can do whatever it is that you are doing and then get a full night sleep after that. But, twenty minutes seems to be a good amount to restore a little bit of that sleep pressure, but not be as groggy when you wake up. Right, if you sleep for longer, you will restore more of that pressure, but you will feel groggier when you wake up.

Sam Greenspan: [14:06](#)

Right and it might make you it harder to fall asleep later on?

Andrew McHill: [14:08](#)

Right, exactly and then kinda doing it again the next day. So just a shorter amount seems to be good.

Sam Greenspan: [14:13](#)

At the institute, we try to develop interventions for all types of workers who work non-traditional work hours. For example, Dr. Ryan Olsen is studying long haul team truck drivers who drive more than ten hours a day, for sixty hours a week. Of course, driving drowsy can be very risky. Also, drivers have trouble sleeping when their partner driving because of the noise and the vibrations from the truck and the hot or cold temperatures and so a lot of our researchers are investigating the effects of installing a therapeutic mattress in a seat, in addition to teaching the drivers about the proper sleep practices, some of which you have already told us about. We would like to end this giving our listeners some take aways about sleep and if there are any resources you recommend that organizations should be aware about.

Andrew McHill: [14:55](#)

Yeah, so that I think the biggest take away is that you just really can't cheat your body of sleep. You know it is one of the three fundamental things that you need. You know you need to be able to eat well, you need to exercise, and then you also need to sleep well. And it is something that our society as a whole kinda discounts because you feel like you can get away without getting enough sleep, but you are really cheating your body in a number of ways. More than we have time to count and talk about today.

Andrew McHill: [15:20](#) So I think that is kind of the major take away. Try to prioritize sleep to the best of your ability because it will just help you function at your best. Then a couple resources that people can look at, The National Sleep Foundation has a great website with lots of tips and lots of facts about what sleep trends are like and how you can make your bedroom conducive to sleep. And then Harvard Medical School, they have a sleep for safety website, in which it has a lot of videos on it and a lot of tips and things people can use within the division of sleep and circadian disorders at Harvard Medical School and Brigham and Women's Hospital. So, I think that's a really great resource and it even has a video with Shaquille O'Neal getting a sleep screen and stuff like that so it's kinda fun. And I know, our director Stephen Shea put in a lot of work to help produce that and to make that website.

Sam Greenspan: [16:06](#) Right, he's a sleep researcher as well.

Andrew McHill: [16:08](#) Yes.

Sam Greenspan: [16:09](#) Andrew, thank you so much for joining us today.

Andrew McHill: [16:11](#) Thanks for having me.

Sam Greenspan: [16:12](#) And sharing with our listeners, all your expertise and all the important work that you do.

Andrew McHill: [16:14](#) Alright, thank you.

Helen Schuckers: [16:17](#) You're listening to "What's Work Got to Do With It?", your go to resource on all things work safety, health, and well-being. This has been an episode of our podcast series where we invite you into the conversation, as we discuss how our work place conditions like work hours, occupational stress, job safety and other issues affect our lives at home and at work. We go into the science behind it all and talk about what we can do to reduce work related risks and promote well-being. Thanks for joining us. This podcast is a production of the Oregon Institute of Occupational Health Sciences, and it hosted and directed by Helen Schuckers, Sam Greenspan and Anjali Rameshbabu. Our mission at the Oregon Institute of Occupational Health Sciences is to improve the lives of workers through biomedical and occupational research. Home to over seventy-five scientists and research staff, the institute explores a range of questions related to the prevention of work related injury and disease and the promotion of health in the workplace.

Helen Schuckers: [17:17](#)

Do you have any idea for a podcast episode? We want to hear from you on important workplace issues that you would like to discuss. Email us at OccHealthSci@OHSU.edu. Subscribe to Oregon in the Workplace Blog or our social media channels at [Facebook.com/OccHealthSci.OHSU](https://www.facebook.com/OccHealthSci.OHSU) or follow us on Twitter at [OHSUOccHealth](https://twitter.com/OHSUOccHealth) to stay updated on current research, resources, news and community events.

