WEBVTT

00:00:00.000 --> 00:00:07.586 Alright. So in 2014, the Sleep Research

00:00:07.586 --> 00:00:12.284 Society and the American Academy of

00:00:12.284 --> 00:00:16.369 Sleep Medicine got together too.

00:00:16.370 --> 00:00:19.075 At the encouragement actually of

00:00:19.075 --> 00:00:22.192 Michael Query, who is the head

00:00:22.192 --> 00:00:25.240 of the Center for Sleep Disorders

00:00:25.344 --> 00:00:29.334 Research at Heart, Lung and Blood?

00:00:29.334 --> 00:00:34.940 As the director of that? I.

00:00:34.940 --> 00:00:38.090 Component of heart, lung and blood.

00:00:38.090 --> 00:00:42.710 Michael Query had been asking for.

00:00:42.710 --> 00:00:47.393 Position paper on how much sleep is

00:00:47.393 --> 00:00:51.292 actually recommended so he he encouraged

00:00:51.292 --> 00:00:55.422 the societies and we got together a

00:00:55.539 --> 00:01:00.075 number of individuals to participate in.

NOTE Confidence: 0.92220026

00:01:00.080 --> 00:01:04.814 Uh. A consensus meeting there.

NOTE Confidence: 0.92220026

00:01:04.814 --> 00:01:08.720 There were many involved in this

NOTE Confidence: 0.92220026

00:01:08.839 --> 00:01:12.780 panel and the product of that work

NOTE Confidence: 0.92220026

00:01:12.780 --> 00:01:16.881 was published in Sleep in 2015 and

NOTE Confidence: 0.92220026

00:01:16.881 --> 00:01:20.325 it was really a landmark consensus

NOTE Confidence: 0.92220026

00:01:20.330 --> 00:01:24.514 piece and you can see here that there

NOTE Confidence: 0.92220026

00:01:24.514 --> 00:01:28.179 were several different areas covered.

NOTE Confidence: 0.92220026

00:01:28.180 --> 00:01:31.900 They reviewed a wealth of literature.

NOTE Confidence: 0.92220026

00:01:31.900 --> 00:01:33.948 From epidemiological to physiological

NOTE Confidence: 0.92220026

00:01:33.948 --> 00:01:37.020 data on the effects of insufficient

NOTE Confidence: 0.92220026

00:01:37.097 --> 00:01:40.044 sleep or hours of sleep on these

NOTE Confidence: 0.92220026

00:01:40.044 --> 00:01:40.886 different parameters,

NOTE Confidence: 0.92220026

00:01:40.890 --> 00:01:42.306 including general health,

NOTE Confidence: 0.92220026

00:01:42.306 --> 00:01:44.196 cardiovascular health, metabolic health,

NOTE Confidence: 0.92220026

00:01:44.196 --> 00:01:46.088 mental health, immune function,

NOTE Confidence: 0.92220026

00:01:46.090 --> 00:01:47.978 human performance, breast cancer,

NOTE Confidence: 0.92220026

00:01:47.978 --> 00:01:49.394 pain and mortality.

NOTE Confidence: 0.92220026

00:01:49.400 --> 00:01:53.657 Ann on all of these except for breast cancer.

NOTE Confidence: 0.92220026

00:01:53.660 --> 00:01:56.020 As you can see here,

NOTE Confidence: 0.92220026

00:01:56.020 --> 00:01:59.219 the hours of recommended sleep or the

NOTE Confidence: 0.92220026

00:01:59.219 --> 00:02:02.260 hours where there was most agreement.

NOTE Confidence: 0.92220026

00:02:02.260 --> 00:02:06.391 That that this amount of sleep 7 to 8

NOTE Confidence: 0.92220026

00:02:06.391 --> 00:02:11.117 hours was the optimal is shown here in green,

NOTE Confidence: 0.92220026

00:02:11.120 --> 00:02:14.162 so the consensus ended up stating

NOTE Confidence: 0.92220026

00:02:14.162 --> 00:02:18.127 that a minimum of 7 to 8 hours

NOTE Confidence: 0.92220026

00:02:18.127 --> 00:02:19.963 of sleep is recommended.

NOTE Confidence: 0.92220026

00:02:19.970 --> 00:02:22.916 As we can see over here,

NOTE Confidence: 0.92220026

00:02:22.920 --> 00:02:24.888 there is some disagreement

NOTE Confidence: 0.92220026

00:02:24.888 --> 00:02:26.856 in the higher range,

NOTE Confidence: 0.92220026

00:02:26.860 --> 00:02:30.442 but in epidemiological research at least

NOTE Confidence: 0.92220026

00:02:30.442 --> 00:02:34.687 we have seen that over 10 hours is.

NOTE Confidence: 0.92220026

00:02:34.690 --> 00:02:37.330 Is thought to be too much.

NOTE Confidence: 0.92220026

00:02:37.330 --> 00:02:37.770 However,

NOTE Confidence: 0.92220026

00:02:37.770 --> 00:02:39.530 comorbidities and age are

NOTE Confidence: 0.92220026

00:02:39.530 --> 00:02:41.730 important to factor in there,

NOTE Confidence: 0.92220026

00:02:41.730 --> 00:02:44.810 so in terms of the bottom line,

NOTE Confidence: 0.92220026

00:02:44.810 --> 00:02:47.540 one in three American adults doesn't

NOTE Confidence: 0.92220026

00:02:47.540 --> 00:02:50.089 get the recommended amount of sleep.

NOTE Confidence: 0.92220026

00:02:50.090 --> 00:02:53.933 And here you can see a prevalence

NOTE Confidence: 0.92220026

00:02:53.933 --> 00:02:57.298 map and you can see that.

NOTE Confidence: 0.92220026

00:02:57.300 --> 00:03:01.234 From 2024.3% all the way to 48.5%

NOTE Confidence: 0.92220026

00:03:01.240 --> 00:03:04.215 of the population in different

NOTE Confidence: 0.92220026

00:03:04.215 --> 00:03:07.190 counties across the country have

NOTE Confidence: 0.92220026

00:03:07.293 --> 00:03:10.467 insufficient sleep less than 7 hours

NOTE Confidence: 0.92220026

00:03:10.467 --> 00:03:13.630 of sleep on average per night.

NOTE Confidence: 0.92220026

00:03:13.630 --> 00:03:17.368 This has been monitored by the Center

NOTE Confidence: 0.92220026

00:03:17.368 --> 00:03:20.980 for Disease Control and there the

NOTE Confidence: 0.92220026

00:03:20.980 --> 00:03:23.528 Behavioral Risk factor surveillance

NOTE Confidence: 0.92220026

00:03:23.528 --> 00:03:27.789 questions have got some items on sleep and.

NOTE Confidence: 0.92220026

00:03:27.790 --> 00:03:30.770 Anybody can actually access those

NOTE Confidence: 0.92220026

00:03:30.770 --> 00:03:33.750 databases there and report from

NOTE Confidence: 0.92220026

00:03:33.844 --> 00:03:37.144 2016 showed us more about the

NOTE Confidence: 0.92220026

00:03:37.144 --> 00:03:39.344 economic costs of insufficient

NOTE Confidence: 0.92220026

00:03:39.438 --> 00:03:42.188 sleep across 5 OECD countries,

NOTE Confidence: 0.92220026

00:03:42.190 --> 00:03:48.734 and you can see here that the gross.

NOTE Confidence: 0.92220026

00:03:48.740 --> 00:03:55.305 The GDP is influenced by

NOTE Confidence: 0.92220026

00:03:55.305 --> 00:04:00.557 insufficient sleep that 2.28%.

NOTE Confidence: 0.92220026

00:04:00.560 --> 00:04:05.429 Is the amount of GDP that's loss due to

NOTE Confidence: 0.92220026

00:04:05.429 --> 00:04:09.306 insufficient sleep according to this report?

NOTE Confidence: 0.92220026

00:04:09.310 --> 00:04:12.634 And this ranges from 1.35 in

NOTE Confidence: 0.92220026

00:04:12.634 --> 00:04:16.354 Canada to 2.9 in Japan, but.

NOTE Confidence: 0.92220026

00:04:16.354 --> 00:04:20.158 1.2 million working days are lost.

NOTE Confidence: 0.92220026

00:04:20.160 --> 00:04:22.240 It's estimated each year

NOTE Confidence: 0.92220026

00:04:22.240 --> 00:04:24.320 in the United States,

NOTE Confidence: 0.92220026

00:04:24.320 --> 00:04:28.488 so this clearly has an impact on economics.

NOTE Confidence: 0.90849763

00:04:31.180 --> 00:04:34.450 In in our country and in

NOTE Confidence: 0.90849763

00:04:34.450 --> 00:04:38.020 other Western nations. She.

NOTE Confidence: 0.90849763

00:04:38.020 --> 00:04:40.685 Healthy Sleep Awareness program was

NOTE Confidence: 0.90849763

00:04:40.685 --> 00:04:43.976 actually a program that was developed

NOTE Confidence: 0.90849763

00:04:43.976 --> 00:04:47.222 in partnership with the Center for

NOTE Confidence: 0.90849763

00:04:47.222 --> 00:04:50.119 Disease Control and 2013 fourteen.

NOTE Confidence: 0.90849763

00:04:50.120 --> 00:04:53.354 They put out an announcement for

NOTE Confidence: 0.90849763

00:04:53.354 --> 00:04:56.714 a competition or excuse me for

NOTE Confidence: 0.90849763

00:04:56.714 --> 00:04:59.464 Grant to be supporting education,

NOTE Confidence: 0.90849763

00:04:59.470 --> 00:05:02.495 public education so the Sleep

NOTE Confidence: 0.90849763

00:05:02.495 --> 00:05:05.520 Research Society and the American

NOTE Confidence: 0.90849763

00:05:05.617 --> 00:05:08.817 Academy of Sleep Medicine got

NOTE Confidence: 0.90849763

00:05:08.817 --> 00:05:11.377 together as founding partners.

NOTE Confidence: 0.90849763

00:05:11.380 --> 00:05:13.765 Developed this education

NOTE Confidence: 0.90849763

00:05:13.765 --> 00:05:16.945 program with the CDC.

NOTE Confidence: 0.90849763

00:05:16.950 --> 00:05:20.040 And. This.

NOTE Confidence: 0.8913829

00:05:26.700 --> 00:05:29.768 This educational group put

NOTE Confidence: 0.8913829

00:05:29.768 --> 00:05:33.603 together they had a communications.

NOTE Confidence: 0.8913829

00:05:33.610 --> 00:05:36.334 A communications subcommittee that

NOTE Confidence: 0.8913829

00:05:36.334 --> 00:05:39.739 worked on these infographics together

NOTE Confidence: 0.8913829

00:05:39.739 --> 00:05:43.437 with the Academy and you can see here,

NOTE Confidence: 0.8913829

00:05:43.440 --> 00:05:45.042 from economic costs,

NOTE Confidence: 0.8913829

00:05:45.042 --> 00:05:48.780 through the importance of drawing of sleep

NOTE Confidence: 0.8913829

00:05:48.865 --> 00:05:52.675 for drowsy driving for cardiovascular health.

NOTE Confidence: 0.8913829

00:05:52.680 --> 00:05:57.200 Another one that was put out for sleep

NOTE Confidence: 0.8913829

00:05:57.200 --> 00:06:00.254 awareness around Halloween and then

NOTE Confidence: 0.8913829

00:06:00.254 --> 00:06:04.496 another that was developed for kids and.

NOTE Confidence: 0.8913829

00:06:04.500 --> 00:06:06.872 Particularly adolescents and these,

00:06:06.872 --> 00:06:10.985 together with some of the other so

00:06:10.985 --> 00:06:14.233 social media led to 4.2 billion clicks.

00:06:14.240 --> 00:06:18.202 And so this program was very effective

00:06:18.202 --> 00:06:21.974 in helping the educate the public

00:06:21.974 --> 00:06:25.244 about the importance of sleep.

00:06:25.250 --> 00:06:28.860 I wanted to talk now a little bit about some

00:06:28.949 --> 00:06:32.316 of the experimental work that we've done,

00:06:32.320 --> 00:06:35.274 so we have tried to do highly

00:06:35.274 --> 00:06:36.540 controlled experimental models

00:06:36.612 --> 00:06:38.976 looking at the effects of insufficient

00:06:38.976 --> 00:06:41.889 sleep and this is Monica hacks work.

00:06:41.890 --> 00:06:43.910 Monica is an associate professor

00:06:43.910 --> 00:06:45.930 in the Department of Neurology

00:06:46.001 --> 00:06:48.527 at our institution at Beth Israel

00:06:48.527 --> 00:06:49.790 Deaconess Medical Center,

00:06:49.790 --> 00:06:53.534 and she's done a lot of research looking at.

NOTE Confidence: 0.870986

00:06:55.660 --> 00:06:58.124 The question as to whether or not

NOTE Confidence: 0.870986

00:06:58.124 --> 00:07:00.940 we can adapt to insufficient sleep,

NOTE Confidence: 0.870986

00:07:00.940 --> 00:07:04.099 and here you see, you know some plot that

NOTE Confidence: 0.870986

00:07:04.099 --> 00:07:07.027 shows what somebody who's working too

NOTE Confidence: 0.870986

00:07:07.027 --> 00:07:09.959 much might actually experience this is

NOTE Confidence: 0.870986

00:07:09.959 --> 00:07:12.767 4 hours of sleep followed by a weekend

NOTE Confidence: 0.870986

00:07:12.767 --> 00:07:15.550 where they try and catch up sleep,

NOTE Confidence: 0.870986

00:07:15.550 --> 00:07:17.986 and sometimes people can do this

NOTE Confidence: 0.870986

00:07:17.986 --> 00:07:19.985 week after, week after week,

NOTE Confidence: 0.870986

00:07:19.985 --> 00:07:24.830 and we think that we adapt to this, but.

NOTE Confidence: 0.870986

00:07:24.830 --> 00:07:27.044 Monica wanted to look and see

NOTE Confidence: 0.870986

00:07:27.044 --> 00:07:29.028 exactly how does this affect

NOTE Confidence: 0.870986

00:07:29.028 --> 00:07:31.198 our Physiology in our health.

NOTE Confidence: 0.870986

00:07:31.200 --> 00:07:32.937 Health risk parameters,

NOTE Confidence: 0.870986

00:07:32.937 --> 00:07:37.912 so we know that that stress affects the

NOTE Confidence: 0.870986

00:07:37.912 --> 00:07:41.208 hypothalamic pituitary adrenal system,

NOTE Confidence: 0.870986

00:07:41.210 --> 00:07:45.460 the immune system and the

NOTE Confidence: 0.870986

00:07:45.460 --> 00:07:47.160 sympathoadrenal system.

NOTE Confidence: 0.870986

00:07:47.160 --> 00:07:50.125 We know that cortisol inhibits

NOTE Confidence: 0.870986

00:07:50.125 --> 00:07:53.090 monocyte production of aisle 6.

NOTE Confidence: 0.870986

00:07:53.090 --> 00:07:57.150 We know that I'll six production when

NOTE Confidence: 0.870986

00:07:57.150 --> 00:08:00.210 monocytes are stimulated it increases.

NOTE Confidence: 0.870986

00:08:00.210 --> 00:08:03.955 We know that norepinephrine can

NOTE Confidence: 0.870986

00:08:03.955 --> 00:08:06.951 also stimulate the production

NOTE Confidence: 0.870986

00:08:06.951 --> 00:08:10.866 by a monocytes and I all six.

NOTE Confidence: 0.870986

00:08:10.870 --> 00:08:13.607 Can cause a or an immune response.

NOTE Confidence: 0.870986

00:08:13.610 --> 00:08:16.860 Causes cortisol to go up.

NOTE Confidence: 0.870986

00:08:16.860 --> 00:08:19.527 So Monica was studying week after week.

NOTE Confidence: 0.870986

00:08:19.530 --> 00:08:21.445 The effects of insufficient sleep

NOTE Confidence: 0.870986

00:08:21.445 --> 00:08:24.476 and what you can see here is that

NOTE Confidence: 0.870986

00:08:24.476 --> 00:08:26.905 the end of week one there's actually

NOTE Confidence: 0.870986

00:08:26.985 --> 00:08:29.469 two nights of sleep recovery sleep.

NOTE Confidence: 0.870986

00:08:29.470 --> 00:08:32.518 What you see is that from from baseline,

NOTE Confidence: 0.870986

00:08:32.520 --> 00:08:34.806 which is actually not shown here.

NOTE Confidence: 0.870986

00:08:34.810 --> 00:08:37.108 But there's three nights of baseline

NOTE Confidence: 0.870986

00:08:37.108 --> 00:08:39.020 before this recording is done,

NOTE Confidence: 0.870986

00:08:39.020 --> 00:08:42.068 so they've been sleeping 8 hours a night,

NOTE Confidence: 0.870986

00:08:42.070 --> 00:08:43.698 or had that opportunity.

NOTE Confidence: 0.870986

00:08:43.698 --> 00:08:46.615 These are normally 8 hours sleepers who

NOTE Confidence: 0.870986

00:08:46.615 --> 00:08:49.408 we bring into the clinical Research Center.

NOTE Confidence: 0.870986

00:08:49.410 --> 00:08:50.360 Um, then?

NOTE Confidence: 0.870986

00:08:50.360 --> 00:08:53.210 What you see here is that

NOTE Confidence: 0.870986

00:08:53.210 --> 00:08:56.150 for the first few nights,

NOTE Confidence: 0.870986

00:08:56.150 --> 00:08:57.515 there's no significant.

NOTE Confidence: 0.870986

00:08:57.515 --> 00:08:59.335 There's a drifting upwards,

NOTE Confidence: 0.870986

00:08:59.340 --> 00:09:02.225 but no significant increase in

NOTE Confidence: 0.870986

00:09:02.225 --> 00:09:05.110 the aisle 6 positive monocytes.

NOTE Confidence: 0.870986

00:09:05.110 --> 00:09:07.345 Percentage and then what you

NOTE Confidence: 0.870986

00:09:07.345 --> 00:09:10.110 see is that during the next.

NOTE Confidence: 0.870986

00:09:10.110 --> 00:09:13.430 Bout of insufficient sleep this is the aisle.

NOTE Confidence: 0.870986

00:09:13.430 --> 00:09:15.435 6 positive monocytes are increased

NOTE Confidence: 0.870986

00:09:15.435 --> 00:09:18.341 and then after you have that second

NOTE Confidence: 0.870986

00:09:18.341 --> 00:09:20.416 that second week you're having

NOTE Confidence: 0.870986

00:09:20.416 --> 00:09:22.560 recovery sleep on the weekend.

NOTE Confidence: 0.870986

00:09:22.560 --> 00:09:24.660 Those levels are still elevated

NOTE Confidence: 0.870986

00:09:24.660 --> 00:09:27.645 and again after the next week they

NOTE Confidence: 0.870986

00:09:27.645 --> 00:09:29.670 are still elevated and recovery

NOTE Confidence: 0.870986

00:09:29.670 --> 00:09:32.580 sleep is not really doing a good

NOTE Confidence: 0.870986

00:09:32.580 --> 00:09:35.010 job returning it back to baseline.

NOTE Confidence: 0.870986

00:09:35.010 --> 00:09:38.062 What you note here is that the

NOTE Confidence: 0.870986

00:09:38.062 --> 00:09:40.670 cortisol is also increased so.

NOTE Confidence: 0.870986

00:09:40.670 --> 00:09:43.480 Quarters all, as I said,

NOTE Confidence: 0.870986

00:09:43.480 --> 00:09:46.640 should inhibit the monocyte product

NOTE Confidence: 0.870986

00:09:46.640 --> 00:09:49.168 productivity production of the

NOTE Confidence: 0.870986

00:09:49.168 --> 00:09:51.910 aisle 6 and it is increasing,

NOTE Confidence: 0.870986

00:09:51.910 --> 00:09:55.170 so that's a counterregulatory if

NOTE Confidence: 0.870986

00:09:55.170 --> 00:09:58.430 you will immune type response.

NOTE Confidence: 0.870986

00:09:58.430 --> 00:10:00.558 And what you see here is that.

NOTE Confidence: 0.870986

00:10:00.560 --> 00:10:06.575 The ability of the dexamethasone

NOTE Confidence: 0.870986

00:10:06.575 --> 00:10:10.184 to dexamethasone being.

NOTE Confidence: 0.870986

00:10:10.190 --> 00:10:11.488 Inhibitory steroid,

NOTE Confidence: 0.870986

00:10:11.488 --> 00:10:14.733 the ability of this dexamethasone

NOTE Confidence: 0.870986

00:10:14.733 --> 00:10:18.429 to reduce the production of IL.

NOTE Confidence: 0.870986

00:10:18.430 --> 00:10:21.625 6 drops so the glucocorticoid

NOTE Confidence: 0.870986

00:10:21.625 --> 00:10:24.181 sensitivity is increasing in

NOTE Confidence: 0.870986

00:10:24.181 --> 00:10:27.307 response to the sleep deprivation.

NOTE Confidence: 0.82121766

00:10:29.370 --> 00:10:33.360 Anet is not returning to baseline

NOTE Confidence: 0.82121766

00:10:33.360 --> 00:10:37.299 after a weekend of of sleep.

NOTE Confidence: 0.82121766

00:10:37.300 --> 00:10:40.541 So cutting back to half half the

NOTE Confidence: 0.82121766

00:10:40.541 --> 00:10:43.385 amount of sleep you need during

NOTE Confidence: 0.82121766

00:10:43.385 --> 00:10:46.556 the week and trying to catch up

NOTE Confidence: 0.82121766

00:10:46.656 --> 00:10:49.827 with just two nights of eight hours

NOTE Confidence: 0.82121766

00:10:49.827 --> 00:10:53.042 of sleep on the weekend is not

NOTE Confidence: 0.82121766

00:10:53.042 --> 00:10:55.820 doing it for your immune system.

NOTE Confidence: 0.82121766

00:10:55.820 --> 00:10:59.054 So Monica and Larissa and heart here,

NOTE Confidence: 0.82121766

00:10:59.060 --> 00:11:01.310 who is a postdoctoral fellow

NOTE Confidence: 0.82121766

00:11:01.310 --> 00:11:03.560 working with Monica currently in

NOTE Confidence: 0.82121766

00:11:03.634 --> 00:11:06.508 our lab has has been investigating

NOTE Confidence: 0.82121766

00:11:06.508 --> 00:11:08.424 these resolvins and resolvins.

NOTE Confidence: 0.82121766

00:11:08.430 --> 00:11:12.672 Are an active component of the

NOTE Confidence: 0.82121766

00:11:12.672 --> 00:11:16.383 immune system that actively tries

NOTE Confidence: 0.82121766

00:11:16.383 --> 00:11:19.407 to resolve the inflammation

NOTE Confidence: 0.82121766

14

00:11:19.407 --> 00:11:23.187 and stop the recruitment of.

NOTE Confidence: 0.82121766

00:11:23.190 --> 00:11:24.080 Immune.

NOTE Confidence: 0.7812701

00:11:27.950 --> 00:11:34.265 Immune factors. So here you see that

NOTE Confidence: 0.7812701

00:11:34.265 --> 00:11:37.827 edema is very quick and then this

NOTE Confidence: 0.7812701

00:11:37.827 --> 00:11:41.192 inflammation infiltration of white blood

NOTE Confidence: 0.7812701

00:11:41.192 --> 00:11:45.508 cells occurs within minutes and then

NOTE Confidence: 0.7812701

00:11:45.508 --> 00:11:48.432 this monocyte macrophage production

NOTE Confidence: 0.7812701

00:11:48.432 --> 00:11:51.938 of inflammatory signals and counter

NOTE Confidence: 0.7812701

00:11:51.938 --> 00:11:55.208 regulatory active resolution factors takes

NOTE Confidence: 0.7812701

00:11:55.208 --> 00:12:00.042 a longer amount of time, hours to days.

NOTE Confidence: 0.7812701

00:12:00.042 --> 00:12:02.738 These omega-3 fatty acid.

NOTE Confidence: 0.7812701

00:12:02.740 --> 00:12:06.178 Components are converted to specialized pro,

NOTE Confidence: 0.7812701

00:12:06.180 --> 00:12:09.630 resolving mediators that you see here.

NOTE Confidence: 0.7812701

00:12:09.630 --> 00:12:12.500 In these graphs there's RV,

NOTE Confidence: 0.7812701

00:12:12.500 --> 00:12:17.084 D3, RV D4, RV D5 and 17HD HA.

NOTE Confidence: 0.7812701

00:12:17.090 --> 00:12:20.330 These are all.

NOTE Confidence: 0.7812701

00:12:20.330 --> 00:12:23.100 Part of these resolving mediators,

NOTE Confidence: 0.7812701

00:12:23.100 --> 00:12:26.322 we're exploring them at this point

NOTE Confidence: 0.7812701

00:12:26.322 --> 00:12:29.565 and I've just selected three that

NOTE Confidence: 0.7812701

00:12:29.565 --> 00:12:33.058 for rather that are that are showing

NOTE Confidence: 0.7812701

00:12:33.058 --> 00:12:35.466 quite interesting patterns here

NOTE Confidence: 0.7812701

00:12:35.466 --> 00:12:39.084 of of stability with the control

NOTE Confidence: 0.7812701

00:12:39.084 --> 00:12:42.450 sleep and a drop in production.

NOTE Confidence: 0.869137640000001

00:12:44.460 --> 00:12:46.852 Associated with insufficient sleep,

NOTE Confidence: 0.869137640000001

00:12:46.852 --> 00:12:49.842 and this is showing insufficient

NOTE Confidence: 0.869137640000001

00:12:49.842 --> 00:12:53.354 sleep after 14 days of being in a

NOTE Confidence: 0.869137640000001

00:12:53.354 --> 00:12:55.281 protocol that involves fragmenting

NOTE Confidence: 0.869137640000001

00:12:55.281 --> 00:12:57.801 nocturnal sleep and allowing

NOTE Confidence: 0.869137640000001

00:12:57.801 --> 00:13:00.951 interdigitated recovery that that's a

NOTE Confidence: 0.869137640000001

00:13:00.960 --> 00:13:04.260 3 three days of insufficient sleep,

NOTE Confidence: 0.869137640000001

00:13:04.260 --> 00:13:07.010 followed by recovery of one

NOTE Confidence: 0.869137640000001

00:13:07.010 --> 00:13:09.760 night and this is repeated.

NOTE Confidence: 0.869137640000001

00:13:09.760 --> 00:13:14.288 So this is a partial sleep deprivation model.

NOTE Confidence: 0.869137640000001

00:13:14.290 --> 00:13:16.545 That is a recurrent exposure

NOTE Confidence: 0.869137640000001

00:13:16.545 --> 00:13:18.349 to the sleep deprivation,

NOTE Confidence: 0.869137640000001

00:13:18.350 --> 00:13:21.958 and then when you allow after that sleep.

NOTE Confidence: 0.869137640000001

00:13:21.960 --> 00:13:25.344 What you seeing here is that this these

NOTE Confidence: 0.869137640000001

00:13:25.344 --> 00:13:28.154 rez resolving mediators are not jumping

NOTE Confidence: 0.869137640000001

00:13:28.154 --> 00:13:30.980 right back up to baseline levels,

NOTE Confidence: 0.869137640000001

00:13:30.980 --> 00:13:34.268 so it's taking longer for this resolution to

NOTE Confidence: 0.869137640000001

00:13:34.268 --> 00:13:37.736 occur in the context of sleep deprivation.

NOTE Confidence: 0.8712889

00:13:39.770 --> 00:13:45.138 So these models are based on pretty acute.

NOTE Confidence: 0.8712889

00:13:45.140 --> 00:13:48.482 God changes and we know that

NOTE Confidence: 0.8712889

00:13:48.482 --> 00:13:50.153 in cardiovascular disease,

NOTE Confidence: 0.8712889

00:13:50.160 --> 00:13:52.436 risk for cardiovascular disease.

NOTE Confidence: 0.8712889

00:13:52.436 --> 00:13:55.850 This is increased when CRP levels

NOTE Confidence: 0.8712889

00:13:55.941 --> 00:13:58.526 are even just mildly elevated,

NOTE Confidence: 0.8712889

00:13:58.530 --> 00:14:02.002 and so we were wanting to further

NOTE Confidence: 0.8712889

00:14:02.002 --> 00:14:04.670 examine the autonomic involvement.

NOTE Confidence: 0.8712889

00:14:04.670 --> 00:14:09.367 One of the hypothesis is that the

NOTE Confidence: 0.8712889

00:14:09.367 --> 00:14:13.989 inflammation that we see in shorter term.

NOTE Confidence: 0.8712889

00:14:13.990 --> 00:14:18.771 I sleep deprivation may be a stress

NOTE Confidence: 0.8712889

00:14:18.771 --> 00:14:22.798 response and may be related to.

NOTE Confidence: 0.8712889

00:14:22.800 --> 00:14:26.738 I. Two shear stresses,

NOTE Confidence: 0.8712889

00:14:26.738 --> 00:14:31.041 and so we wanted to look at vascular

NOTE Confidence: 0.8712889

00:14:31.041 --> 00:14:35.113 tone and to look at some of the.

NOTE Confidence: 0.8712889

00:14:35.120 --> 00:14:40.868 Inflammatory regulation mediators.

NOTE Confidence: 0.8712889

00:14:40.870 --> 00:14:43.830 We conducted a study here you can see

NOTE Confidence: 0.8712889

00:14:43.830 --> 00:14:47.130 a four hour condition in an 8 hour

NOTE Confidence: 0.8712889

00:14:47.130 --> 00:14:50.129 condition in the four hour condition.

NOTE Confidence: 0.8712889

00:14:50.130 --> 00:14:53.112 The participants were kept awake until

NOTE Confidence: 0.8712889

00:14:53.112 --> 00:14:56.151 3:00 o'clock and allowed to sleep from

NOTE Confidence: 0.8712889

00:14:56.151 --> 00:14:59.349 3 until seven and this is a 22 day

NOTE Confidence: 0.8712889

00:14:59.349 --> 00:15:01.905 protocol an we studied heavy recording

NOTE Confidence: 0.8712889

00:15:01.905 --> 00:15:05.150 days are indicated here in the green

NOTE Confidence: 0.8712889

00:15:05.150 --> 00:15:08.052 and on these heavy recording days

NOTE Confidence: 0.8712889

00:15:08.052 --> 00:15:11.034 we did beat to beat blood pressure.

NOTE Confidence: 0.8712889

00:15:11.040 --> 00:15:14.988 And we also recorded continuous e.g.

NOTE Confidence: 0.8712889

00:15:14.990 --> 00:15:19.030 And we had vascular reactivity

NOTE Confidence: 0.8712889

00:15:19.030 --> 00:15:22.262 testing during the day.

NOTE Confidence: 0.8712889

00:15:22.270 --> 00:15:25.562 Following the last recording

NOTE Confidence: 0.8712889

00:15:25.562 --> 00:15:29.677 from each of these blocks.

NOTE Confidence: 0.8712889

00:15:29.680 --> 00:15:32.484 We also measured mediators

NOTE Confidence: 0.8712889

00:15:32.484 --> 00:15:35.989 before bed and after bed.

NOTE Confidence: 0.8712889

00:15:35.990 --> 00:15:39.310 So here you can see the blood pressure

NOTE Confidence: 0.8712889

00:15:39.310 --> 00:15:42.679 data and you see that that the control

NOTE Confidence: 0.8712889

00:15:42.679 --> 00:15:46.295 is shown here in the in the black line

NOTE Confidence: 0.8712889

00:15:46.295 --> 00:15:49.014 and the dotted or the hatched line.

NOTE Confidence: 0.8712889

00:15:49.014 --> 00:15:51.049 Here is the sleep deprivation.

NOTE Confidence: 0.8712889

00:15:51.050 --> 00:15:53.913 The partial sleep deprivation and these are

NOTE Confidence: 0.8712889

00:15:53.913 --> 00:15:56.748 showing the first block and second block,

NOTE Confidence: 0.8712889

00:15:56.750 --> 00:15:59.186 third block and 4th block and

NOTE Confidence: 0.8712889

00:15:59.186 --> 00:16:00.404 then the recovery.

NOTE Confidence: 0.8712889

00:16:00.410 --> 00:16:02.654 So what you'll notice here is

NOTE Confidence: 0.8712889

00:16:02.654 --> 00:16:04.684 that the systolic blood pressure

NOTE Confidence: 0.8712889

00:16:04.684 --> 00:16:06.979 is elevated and the diastolic.

NOTE Confidence: 0.8712889

00:16:06.980 --> 00:16:09.830 Blood pressure is elevated and

NOTE Confidence: 0.8712889

00:16:09.830 --> 00:16:12.110 the heart rate is.

NOTE Confidence: 0.8712889

00:16:12.110 --> 00:16:15.122 Is is elevated in the restriction

NOTE Confidence: 0.8712889

00:16:15.122 --> 00:16:18.549 condition and these are daily averages?

NOTE Confidence: 0.8712889

00:16:18.550 --> 00:16:22.834 I will show you some of the

NOTE Confidence: 0.8712889

00:16:22.834 --> 00:16:26.448 tracings but here you see the.

NOTE Confidence: 0.8712889

00:16:26.450 --> 00:16:29.096 This is the Porter press system.

NOTE Confidence: 0.8712889

00:16:29.100 --> 00:16:32.180 There's a block worn on the wrist,

NOTE Confidence: 0.8712889

00:16:32.180 --> 00:16:34.586 and the finger cuffs inflate and

NOTE Confidence: 0.8712889

00:16:34.586 --> 00:16:37.030 deflate at 15 minute intervals.

NOTE Confidence: 0.8712889

00:16:37.030 --> 00:16:39.778 We use so that it's reasonably

NOTE Confidence: 0.8712889

00:16:39.778 --> 00:16:41.152 comfortable and participants

NOTE Confidence: 0.8712889

00:16:41.152 --> 00:16:43.646 can be awake and performing or.

NOTE Confidence: 0.8631009

00:16:45.790 --> 00:16:48.710 Doing different activities in the day it is

NOTE Confidence: 0.8631009

00:16:48.710 --> 00:16:50.939 actually marketed as an ambulatory system,

NOTE Confidence: 0.8631009

00:16:50.940 --> 00:16:53.516 although I wouldn't want to try that.

NOTE Confidence: 0.8631009

00:16:53.520 --> 00:16:55.907 I we have people stay with this

NOTE Confidence: 0.8631009

00:16:55.907 --> 00:16:58.558 system in the lab and they can

NOTE Confidence: 0.8631009

00:16:58.558 --> 00:17:00.880 sleep with this through the night,

NOTE Confidence: 0.8631009

00:17:00.880 --> 00:17:05.346 and our hope is that we actually.

NOTE Confidence: 0.8631009

00:17:05.350 --> 00:17:08.222 Do not disrupt sleep as much as we

NOTE Confidence: 0.8631009

00:17:08.222 --> 00:17:11.019 would with something like spacelabs.

NOTE Confidence: 0.8631009

00:17:11.020 --> 00:17:14.017 We did do a little bit of a head

NOTE Confidence: 0.8631009

00:17:14.017 --> 00:17:16.507 to head comparison and didn't

NOTE Confidence: 0.8631009

00:17:16.507 --> 00:17:20.170 find a lot of difference in fact,

NOTE Confidence: 0.8631009

00:17:20.170 --> 00:17:21.730 but in any case,

NOTE Confidence: 0.8631009

00:17:21.730 --> 00:17:24.070 with this 24 hour blood pressure

NOTE Confidence: 0.8631009

00:17:24.158 --> 00:17:26.708 we did repeated repeated cycles.

NOTE Confidence: 0.8631009

00:17:26.710 --> 00:17:30.031 As you saw a moment ago and what we

NOTE Confidence: 0.8631009

00:17:30.031 --> 00:17:33.105 saw is that the sleep restriction

NOTE Confidence: 0.8631009

00:17:33.105 --> 00:17:36.660 led to elevation of blood pressure.

NOTE Confidence: 0.8631009

00:17:36.660 --> 00:17:38.952 When permitted to sleep in the

NOTE Confidence: 0.8631009

00:17:38.952 --> 00:17:40.098 short sleep condition,

NOTE Confidence: 0.8631009

00:17:40.100 --> 00:17:42.529 you can see here in the red

NOTE Confidence: 0.8631009

00:17:42.529 --> 00:17:44.300 bar at the bottom,

NOTE Confidence: 0.8631009

00:17:44.300 --> 00:17:46.360 the participants had elevated blood

NOTE Confidence: 0.8631009

00:17:46.360 --> 00:17:48.827 pressure compared to when they were

NOTE Confidence: 0.8631009

00:17:48.827 --> 00:17:51.179 allowed to sleep earlier in the night.

NOTE Confidence: 0.8631009

00:17:51.180 --> 00:17:53.550 So the slow wave actually was

NOTE Confidence: 0.8631009

00:17:53.550 --> 00:17:55.559 quite well preserved in the

NOTE Confidence: 0.8631009

00:17:55.559 --> 00:17:57.665 first part of the night here,

NOTE Confidence: 0.8631009

00:17:57.670 --> 00:18:01.286 but they did not get down as far

NOTE Confidence: 0.8631009

00:18:01.286 --> 00:18:04.568 as they did in normal sleep.

NOTE Confidence: 0.8631009

00:18:04.570 --> 00:18:07.802 And the recovery is here in the tracing

NOTE Confidence: 0.8631009

00:18:07.802 --> 00:18:10.897 at the bottom here in the green.

NOTE Confidence: 0.8631009

00:18:10.900 --> 00:18:14.141 So they go pretty quickly back to

NOTE Confidence: 0.8631009

00:18:14.141 --> 00:18:17.879 the range of where they were in

NOTE Confidence: 0.8631009

00:18:17.879 --> 00:18:20.679 baseline in the first recovery.

NOTE Confidence: 0.8631009

00:18:20.680 --> 00:18:23.207 This is actually the second recovery night,

NOTE Confidence: 0.8631009

00:18:23.210 --> 00:18:25.370 but I'll get into that later.

NOTE Confidence: 0.8631009

00:18:25.370 --> 00:18:27.082 But in any case,

NOTE Confidence: 0.8631009

00:18:27.082 --> 00:18:30.150 what I wanted to sorry what I

NOTE Confidence: 0.8631009

00:18:30.150 --> 00:18:32.957 wanted to show you here is the.

NOTE Confidence: 0.8631009

00:18:32.960 --> 00:18:37.552 Period from 8:00 PM until 3:00 AM

23

NOTE Confidence: 0.8631009

00:18:37.552 --> 00:18:42.516 and what you can see is that the.

NOTE Confidence: 0.8631009

00:18:42.520 --> 00:18:45.688 Later cycles the 3rd and 4th cycle of

NOTE Confidence: 0.8631009

00:18:45.688 --> 00:18:47.860 sleep restriction showed a decrease,

NOTE Confidence: 0.8631009

00:18:47.860 --> 00:18:49.920 so it starts the blood.

NOTE Confidence: 0.8631009

00:18:49.920 --> 00:18:52.194 Blood pressure tries to go down

NOTE Confidence: 0.8631009

00:18:52.194 --> 00:18:54.440 if you will eat earlier,

NOTE Confidence: 0.8631009

00:18:54.440 --> 00:18:57.436 and this is after the meal where

NOTE Confidence: 0.8631009

00:18:57.436 --> 00:19:00.140 usually you have and you can see

NOTE Confidence: 0.8631009

00:19:00.140 --> 00:19:03.131 a little bit of a peak here in

NOTE Confidence: 0.8631009

00:19:03.131 --> 00:19:05.855 the black and meal associated Pick

NOTE Confidence: 0.8631009

00:19:05.855 --> 00:19:07.602 peak here after lunch.

NOTE Confidence: 0.8631009

00:19:07.602 --> 00:19:10.514 But in the evening this blood pressure

NOTE Confidence: 0.8631009

00:19:10.514 --> 00:19:13.439 was starting to decrease at 8:00 PM.

NOTE Confidence: 0.8631009

00:19:13.440 --> 00:19:15.486 Long before they get into bed,

NOTE Confidence: 0.8631009

00:19:15.490 --> 00:19:18.130 they got into bed at 10:30 PM and

NOTE Confidence: 0.8631009

00:19:18.130 --> 00:19:20.258 lights were out at 11 actually.

NOTE Confidence: 0.8631009

00:19:20.260 --> 00:19:22.612 And So what you'll notice is that

NOTE Confidence: 0.8631009

00:19:22.612 --> 00:19:24.363 the blood pressure begins to

NOTE Confidence: 0.8631009

00:19:24.363 --> 00:19:26.397 decrease and then it at bedtime.

NOTE Confidence: 0.8631009

00:19:26.400 --> 00:19:28.624 It does go up and there is a

NOTE Confidence: 0.8631009

00:19:28.624 --> 00:19:30.448 pre sleep increasing in blood

NOTE Confidence: 0.8631009

00:19:30.448 --> 00:19:33.220 pressure that we see here as well.

NOTE Confidence: 0.8631009

00:19:33.220 --> 00:19:35.770 In this short sleep condition.

NOTE Confidence: 0.8631009

00:19:35.770 --> 00:19:37.924 We looked at that period between

NOTE Confidence: 0.8631009

00:19:37.924 --> 00:19:40.917 8:00 and 3:00 and we found no

NOTE Confidence: 0.8631009

00:19:40.917 --> 00:19:42.889 difference in subjective sleepiness.

NOTE Confidence: 0.8631009

00:19:42.890 --> 00:19:45.494 We had thought maybe they were

NOTE Confidence: 0.8631009

00:19:45.494 --> 00:19:48.123 getting tired and that's why blood

NOTE Confidence: 0.8631009

00:19:48.123 --> 00:19:50.138 pressure was dropping early and

NOTE Confidence: 0.8631009

00:19:50.138 --> 00:19:52.637 we saw no increase in microsleeps

NOTE Confidence: 0.8631009

00:19:52.637 --> 00:19:55.858 we we had the EG and looked and

NOTE Confidence: 0.8631009

00:19:55.858 --> 00:19:57.848 scored through and didn't find

NOTE Confidence: 0.8631009

00:19:57.848 --> 00:20:00.310 that there were more microsleep.

NOTE Confidence: 0.8631009

00:20:00.310 --> 00:20:04.278 In the 8:00 to 8:00 PM to bedtime,

NOTE Confidence: 0.8631009

00:20:04.280 --> 00:20:06.260 whether that was eleven,

NOTE Confidence: 0.8631009

00:20:06.260 --> 00:20:08.735 there was no difference there,

NOTE Confidence: 0.8631009

00:20:08.740 --> 00:20:12.708 so that was 11 for the sleep condition.

NOTE Confidence: 0.9001333

00:20:14.980 --> 00:20:18.350 So we we looked at, I'm sorry.

NOTE Confidence: 0.91620755

00:20:20.760 --> 00:20:26.177 So we. We wanted to look at the recovery

NOTE Confidence: 0.91620755

00:20:26.177 --> 00:20:28.831 sleep also for homeostatic regulation

NOTE Confidence: 0.91620755

00:20:28.831 --> 00:20:32.815 of sleep and and autonomic involvement.

NOTE Confidence: 0.91620755

00:20:32.820 --> 00:20:35.455 So we have done additional

NOTE Confidence: 0.91620755

00:20:35.455 --> 00:20:39.233 studies and just to give you a

NOTE Confidence: 0.91620755

00:20:39.233 --> 00:20:41.818 little bit of the background,

NOTE Confidence: 0.91620755

00:20:41.820 --> 00:20:44.994 we all know that with the

NOTE Confidence: 0.91620755

00:20:44.994 --> 00:20:47.110 homeostatic regulation of sleep,

NOTE Confidence: 0.91620755

00:20:47.110 --> 00:20:49.430 there's increased sleep pressure

NOTE Confidence: 0.91620755

00:20:49.430 --> 00:20:52.330 and when participants are sleep

NOTE Confidence: 0.91620755

00:20:52.330 --> 00:20:55.138 deprived and allowed to sleep again.

NOTE Confidence: 0.91620755

00:20:55.140 --> 00:20:57.560 There's an increase in slow

NOTE Confidence: 0.91620755

00:20:57.560 --> 00:21:00.640 wave sleep and and Delta power,

NOTE Confidence: 0.91620755

00:21:00.640 --> 00:21:04.399 and there's one study only that showing

NOTE Confidence: 0.91620755

00:21:04.399 --> 00:21:08.503 only one study that looked at heart

NOTE Confidence: 0.91620755

00:21:08.503 --> 00:21:11.488 rate variability in the recovery.

NOTE Confidence: 0.91620755

00:21:11.490 --> 00:21:14.705 In sleep during recovery sleep

NOTE Confidence: 0.91620755

00:21:14.705 --> 00:21:17.920 following the sleep deprivation and

NOTE Confidence: 0.91620755

00:21:18.017 --> 00:21:21.182 Glos and colleagues showed that

NOTE Confidence: 0.91620755

00:21:21.182 --> 00:21:24.347 the low frequency high frequency,

NOTE Confidence: 0.91620755

00:21:24.350 --> 00:21:27.560 so this is showing the

NOTE Confidence: 0.91620755

00:21:27.560 --> 00:21:28.844 sympathetic predominant.

NOTE Confidence: 0.8872154

00:21:33.310 --> 00:21:38.460 The increase of parasympathetic predominant.

NOTE Confidence: 0.8336154

00:21:40.610 --> 00:21:42.080 Heart rate variability

NOTE Confidence: 0.8336154

00:21:42.080 --> 00:21:43.550 following sleep deprivation.

NOTE Confidence: 0.8336154

00:21:43.550 --> 00:21:46.728 So during recovery sleep there is an

NOTE Confidence: 0.8336154

00:21:46.728 --> 00:21:50.405 increase and you can see that very nicely

NOTE Confidence: 0.8336154

00:21:50.405 --> 00:21:53.840 here in jurist as beautiful illustration,

NOTE Confidence: 0.8336154

00:21:53.840 --> 00:21:57.062 showing the sleep histogram here with

NOTE Confidence: 0.8336154

00:21:57.062 --> 00:22:00.639 slow wave sleep and REM sleep and

NOTE Confidence: 0.8336154

00:22:00.639 --> 00:22:03.740 what use notice here is the Delta

NOTE Confidence: 0.8336154

00:22:03.836 --> 00:22:06.756 power coinciding with this low.

NOTE Confidence: 0.8336154

00:22:06.760 --> 00:22:09.220 Obviously with the slow wave sleep,

NOTE Confidence: 0.8336154

00:22:09.220 --> 00:22:11.735 but the high frequency Spectra

NOTE Confidence: 0.8336154

00:22:11.735 --> 00:22:13.747 of of the heart.

NOTE Confidence: 0.8336154

00:22:13.750 --> 00:22:17.628 Rate the high frequency is shown down

NOTE Confidence: 0.8336154

00:22:17.628 --> 00:22:22.061 here on panel C and it is coinciding

NOTE Confidence: 0.8336154

00:22:22.061 --> 00:22:25.391 it with actually the Delta power

NOTE Confidence: 0.8336154

00:22:25.391 --> 00:22:29.290 and the peak in the high frequency,

NOTE Confidence: 0.8336154

00:22:29.290 --> 00:22:31.680 the autonomic.

NOTE Confidence: 0.8336154

00:22:31.680 --> 00:22:32.956 Parasympathetic peak,

NOTE Confidence: 0.8336154

00:22:32.956 --> 00:22:36.418 if you will, is in advance of

NOTE Confidence: 0.8336154

00:22:36.418 --> 00:22:39.180 the Delta power by a little bit.

NOTE Confidence: 0.8336154

00:22:39.180 --> 00:22:42.468 The Delta Power does show an

NOTE Confidence: 0.8336154

00:22:42.468 --> 00:22:45.600 increase here in advance of that,

NOTE Confidence: 0.8336154

00:22:45.600 --> 00:22:49.398 so clearly there is a regulation

NOTE Confidence: 0.8336154

00:22:49.398 --> 00:22:51.930 with the sympathetic parasympathetic

NOTE Confidence: 0.8336154

00:22:52.025 --> 00:22:54.870 balance and those sleep stages.

NOTE Confidence: 0.8336154

00:22:54.870 --> 00:22:59.182 So we wanted to look in the recovery

NOTE Confidence: 0.8336154

00:22:59.182 --> 00:23:01.989 sleep following the short sleep

NOTE Confidence: 0.8336154

00:23:01.989 --> 00:23:05.235 boats and look for any rebound.

NOTE Confidence: 0.8336154

00:23:05.240 --> 00:23:08.789 We did not have a recording on

NOTE Confidence: 0.8336154

00:23:08.789 --> 00:23:11.597 the 1st Recovery Night because

NOTE Confidence: 0.8336154

00:23:11.597 --> 00:23:14.527 as I showed you earlier,

NOTE Confidence: 0.8336154

00:23:14.530 --> 00:23:17.020 we were recording the heavy

NOTE Confidence: 0.8336154

00:23:17.020 --> 00:23:20.206 recording was done on the third

NOTE Confidence: 0.8336154

00:23:20.206 --> 00:23:23.211 night of the deprivation throughout

NOTE Confidence: 0.8336154

00:23:23.211 --> 00:23:25.615 these cycles and then.

NOTE Confidence: 0.8336154

00:23:25.620 --> 00:23:27.942 The first recovery night was always

NOTE Confidence: 0.8336154

00:23:27.942 --> 00:23:30.279 without EG to give participants a

NOTE Confidence: 0.8336154

00:23:30.279 --> 00:23:33.143 break and then we did the full each

NOTE Confidence: 0.8336154

00:23:33.220 --> 00:23:35.880 G and beat to beat blood pressure

NOTE Confidence: 0.8336154

00:23:35.880 --> 00:23:37.400 monitoring again on recovery

NOTE Confidence: 0.8336154

00:23:37.400 --> 00:23:39.300 night 2IN Recovery Night 3.

NOTE Confidence: 0.8122536

00:23:41.980 --> 00:23:45.487 And we were interested in looking at

NOTE Confidence: 0.8122536

00:23:45.487 --> 00:23:47.994 the spontaneous cardio, vagal BRS,

NOTE Confidence: 0.8122536

00:23:47.994 --> 00:23:49.500 Barros reflect sensitivity,

NOTE Confidence: 0.8122536

00:23:49.500 --> 00:23:52.500 an we used a sequence method,

NOTE Confidence: 0.8122536

00:23:52.500 --> 00:23:55.636 and we were looking at the up

NOTE Confidence: 0.8122536

00:23:55.636 --> 00:23:59.039 sequence so when the up up sequence

NOTE Confidence: 0.8122536

00:23:59.039 --> 00:24:01.967 when blood pressure goes up the

NOTE Confidence: 0.8122536

00:24:02.065 --> 00:24:05.887 heart rate should come down and when

NOTE Confidence: 0.8122536

00:24:05.887 --> 00:24:09.558 blood pressure goes down the heart

NOTE Confidence: 0.8122536

00:24:09.558 --> 00:24:14.290 rate should go up the RR interval.

NOTE Confidence: 0.8122536

00:24:14.290 --> 00:24:17.794 Response to the blood pressure and what we

NOTE Confidence: 0.8122536

00:24:17.794 --> 00:24:21.896 saw is that the normalized high frequency.

NOTE Confidence: 0.8122536

00:24:21.900 --> 00:24:24.435 So this is the parasympathetic

NOTE Confidence: 0.8122536

00:24:24.435 --> 00:24:28.093 response to sleep loss in that second

NOTE Confidence: 0.8122536

00:24:28.093 --> 00:24:31.705 recovery night we see here quite a

NOTE Confidence: 0.8122536

00:24:31.705 --> 00:24:34.228 pronounced increase this these data

NOTE Confidence: 0.8122536

00:24:34.228 --> 00:24:38.282 that I'm showing you here on this slide

NOTE Confidence: 0.8122536

00:24:38.282 --> 00:24:42.384 are from the first hour of sleep.

NOTE Confidence: 0.8122536

00:24:42.390 --> 00:24:47.286 On the baseline and then the recovery sleep.

NOTE Confidence: 0.8122536

00:24:47.290 --> 00:24:48.806 Not the recovery sleep.

NOTE Confidence: 0.8122536

00:24:48.806 --> 00:24:52.000 Sorry the third night of sleep deprivation.

NOTE Confidence: 0.8122536

00:24:52.000 --> 00:24:54.989 And then finally the second recovery night.

NOTE Confidence: 0.8122536

00:24:54.990 --> 00:24:58.116 So we would expect that these

NOTE Confidence: 0.8122536

00:24:58.116 --> 00:24:59.679 first nights of.

NOTE Confidence: 0.8122536

00:24:59.680 --> 00:25:02.244 Partial sleep deprivation that

NOTE Confidence: 0.8122536

00:25:02.244 --> 00:25:05.449 these nights of partial sleep

NOTE Confidence: 0.8122536

00:25:05.449 --> 00:25:08.060 deprivation might show a rebound.

NOTE Confidence: 0.8122536

00:25:08.060 --> 00:25:11.940 So I'm very interested to know what the

NOTE Confidence: 0.8122536

00:25:11.940 --> 00:25:15.428 first recovery full night would look like,

NOTE Confidence: 0.8122536

00:25:15.430 --> 00:25:19.350 but what we see is the recovery too.

NOTE Confidence: 0.8122536

00:25:19.350 --> 00:25:22.308 Has the increase in the high

NOTE Confidence: 0.8122536

00:25:22.308 --> 00:25:25.738 frequency and also the BRS down down.

NOTE Confidence: 0.8122536

00:25:25.740 --> 00:25:30.268 So when the down the the blood pressure.

NOTE Confidence: 0.8122536

00:25:30.270 --> 00:25:32.206 Is going down there.

NOTE Confidence: 0.8122536

00:25:32.206 --> 00:25:35.644 Heart rate is more more responsive here

NOTE Confidence: 0.8122536

00:25:35.644 --> 00:25:39.604 and also the Delta power is increased on the.

NOTE Confidence: 0.86968875

00:25:41.830 --> 00:25:45.958 On each of those nights, as one would expect.

NOTE Confidence: 0.86968875

00:25:45.960 --> 00:25:48.498 This shows you the correlation and

NOTE Confidence: 0.86968875

00:25:48.498 --> 00:25:51.043 the correlation for the baseline night

NOTE Confidence: 0.86968875

00:25:51.043 --> 00:25:53.752 as well as the recovery nights shows

NOTE Confidence: 0.86968875

00:25:53.752 --> 00:25:56.472 a very tight correlation between the

NOTE Confidence: 0.86968875

00:25:56.472 --> 00:25:59.832 high frequency and the slow wave sleep,

NOTE Confidence: 0.86968875

00:25:59.832 --> 00:26:04.200 just as seen here in the juristic data.

NOTE Confidence: 0.86968875

00:26:04.200 --> 00:26:07.788 So what what is it about?

NOTE Confidence: 0.86968875

00:26:07.790 --> 00:26:10.502 Restoration, Ann? Can we?

NOTE Confidence: 0.86968875

00:26:10.502 --> 00:26:14.570 Can we further understand the recovery

NOTE Confidence: 0.86968875

00:26:14.680 --> 00:26:17.595 sleep by looking at subjective

NOTE Confidence: 0.86968875

00:26:17.595 --> 00:26:21.570 indices and we know that 20 to 30%

NOTE Confidence: 0.86968875

00:26:21.570 --> 00:26:25.512 of patients seek attention in primary

NOTE Confidence: 0.86968875

00:26:25.512 --> 00:26:28.775 care settings for significant fatigue

NOTE Confidence: 0.86968875

00:26:28.775 --> 00:26:31.955 and over 700 million office visits

NOTE Confidence: 0.86968875

00:26:31.955 --> 00:26:35.410 per year in the United States.

NOTE Confidence: 0.86968875

00:26:35.410 --> 00:26:38.040 Are are with presenting concerns

NOTE Confidence: 0.86968875

00:26:38.040 --> 00:26:40.144 about fatigue and sleep.

NOTE Confidence: 0.86968875

00:26:40.150 --> 00:26:44.238 Is sleepiness and fatigue as we know

NOTE Confidence: 0.86968875

00:26:44.238 --> 00:26:48.239 are produced by insufficient sleep.

NOTE Confidence: 0.86968875

00:26:48.240 --> 00:26:50.473 We we decided to compare the data

NOTE Confidence: 0.86968875

00:26:50.473 --> 00:26:52.729 that I was just talking about

NOTE Confidence: 0.86968875

00:26:52.729 --> 00:26:54.769 with the four hours sleep.

NOTE Confidence: 0.86968875

00:26:54.770 --> 00:26:56.715 Three nights of insufficient sleep

NOTE Confidence: 0.86968875

00:26:56.715 --> 00:26:59.041 followed by recovery repeated four times

NOTE Confidence: 0.86968875

00:26:59.041 --> 00:27:01.309 and then three nights of recovery sleep.

NOTE Confidence: 0.86968875

00:27:01.310 --> 00:27:03.155 Compare that with another protocol

NOTE Confidence: 0.86968875

00:27:03.155 --> 00:27:05.659 where we gave 4 hours of sleep,

NOTE Confidence: 0.86968875

00:27:05.660 --> 00:27:08.927 but we spread it out and this is again.

NOTE Confidence: 0.86968875

00:27:08.930 --> 00:27:11.408 This is 3 cycles and we're comparing

NOTE Confidence: 0.86968875

00:27:11.408 --> 00:27:13.740 the the three cycles first three

NOTE Confidence: 0.86968875

00:27:13.740 --> 00:27:16.122 cycles in the four hour condition

NOTE Confidence: 0.86968875

00:27:16.122 --> 00:27:18.508 and what we did here was allow.

NOTE Confidence: 0.86968875

00:27:18.510 --> 00:27:20.850 40 minutes of sleep and

NOTE Confidence: 0.86968875

00:27:20.850 --> 00:27:22.722 20 minutes of wakefulness,

NOTE Confidence: 0.86968875

00:27:22.730 --> 00:27:25.880 so the total amount of sleep is

NOTE Confidence: 0.86968875

00:27:25.880 --> 00:27:29.247 4 hours here and is also four

NOTE Confidence: 0.86968875

00:27:29.247 --> 00:27:31.632 hours in the upper graph.

NOTE Confidence: 0.86463135

00:27:33.740 --> 00:27:37.148 What what I'm showing here is the visual

NOTE Confidence: 0.86463135

00:27:37.148 --> 00:27:39.858 analog scale ratings of sleepiness.

NOTE Confidence: 0.86463135

00:27:39.860 --> 00:27:42.870 You can see that that each cycle

NOTE Confidence: 0.86463135

00:27:42.870 --> 00:27:45.235 of insufficient sleep causes an

NOTE Confidence: 0.86463135

00:27:45.235 --> 00:27:48.199 increase in sleepiness as we expect

NOTE Confidence: 0.86463135

00:27:48.199 --> 00:27:50.229 the consolidated short sleep.

NOTE Confidence: 0.86463135

00:27:50.230 --> 00:27:53.990 The four hours of sleep is shown here,

NOTE Confidence: 0.86463135

00:27:53.990 --> 00:27:59.406 and the fragmented 4 hours are shown here.

NOTE Confidence: 0.86463135

00:27:59.410 --> 00:28:02.091 What you'll notice is that there's an

NOTE Confidence: 0.86463135

00:28:02.091 --> 00:28:04.828 increase in the base in the baseline.

00:28:04.830 --> 00:28:06.760 This is after recovery sleep.

00:28:06.760 --> 00:28:08.695 There is still an elevation

00:28:08.695 --> 00:28:10.630 of sleepiness the next day,

00:28:10.630 --> 00:28:12.570 and this is showing fatigue.

00:28:12.570 --> 00:28:14.500 This is the fragmented sleep,

00:28:14.500 --> 00:28:17.965 and this is the consolidated short sleep.

00:28:17.970 --> 00:28:21.993 And these are the levels of eight hours of

00:28:21.993 --> 00:28:26.626 of sleep that you see in Gray at the bottom.

00:28:26.630 --> 00:28:28.910 Of particular interest, I think,

00:28:28.910 --> 00:28:31.520 is that if you compare what

00:28:31.520 --> 00:28:33.930 happens on the day after,

00:28:33.930 --> 00:28:37.026 so this is showing the baseline and then

00:28:37.026 --> 00:28:40.353 what about one night of recovery sleep

00:28:40.353 --> 00:28:42.823 following either the fragmented short

00:28:42.901 --> 00:28:45.787 sleep or the consolidated short sleep?

00:28:45.790 --> 00:28:49.346 What you'll see here in the red?

NOTE Confidence: 0.86463135

00:28:49.350 --> 00:28:52.283 That the fragmented short sleep leads to

NOTE Confidence: 0.86463135

00:28:52.283 --> 00:28:55.448 a much greater impairment the next day,

NOTE Confidence: 0.86463135

00:28:55.450 --> 00:28:58.509 so this is in all of these.

NOTE Confidence: 0.86463135

00:28:58.510 --> 00:29:01.414 I'm showing you what it looks like after

NOTE Confidence: 0.86463135

00:29:01.414 --> 00:29:04.169 they've had recovery sleep subjectively,

NOTE Confidence: 0.86463135

00:29:04.170 --> 00:29:06.242 so they're reporting elevated

NOTE Confidence: 0.86463135

00:29:06.242 --> 00:29:08.314 levels of subjective sleepiness

NOTE Confidence: 0.86463135

00:29:08.314 --> 00:29:10.509 even after recovery sleep.

NOTE Confidence: 0.86463135

00:29:10.510 --> 00:29:12.865 Following the fragmented but not

NOTE Confidence: 0.86463135

00:29:12.865 --> 00:29:14.749 the consolidated short sleep.

NOTE Confidence: 0.86463135

00:29:14.750 --> 00:29:17.100 So they're feeling much worse,

NOTE Confidence: 0.86463135

00:29:17.100 --> 00:29:19.455 and this is persisting even

NOTE Confidence: 0.86463135

00:29:19.455 --> 00:29:21.339 after the second night.

NOTE Confidence: 0.86463135

00:29:21.340 --> 00:29:23.224 It's not significant anymore,

NOTE Confidence: 0.86463135

00:29:23.224 --> 00:29:26.050 but you still see some elevation.

NOTE Confidence: 0.86463135

00:29:26.050 --> 00:29:26.518 However,

NOTE Confidence: 0.86463135

00:29:26.518 --> 00:29:27.454 with fatigue,

NOTE Confidence: 0.86463135

00:29:27.454 --> 00:29:30.730 and this is showing this same thing

NOTE Confidence: 0.86463135

00:29:30.814 --> 00:29:34.146 with the fatigue self report the the

NOTE Confidence: 0.86463135

00:29:34.146 --> 00:29:36.562 fragmented short sleep causes an

NOTE Confidence: 0.86463135

00:29:36.562 --> 00:29:39.274 elevation in fatigue that persists even

NOTE Confidence: 0.86463135

00:29:39.274 --> 00:29:43.980 on the third night after recovery sleep.

NOTE Confidence: 0.86463135

00:29:43.980 --> 00:29:47.838 So the fatigue and sleepiness here

NOTE Confidence: 0.86463135

00:29:47.838 --> 00:29:51.627 which you'll notice is that they

NOTE Confidence: 0.86463135

00:29:51.627 --> 00:29:54.927 are separable in in the post.

NOTE Confidence: 0.86463135

00:29:54.930 --> 00:29:57.262 Deprivation exposure when they

NOTE Confidence: 0.86463135

00:29:57.262 --> 00:30:00.326 are recovering. They they are.

NOTE Confidence: 0.86463135

00:30:00.326 --> 00:30:03.486 Separating fatigue and sleepiness and

NOTE Confidence: 0.86463135

00:30:03.486 --> 00:30:07.580 the sleepiness system more quickly resolved.

NOTE Confidence: 0.86463135

00:30:07.580 --> 00:30:09.052 So what about translational?

NOTE Confidence: 0.86463135

00:30:09.052 --> 00:30:12.273 I wanted to talk a little bit about

NOTE Confidence: 0.86463135

00:30:12.273 --> 00:30:15.087 translational opportunities for the field an.

NOTE Confidence: 0.86463135

00:30:15.090 --> 00:30:16.690 We've done a study,

NOTE Confidence: 0.86463135

00:30:16.690 --> 00:30:19.670 so I've been talking with you about,

NOTE Confidence: 0.86463135

00:30:19.670 --> 00:30:23.000 you know the effects of.

NOTE Confidence: 0.86463135

00:30:23.000 --> 00:30:25.730 Insufficient sleep on blood pressure.

NOTE Confidence: 0.86463135

00:30:25.730 --> 00:30:28.832 Can we help people with hypertension

NOTE Confidence: 0.86463135

00:30:28.832 --> 00:30:31.740 by increasing their sleep duration?

NOTE Confidence: 0.86463135

00:30:31.740 --> 00:30:34.470 And this study is ongoing,

NOTE Confidence: 0.86463135

00:30:34.470 --> 00:30:36.430 but.

NOTE Confidence: 0.86463135

00:30:36.430 --> 00:30:39.530 I just want to show you a little bit of

NOTE Confidence: 0.86463135

00:30:39.611 --> 00:30:43.184 preliminary data and I can tell you we don't.

NOTE Confidence: 0.86463135

00:30:43.190 --> 00:30:45.206 We're not unblinded yet,

NOTE Confidence: 0.86463135

00:30:45.206 --> 00:30:47.726 so we don't know which.

NOTE Confidence: 0.86463135

00:30:47.730 --> 00:30:50.634 With the data I'm going to show you,

NOTE Confidence: 0.86463135

00:30:50.640 --> 00:30:52.515 we don't know which condition

NOTE Confidence: 0.86463135

00:30:52.515 --> 00:30:54.650 that that the participants are in,

NOTE Confidence: 0.86463135

00:30:54.650 --> 00:30:56.810 but we randomized to a sleep

NOTE Confidence: 0.86463135

00:30:56.810 --> 00:30:59.038 extension or asleep timing and we're

NOTE Confidence: 0.86463135

00:30:59.038 --> 00:31:01.198 hoping to look at sex differences.

NOTE Confidence: 0.86463135

00:31:01.200 --> 00:31:03.678 Covid has really had an impact on

NOTE Confidence: 0.86463135

00:31:03.678 --> 00:31:05.928 our ability to run this study,

NOTE Confidence: 0.86463135

00:31:05.930 --> 00:31:08.338 so we won't have as many subjects

NOTE Confidence: 0.86463135

00:31:08.338 --> 00:31:09.930 as we had hoped,

NOTE Confidence: 0.86463135

00:31:09.930 --> 00:31:13.269 but we're still hoping to look at

NOTE Confidence: 0.86463135

00:31:13.269 --> 00:31:15.960 sex differences as well. Alright.

NOTE Confidence: 0.8782236

00:31:18.130 --> 00:31:19.260 We are.

NOTE Confidence: 0.8806746

00:31:21.270 --> 00:31:25.494 We advertised for individuals who had

NOTE Confidence: 0.8806746

00:31:25.494 --> 00:31:28.310 hypertensive hypertension and this

NOTE Confidence: 0.8806746

00:31:28.409 --> 00:31:31.930 is not a high level of hypertension.

NOTE Confidence: 0.8806746

00:31:31.930 --> 00:31:34.646 We're looking for participants

NOTE Confidence: 0.8806746

00:31:34.646 --> 00:31:40.077 with less than Stage 2 or 160 / 100

NOTE Confidence: 0.8806746

00:31:40.077 --> 00:31:46.200 and yet still over the 120 / 80.

NOTE Confidence: 0.8806746

00:31:46.200 --> 00:31:50.466 So in the in the pre hypertension and stage

NOTE Confidence: 0.8806746

00:31:50.466 --> 00:31:54.580 one phase one hypertension if you will.

NOTE Confidence: 0.8806746

00:31:54.580 --> 00:32:00.335 We we. Determine what their regular time

NOTE Confidence: 0.8806746

00:32:00.335 --> 00:32:04.489 is based on a couple of weeks of sleep.

NOTE Confidence: 0.8806746

00:32:04.490 --> 00:32:09.938 Log in, act graph and we then design.

NOTE Confidence: 0.8806746

00:32:09.940 --> 00:32:13.251 What is an increased amount of time

NOTE Confidence: 0.8806746

00:32:13.251 --> 00:32:17.088 for them by an hour or we maintain

NOTE Confidence: 0.8806746

00:32:17.088 --> 00:32:20.310 the time that they most usually?

NOTE Confidence: 0.8806746

00:32:20.310 --> 00:32:24.756 They usually would go to bed and get up.

NOTE Confidence: 0.8806746

00:32:24.760 --> 00:32:28.218 So we either maintain or we extend.

NOTE Confidence: 0.8806746

00:32:28.220 --> 00:32:32.764 But in both cases it's based on their

NOTE Confidence: 0.8806746

00:32:32.764 --> 00:32:35.558 circadian placement and duration of

NOTE Confidence: 0.8806746

00:32:35.558 --> 00:32:39.184 time prior to coming into the study.

NOTE Confidence: 0.8806746

00:32:39.190 --> 00:32:42.640 So I'm going to show you as I said some.

NOTE Confidence: 0.8806746

00:32:42.640 --> 00:32:43.562 Preliminary data,

NOTE Confidence: 0.8806746

00:32:43.562 --> 00:32:46.328 but essentially we have that evaluation

NOTE Confidence: 0.8806746

00:32:46.328 --> 00:32:48.791 phase with the screening visit and

NOTE Confidence: 0.8806746

00:32:48.791 --> 00:32:51.402 then they do an overnight stay where

NOTE Confidence: 0.8806746

00:32:51.402 --> 00:32:53.775 we do beat to beat blood pressure,

NOTE Confidence: 0.8806746

00:32:53.780 --> 00:32:55.034 an EEG recording.

NOTE Confidence: 0.8806746

00:32:55.034 --> 00:32:57.960 Then they go home and they are

NOTE Confidence: 0.8806746

00:32:58.052 --> 00:32:59.360 on a wait list.

NOTE Confidence: 0.8806746

00:32:59.360 --> 00:33:02.933 This is a wait list control for this study.

NOTE Confidence: 0.8806746

00:33:02.940 --> 00:33:06.116 They come back and repeat the same thing.

NOTE Confidence: 0.8806746

00:33:06.120 --> 00:33:09.081 We did this because we were concerned

NOTE Confidence: 0.8806746

00:33:09.081 --> 00:33:11.298 that maybe being in a study,

NOTE Confidence: 0.8806746

00:33:11.300 --> 00:33:13.530 maybe the adaptation to the.

NOTE Confidence: 0.8806746

00:33:13.530 --> 00:33:16.824 Stressful condition within the being in

NOTE Confidence: 0.8806746

00:33:16.824 --> 00:33:20.120 clinical Research Center might have affects,

NOTE Confidence: 0.8806746

00:33:20.120 --> 00:33:22.312 so we're interested in

NOTE Confidence: 0.8806746

00:33:22.312 --> 00:33:24.504 this overnight stay too,

NOTE Confidence: 0.8806746

00:33:24.510 --> 00:33:28.614 as well as the overnight stay 3 where

NOTE Confidence: 0.8806746

00:33:28.614 --> 00:33:32.562 we evaluate whether the sleep extension

NOTE Confidence: 0.8806746

00:33:32.562 --> 00:33:36.774 or the sleep timing condition improves.

NOTE Confidence: 0.8806746

00:33:36.780 --> 00:33:39.762 New blood pressure and this work

NOTE Confidence: 0.8806746

00:33:39.762 --> 00:33:43.650 that I'm going to show you has been.

NOTE Confidence: 0.8806746

00:33:43.650 --> 00:33:48.990 Can analyze Dan process by.

NOTE Confidence: 0.8806746

00:33:48.990 --> 00:33:52.240 Quan Yang and Michael Vasquez,

NOTE Confidence: 0.8806746

00:33:52.240 --> 00:33:56.028 who are shown here.

NOTE Confidence: 0.8806746

00:33:56.030 --> 00:34:00.798 And here I'm showing you the blood pressure,

NOTE Confidence: 0.8806746

00:34:00.800 --> 00:34:03.780 beatbeat blood pressure and the

NOTE Confidence: 0.8806746

00:34:03.780 --> 00:34:05.568 heart rate tracings.

NOTE Confidence: 0.8806746

00:34:05.570 --> 00:34:09.574 And with the Valsalva maneuver what we

NOTE Confidence: 0.8806746

00:34:09.574 --> 00:34:13.841 what we do is instruct the individual

NOTE Confidence: 0.8806746

00:34:13.841 --> 00:34:18.775 to take a deep breath and this is

NOTE Confidence: 0.8806746

00:34:18.775 --> 00:34:22.863 the early phase here early phase two

NOTE Confidence: 0.8806746

00:34:22.863 --> 00:34:27.458 where the individual is holding their breath.

NOTE Confidence: 0.8806746

00:34:27.460 --> 00:34:31.780 It's inspiring and holding their breath.

NOTE Confidence: 0.8806746

00:34:31.780 --> 00:34:35.175 And then when they released their breath,

NOTE Confidence: 0.8806746

00:34:35.180 --> 00:34:38.792 we see a drop in blood pressure

NOTE Confidence: 0.8806746

00:34:38.792 --> 00:34:41.968 corresponding with the peak in the ECG,

NOTE Confidence: 0.8806746

00:34:41.970 --> 00:34:44.880 and then as the blood pressure

NOTE Confidence: 0.8806746

00:34:44.880 --> 00:34:46.820 comes back to normal,

NOTE Confidence: 0.8806746

00:34:46.820 --> 00:34:50.208 then the heart rate goes back down.

NOTE Confidence: 0.8806746

00:34:50.210 --> 00:34:53.730 We see we're in phase four here and

NOTE Confidence: 0.8806746

00:34:53.730 --> 00:34:56.810 we look at the the responsibility

NOTE Confidence: 0.8806746

00:34:56.810 --> 00:34:59.425 of the part to this.

NOTE Confidence: 0.8806746

00:34:59.430 --> 00:35:01.980 These changes in blood pressure.

NOTE Confidence: 0.8806746

00:35:01.980 --> 00:35:04.320 So we're looking at the baroreflex

NOTE Confidence: 0.8806746

00:35:04.320 --> 00:35:07.370 sensitivity in the data that I will show you.

NOTE Confidence: 0.900938

00:35:09.630 --> 00:35:12.966 Alright, so here what we're looking at is

NOTE Confidence: 0.900938

00:35:12.966 --> 00:35:16.577 the slope and you see that the early phase.

NOTE Confidence: 0.900938

00:35:16.580 --> 00:35:19.530 So this phase over here.

NOTE Confidence: 0.900938

00:35:19.530 --> 00:35:24.306 Over sorry over here the slope is not

NOTE Confidence: 0.900938

00:35:24.306 --> 00:35:28.046 changing between state one and State 2,

NOTE Confidence: 0.900938

00:35:28.050 --> 00:35:33.898 but then with stage state three is increased.

NOTE Confidence: 0.900938

00:35:33.900 --> 00:35:36.375 And the blood pressure maximum

NOTE Confidence: 0.900938

00:35:36.375 --> 00:35:38.850 is decreasing on Stage 3.

NOTE Confidence: 0.900938

00:35:38.850 --> 00:35:41.325 Not a lot of difference

NOTE Confidence: 0.900938

00:35:41.325 --> 00:35:43.800 between stage one and two,

NOTE Confidence: 0.900938

00:35:43.800 --> 00:35:47.052 but the blood pressure Max during

NOTE Confidence: 0.900938

00:35:47.052 --> 00:35:50.470 the early phase is decreased on

NOTE Confidence: 0.900938

00:35:50.470 --> 00:35:53.908 stage three and the phase four.

NOTE Confidence: 0.900938

00:35:53.910 --> 00:35:56.640 So the responsiveness the slope

NOTE Confidence: 0.900938

00:35:56.640 --> 00:35:59.370 is increased through each state.

NOTE Confidence: 0.900938

00:35:59.370 --> 00:36:03.213 The most important for our study will

NOTE Confidence: 0.900938

00:36:03.213 --> 00:36:08.036 be stay two to stay 3 and you see there

NOTE Confidence: 0.900938

00:36:08.036 --> 00:36:11.929 is still an increase showing here,

NOTE Confidence: 0.900938

00:36:11.930 --> 00:36:14.110 but it's not reached

NOTE Confidence: 0.900938

00:36:14.110 --> 00:36:15.200 statistical significance.

NOTE Confidence: 0.900938

00:36:15.200 --> 00:36:17.930 This is, as I said,

NOTE Confidence: 0.900938

00:36:17.930 --> 00:36:21.206 a combination of both conditions were

NOTE Confidence: 0.900938

00:36:21.206 --> 00:36:25.034 not unblinded yet, so we don't know.

NOTE Confidence: 0.900938

00:36:25.034 --> 00:36:27.218 Who's in what condition?

NOTE Confidence: 0.900938

00:36:27.220 --> 00:36:31.108 But we can see that there is a

NOTE Confidence: 0.900938

00:36:31.108 --> 00:36:35.098 signal also with the BP Max dropping,

NOTE Confidence: 0.900938

00:36:35.100 --> 00:36:38.789 so the the system is getting more

NOTE Confidence: 0.900938

00:36:38.789 --> 00:36:42.569 responsive with the sleep conditions and.

NOTE Confidence: 0.900938

00:36:42.570 --> 00:36:44.916 It it we consider the stabilization

NOTE Confidence: 0.900938

00:36:44.916 --> 00:36:47.739 of sleep as an active control.

NOTE Confidence: 0.900938

00:36:47.740 --> 00:36:50.337 So the fact that we are seeing

NOTE Confidence: 0.900938

00:36:50.337 --> 00:36:52.480 anything here is encouraging.

NOTE Confidence: 0.900938

00:36:52.480 --> 00:36:55.840 And if we have a difference between our

NOTE Confidence: 0.900938

00:36:55.840 --> 00:36:58.518 conditions that will also be important.

NOTE Confidence: 0.900938

00:36:58.520 --> 00:37:01.432 Of course for the sleep extension we

NOTE Confidence: 0.900938

00:37:01.432 --> 00:37:04.119 expected to see a greater effect,

NOTE Confidence: 0.900938

00:37:04.120 --> 00:37:08.348 but having any effects here compared to.

NOTE Confidence: 0.900938

00:37:08.350 --> 00:37:10.750 Overnight stays one in particularly

NOTE Confidence: 0.900938

00:37:10.750 --> 00:37:11.710 overnight stays.

NOTE Confidence: 0.900938

00:37:11.710 --> 00:37:15.070 Two will will be of interest for

NOTE Confidence: 0.900938

00:37:15.070 --> 00:37:16.510 sleeping circadian scientists.

NOTE Confidence: 0.900938

00:37:16.510 --> 00:37:19.360 So what about future directions for

NOTE Confidence: 0.900938

00:37:19.360 --> 00:37:20.785 behaviorally based interventions

NOTE Confidence: 0.900938

00:37:20.785 --> 00:37:22.270 to improve sleep?

NOTE Confidence: 0.900938

00:37:22.270 --> 00:37:22.744 Well,

NOTE Confidence: 0.900938

00:37:22.744 --> 00:37:27.010 we know there's a lot of work that has

NOTE Confidence: 0.900938

00:37:27.124 --> 00:37:31.864 been done and more to be done with CBT eyes.

NOTE Confidence: 0.900938

00:37:31.870 --> 00:37:34.270 Cognitive behavioral therapies for insomnia.

NOTE Confidence: 0.900938

00:37:34.270 --> 00:37:35.962 Sleep extension we've,

NOTE Confidence: 0.900938

00:37:35.962 --> 00:37:36.526 we,

NOTE Confidence: 0.900938

00:37:36.526 --> 00:37:39.910 and others have been working with.

NOTE Confidence: 0.900938

00:37:39.910 --> 00:37:43.368 Some studies have started to look at

NOTE Confidence: 0.900938

00:37:43.368 --> 00:37:46.320 more at breathing and meditation,

NOTE Confidence: 0.900938

00:37:46.320 --> 00:37:49.687 and this is just showing you Juan

NOTE Confidence: 0.900938

00:37:49.687 --> 00:37:52.190 Yang and Michael Goldstein,

NOTE Confidence: 0.900938

00:37:52.190 --> 00:37:56.454 who one is an instructor in our group.

NOTE Confidence: 0.900938

00:37:56.460 --> 00:38:00.303 And Michael Goldstein is a postdoc who's

NOTE Confidence: 0.900938

00:38:00.303 --> 00:38:03.634 recently joined us and they applied

NOTE Confidence: 0.900938

00:38:03.634 --> 00:38:06.814 for and were awarded Oscher Center

NOTE Confidence: 0.900938

00:38:06.814 --> 00:38:10.418 grant to look at slow paced breathing.

NOTE Confidence: 0.900938

00:38:10.420 --> 00:38:11.996 And mindfulness,

NOTE Confidence: 0.900938

00:38:11.996 --> 00:38:16.724 they are trying to differentiate the.

NOTE Confidence: 0.900938

00:38:16.730 --> 00:38:17.732 Effects on.

NOTE Confidence: 0.900938

00:38:17.732 --> 00:38:20.738 On blood pressure with slow paced

NOTE Confidence: 0.900938

00:38:20.738 --> 00:38:22.906 breathing or mindfulness trying

NOTE Confidence: 0.900938

00:38:22.906 --> 00:38:26.122 to tease apart these effects so

NOTE Confidence: 0.900938

00:38:26.122 --> 00:38:29.098 people will be doing mindfulness.

NOTE Confidence: 0.900938

00:38:29.100 --> 00:38:30.026 Yoga's yoga,

NOTE Confidence: 0.900938

00:38:30.026 --> 00:38:32.341 breathing plus mindfulness or just

NOTE Confidence: 0.900938

00:38:32.341 --> 00:38:35.109 the slow paced breathing and they're

NOTE Confidence: 0.900938

00:38:35.109 --> 00:38:37.707 hoping to tease apart the effects

NOTE Confidence: 0.900938

00:38:37.707 --> 00:38:40.575 on blood pressure with these three

NOTE Confidence: 0.900938

00:38:40.575 --> 00:38:42.930 different usually if court with

NOTE Confidence: 0.900938

00:38:42.930 --> 00:38:45.090 these three different approaches.

NOTE Confidence: 0.900938

00:38:45.090 --> 00:38:49.449 Usually of course we see apps in a lot of.

NOTE Confidence: 0.900938

00:38:49.450 --> 00:38:52.010 Advertising too.

NOTE Confidence: 0.900938

00:38:52.010 --> 00:38:53.912 To combine these and it's not

NOTE Confidence: 0.900938

00:38:53.912 --> 00:38:56.106 really known what is the relative

49

NOTE Confidence: 0.900938

00:38:56.106 --> 00:38:57.399 contribution of each,

NOTE Confidence: 0.900938

00:38:57.400 --> 00:38:59.728 so I'm looking forward to seeing

NOTE Confidence: 0.900938

00:38:59.728 --> 00:39:01.940 the results of those studies.

NOTE Confidence: 0.900938

00:39:01.940 --> 00:39:04.754 I've, I think that there's it's an.

NOTE Confidence: 0.900938

00:39:04.760 --> 00:39:07.581 It's an ideal time to do research

NOTE Confidence: 0.900938

00:39:07.581 --> 00:39:08.790 in the home,

NOTE Confidence: 0.900938

00:39:08.790 --> 00:39:11.415 and Tele medicine has really taken off

NOTE Confidence: 0.900938

00:39:11.415 --> 00:39:14.030 even even more during the pandemic,

NOTE Confidence: 0.900938

00:39:14.030 --> 00:39:16.851 and I think that it is developing

NOTE Confidence: 0.900938

00:39:16.851 --> 00:39:19.040 some opportunities for us in the

NOTE Confidence: 0.900938

00:39:19.040 --> 00:39:21.154 field to do more research in the

NOTE Confidence: 0.8739514

00:39:21.230 --> 00:39:24.110 home with ambulatory monitoring methods.

NOTE Confidence: 0.8739514

00:39:24.110 --> 00:39:26.120 Tele medicine. As I said,

NOTE Confidence: 0.8739514

00:39:26.120 --> 00:39:28.160 I think can augment augment

NOTE Confidence: 0.8739514

00:39:28.160 --> 00:39:31.359 some of that so we can do some.

NOTE Confidence: 0.8762868

00:39:33.670 --> 00:39:36.800 Work in interacting with participants

NOTE Confidence: 0.8762868

00:39:36.800 --> 00:39:41.154 with through Tele medicine and OPT based

NOTE Confidence: 0.8762868

00:39:41.154 --> 00:39:44.526 interventions have been and are being

NOTE Confidence: 0.8762868

00:39:44.526 --> 00:39:47.999 developed now and can integrate then the

NOTE Confidence: 0.8762868

00:39:47.999 --> 00:39:51.422 sleep log and sound or motion detection.

NOTE Confidence: 0.8762868

00:39:51.422 --> 00:39:55.489 To be able to create different interventions

NOTE Confidence: 0.8762868

00:39:55.489 --> 00:39:59.106 that may be helpful in improving sleep,

NOTE Confidence: 0.8762868

00:39:59.110 --> 00:40:00.342 consolidating sleep.

NOTE Confidence: 0.8762868

00:40:00.342 --> 00:40:02.806 For insomnia, for instance,

NOTE Confidence: 0.8762868

00:40:02.810 --> 00:40:06.639 maybe even helping to reduce blood pressure.

NOTE Confidence: 0.8762868

00:40:06.640 --> 00:40:10.175 So I wanted to just acknowledge that

NOTE Confidence: 0.8762868

00:40:10.175 --> 00:40:14.278 our team and our our funding sources.

NOTE Confidence: 0.8762868

00:40:14.280 --> 00:40:19.090 This is Monica Hack and she is doing a lot

NOTE Confidence: 0.8762868

00:40:19.206 --> 00:40:23.560 of different models as I've shown you.

NOTE Confidence: 0.8762868

00:40:23.560 --> 00:40:27.375 Looking at sleep affects and immune function.

NOTE Confidence: 0.8762868

00:40:27.380 --> 00:40:30.160 Michael Goldstein is a clinical

NOTE Confidence: 0.8762868

00:40:30.160 --> 00:40:31.828 psychologist who's working.

NOTE Confidence: 0.8762868

00:40:31.830 --> 00:40:34.224 With us, and as I showed you,

NOTE Confidence: 0.8762868

00:40:34.230 --> 00:40:36.519 is going to be starting to do

NOTE Confidence: 0.8762868

00:40:36.519 --> 00:40:38.000 those that Oshir grant.

NOTE Confidence: 0.8762868

00:40:38.000 --> 00:40:39.266 Looking at mindfulness

NOTE Confidence: 0.8762868

00:40:39.266 --> 00:40:40.954 and breathing and sleep.

NOTE Confidence: 0.8762868

00:40:40.960 --> 00:40:44.158 And blood pressure and Larissa Angert

NOTE Confidence: 0.8762868

00:40:44.158 --> 00:40:49.059 doing a lot of work now on the resolvins.

NOTE Confidence: 0.8762868

00:40:49.060 --> 00:40:50.680 And she's fellow,

NOTE Confidence: 0.8762868

00:40:50.680 --> 00:40:54.460 who's with us now from from Germany.

NOTE Confidence: 0.8762868

00:40:54.460 --> 00:40:58.308 And this is 1 Yang who is an

NOTE Confidence: 0.8762868

00:40:58.308 --> 00:41:02.017 instructor in neurology in our group,

NOTE Confidence: 0.8762868

00:41:02.020 --> 00:41:05.954 and she has currently a HK early

NOTE Confidence: 0.8762868

00:41:05.954 --> 00:41:08.790 career investigator and Sleep Research

NOTE Confidence: 0.8762868

00:41:08.790 --> 00:41:12.966 Society grant to look at some of the.

NOTE Confidence: 0.8762868

00:41:12.970 --> 00:41:14.950 Um?

NOTE Confidence: 0.8762868

00:41:14.950 --> 00:41:17.624 Some of the renal aspects of blood

NOTE Confidence: 0.8762868

00:41:17.624 --> 00:41:20.099 pressure control and sleep deprivation,

NOTE Confidence: 0.8762868

00:41:20.100 --> 00:41:23.524 so thank you very much for your attention.

NOTE Confidence: 0.8762868

00:41:23.530 --> 00:41:24.390 I will.

NOTE Confidence: 0.90072113

00:41:26.410 --> 00:41:29.458 Stop it there and I just need to.

NOTE Confidence: 0.8066844

00:41:34.860 --> 00:41:37.425 Sorry, I should stop sharing the screen

NOTE Confidence: 0.8066844

00:41:37.425 --> 00:41:39.628 I guess. Thank you Doctor Millington,

NOTE Confidence: 0.8066844

00:41:39.630 --> 00:41:41.470 this is under the truck.

NOTE Confidence: 0.8066844

00:41:41.470 --> 00:41:43.666 This was a really long talk,

NOTE Confidence: 0.8066844

00:41:43.670 --> 00:41:46.365 not really, only just we all know

NOTE Confidence: 0.8066844

00:41:46.365 --> 00:41:48.069 that sleep deprivation is bad,

NOTE Confidence: 0.8066844

00:41:48.070 --> 00:41:50.230 but it's really impressive to see

NOTE Confidence: 0.8066844

00:41:50.230 --> 00:41:52.466 the specific mechanisms by which they

NOTE Confidence: 0.8066844

00:41:52.466 --> 00:41:54.306 lead to disease and importantly,

NOTE Confidence: 0.8066844

00:41:54.310 --> 00:41:55.778 some of the mechanisms

NOTE Confidence: 0.8066844

00:41:55.778 --> 00:41:56.879 for potential recovery,

NOTE Confidence: 0.8066844

00:41:56.880 --> 00:42:00.280 especially with the sleep extension.

NOTE Confidence: 0.8066844

00:42:00.280 --> 00:42:02.436 So now the forms open to questions,

NOTE Confidence: 0.8066844

00:42:02.440 --> 00:42:04.996 so please use the chat to ask your questions

NOTE Confidence: 0.8066844

00:42:04.996 --> 00:42:07.355 and there's a couple in there already,

NOTE Confidence: 0.8066844

00:42:07.360 --> 00:42:10.440 so I might ask him to you right after that.

NOTE Confidence: 0.8066844

00:42:10.440 --> 00:42:11.980 And so first question is,

NOTE Confidence: 0.8066844

00:42:11.980 --> 00:42:13.520 is there data of recovery,

NOTE Confidence: 0.8066844

00:42:13.520 --> 00:42:15.396 sleep and disease states such as sleep

NOTE Confidence: 0.8066844

00:42:15.396 --> 00:42:17.219 apnea or other medical conditions?

NOTE Confidence: 0.5440619

00:42:19.100 --> 00:42:25.904 Um so so we have lot done.

NOTE Confidence: 0.5440619

00:42:25.910 --> 00:42:30.910 We have not investigated apnea.

NOTE Confidence: 0.5440619

00:42:30.910 --> 00:42:34.456 Um? We haven't done any of

NOTE Confidence: 0.5440619

00:42:34.456 --> 00:42:36.820 these studies with apnea.

NOTE Confidence: 0.5440619

00:42:36.820 --> 00:42:41.518 I think that that would be a very interesting

NOTE Confidence: 0.5440619

54

00:42:41.518 --> 00:42:46.097 and important line of of work to do look.

NOTE Confidence: 0.5440619

00:42:46.100 --> 00:42:47.844 At in more detail.

NOTE Confidence: 0.5440619

00:42:47.844 --> 00:42:51.064 I mean there there is some data

NOTE Confidence: 0.5440619

00:42:51.064 --> 00:42:54.481 looking at see pop effects Now, yeah,

NOTE Confidence: 0.5440619

00:42:54.481 --> 00:42:57.849 but I haven't seen any studies that have

NOTE Confidence: 0.5440619

00:42:57.849 --> 00:43:01.080 done these sleep deprivation in apnea.

NOTE Confidence: 0.5440619

00:43:01.080 --> 00:43:04.816 I would expect them to be more sensitive,

NOTE Confidence: 0.5440619

00:43:04.820 --> 00:43:08.530 and we have actually been looking at

NOTE Confidence: 0.5440619

00:43:08.530 --> 00:43:13.007 AT and we will be looking at some.

NOTE Confidence: 0.5440619

00:43:13.010 --> 00:43:15.058 Responsivity in insomnia population.

NOTE Confidence: 0.5440619

00:43:15.058 --> 00:43:18.622 So I think that's an important area

NOTE Confidence: 0.5440619

00:43:18.622 --> 00:43:21.499 that that we're starting to move into,

NOTE Confidence: 0.5440619

00:43:21.500 --> 00:43:24.810 but I think it's definitely.

NOTE Confidence: 0.5440619

00:43:24.810 --> 00:43:28.158 Relevant often, particularly in shift work,

NOTE Confidence: 0.5440619

00:43:28.160 --> 00:43:31.485 where there is increased incidence

NOTE Confidence: 0.5440619

00:43:31.485 --> 00:43:35.230 or increased prevalence of of of.

NOTE Confidence: 0.5440619

00:43:35.230 --> 00:43:38.152 Uh, you know diabetes and cardiovascular

NOTE Confidence: 0.5440619

00:43:38.152 --> 00:43:40.550 disease associated with insufficient sleep.

NOTE Confidence: 0.5440619

00:43:40.550 --> 00:43:42.533 I think, definitely,

NOTE Confidence: 0.5440619

00:43:42.533 --> 00:43:45.838 it's important to pursue that.

NOTE Confidence: 0.5440619

00:43:45.840 --> 00:43:49.680 He I I'd like this say something here,

NOTE Confidence: 0.5440619

00:43:49.680 --> 00:43:50.160 Andre.

NOTE Confidence: 0.5440619

00:43:50.160 --> 00:43:53.520 This is Mayor Krieger and I I'd

NOTE Confidence: 0.5440619

00:43:53.520 --> 00:43:56.400 like to remind Janet that the

NOTE Confidence: 0.5440619

00:43:56.400 --> 00:43:59.760 very she she presented a paper at

NOTE Confidence: 0.5440619

00:43:59.760 --> 00:44:02.160 the Canadian Sleep Society when

NOTE Confidence: 0.7961237

00:44:02.160 --> 00:44:04.080 she was a student.

NOTE Confidence: 0.8797145

00:44:04.690 --> 00:44:07.786 And she got an award and I was

NOTE Confidence: 0.8797145

00:44:07.786 --> 00:44:10.498 very pleased to give her an award.

NOTE Confidence: 0.8797145

00:44:10.498 --> 00:44:13.200 What seems like many, many years ago,

NOTE Confidence: 0.8797145

00:44:13.200 --> 00:44:17.076 and it was a copy of my textbook and Ann.

NOTE Confidence: 0.8797145

00:44:17.076 --> 00:44:19.782 And who knew that years later you

NOTE Confidence: 0.8797145

00:44:19.782 --> 00:44:22.106 would be a professor at Harvard.

NOTE Confidence: 0.8797145

00:44:22.106 --> 00:44:24.431 Anyways, congratulations on a great career.

NOTE Confidence: 0.8797145

00:44:24.431 --> 00:44:25.979 Thank you so much.

NOTE Confidence: 0.8797145

00:44:25.980 --> 00:44:28.688 My thought was really very, very nice.

NOTE Confidence: 0.8797145

00:44:28.688 --> 00:44:32.269 You know, I actually when I got that award

NOTE Confidence: 0.8797145

00:44:32.269 --> 00:44:35.357 it was really a very special for me.

NOTE Confidence: 0.8797145

00:44:35.360 --> 00:44:38.546 And that had been work that I did with

NOTE Confidence: 0.8797145

00:44:38.546 --> 00:44:42.280 a lot of data that Roger Broughton had,

NOTE Confidence: 0.8797145

00:44:42.280 --> 00:44:45.129 and I did my as you remember,

NOTE Confidence: 0.8797145

00:44:45.130 --> 00:44:47.866 I did my PhD work with Roger Broughton

NOTE Confidence: 0.8797145

00:44:47.866 --> 00:44:51.065 that was on the timing and placement of

NOTE Confidence: 0.8797145

00:44:51.065 --> 00:44:54.080 napping in narcolepsy and circadian aspects.

NOTE Confidence: 0.8797145

00:44:54.080 --> 00:44:57.740 And I actually got a call from Roger out of

NOTE Confidence: 0.8797145

00:44:57.830 --> 00:45:01.406 the blue on the weekend this past weekend,

NOTE Confidence: 0.8797145

00:45:01.410 --> 00:45:03.440 so he's over in France,

NOTE Confidence: 0.8797145

00:45:03.440 --> 00:45:05.880 sheltering in place and doing.

NOTE Confidence: 0.8797145

00:45:05.880 --> 00:45:08.740 All. Nice to see you, yeah.

NOTE Confidence: 0.79691356

00:45:10.320 --> 00:45:11.106 Great thank you.

NOTE Confidence: 0.79691356

00:45:11.106 --> 00:45:12.678 Thank you for the kind comment.

NOTE Confidence: 0.79691356

00:45:12.680 --> 00:45:14.396 Merona reminder at that.

NOTE Confidence: 0.79691356

00:45:14.396 --> 00:45:16.970 Encouragement early on it can be

NOTE Confidence: 0.79691356

00:45:17.048 --> 00:45:19.394 very meaningful at lead to success

NOTE Confidence: 0.79691356

00:45:19.394 --> 00:45:22.575 and so so there's a couple of other

NOTE Confidence: 0.79691356

00:45:22.575 --> 00:45:24.879 questions and so one question is,

NOTE Confidence: 0.79691356

00:45:24.880 --> 00:45:26.725 in this sleep extension protocol

NOTE Confidence: 0.79691356

00:45:26.725 --> 00:45:28.570 that you mentioned is the

NOTE Confidence: 0.79691356

00:45:28.641 --> 00:45:30.425 sleep extension just extending

NOTE Confidence: 0.79691356

00:45:30.425 --> 00:45:32.209 the opportunity to sleep?

NOTE Confidence: 0.79691356

00:45:32.210 --> 00:45:34.240 Or are you providing some

NOTE Confidence: 0.8511841

00:45:34.240 --> 00:45:35.868 sort of interventions to

NOTE Confidence: 0.8511841

00:45:35.868 --> 00:45:37.089 actually extend sleep?

NOTE Confidence: 0.8511841

00:45:37.090 --> 00:45:39.130 And yes, we are we.

NOTE Confidence: 0.8511841

00:45:39.130 --> 00:45:40.754 We give them instruction

NOTE Confidence: 0.8511841

00:45:40.754 --> 00:45:42.378 that are behaviorally based,

NOTE Confidence: 0.8511841

00:45:42.380 --> 00:45:44.906 so it's really around sleep hygiene.

NOTE Confidence: 0.8511841

00:45:44.910 --> 00:45:46.374 We're not doing CBT,

NOTE Confidence: 0.8511841

00:45:46.374 --> 00:45:49.042 but we we actually do coach and

NOTE Confidence: 0.8511841

00:45:49.042 --> 00:45:51.022 we have a psychologist working

NOTE Confidence: 0.8511841

00:45:51.022 --> 00:45:53.944 with us who calls them checks in

NOTE Confidence: 0.8511841

00:45:53.944 --> 00:45:56.458 with them weekly asking them how

NOTE Confidence: 0.8511841

00:45:56.458 --> 00:45:58.880 they're doing with it and giving,

NOTE Confidence: 0.8511841

00:45:58.880 --> 00:46:00.472 giving them some assistance

NOTE Confidence: 0.8511841

00:46:00.472 --> 00:46:02.064 with following their times.

NOTE Confidence: 0.8511841

00:46:02.070 --> 00:46:04.856 So they are just given those times.

NOTE Confidence: 0.8511841

00:46:04.860 --> 00:46:07.852 But they are also given a set of

NOTE Confidence: 0.8511841

00:46:07.852 --> 00:46:10.048 recommendations for good sleep hygiene.

NOTE Confidence: 0.8511841

00:46:10.050 --> 00:46:12.474 No blue light before you know

NOTE Confidence: 0.8511841

00:46:12.474 --> 00:46:14.554 computer screen time and blue

NOTE Confidence: 0.8511841

00:46:14.554 --> 00:46:16.110 light before bed and.

NOTE Confidence: 0.8511841

00:46:16.110 --> 00:46:19.010 No caffeine in the afternoon

NOTE Confidence: 0.8511841

00:46:19.010 --> 00:46:21.910 and keep your exercise and.

NOTE Confidence: 0.8511841

00:46:21.910 --> 00:46:25.278 Food in consumption not just before bed for.

NOTE Confidence: 0.8296021

00:46:27.430 --> 00:46:28.570 Sleep hygiene and

NOTE Confidence: 0.8296021

00:46:28.570 --> 00:46:31.018 all the wonderful things that we

NOTE Confidence: 0.8296021

00:46:31.018 --> 00:46:33.149 intend to invite patients to do,

NOTE Confidence: 0.8296021

00:46:33.150 --> 00:46:35.124 and so are the patients asleep

NOTE Confidence: 0.8296021

00:46:35.124 --> 00:46:36.999 for the entirety of that

NOTE Confidence: 0.8296021

00:46:36.999 --> 00:46:38.860 sleep extension protocol. Or

NOTE Confidence: 0.8296021

00:46:38.860 --> 00:46:41.527 are you measuring that in some way?

NOTE Confidence: 0.8296021

00:46:41.530 --> 00:46:43.810 Yes, we are, so they have.

NOTE Confidence: 0.8296021

00:46:43.810 --> 00:46:46.477 They have actigraphy for the whole time,

NOTE Confidence: 0.8296021

00:46:46.480 --> 00:46:48.004 and we have looked,

NOTE Confidence: 0.8296021

00:46:48.004 --> 00:46:50.290 and they we are not blinded,

NOTE Confidence: 0.8296021

00:46:50.290 --> 00:46:52.780 but they are wearing their active

NOTE Confidence: 0.8296021

00:46:52.780 --> 00:46:55.652 graphs and so we have just looked

NOTE Confidence: 0.8296021

00:46:55.652 --> 00:46:58.770 and so I cannot tell you how long.

NOTE Confidence: 0.8296021

00:46:58.770 --> 00:47:00.942 Currently with that protocol,

NOTE Confidence: 0.8296021

00:47:00.942 --> 00:47:04.649 but I actually have preliminary data from

NOTE Confidence: 0.8296021

00:47:04.649 --> 00:47:07.907 a pilot study we did that did show that

NOTE Confidence: 0.8296021

00:47:07.992 --> 00:47:11.448 we were able to increase about 35 minutes,

NOTE Confidence: 0.8296021

00:47:11.450 --> 00:47:12.809 the sleep duration,

NOTE Confidence: 0.8296021

00:47:12.809 --> 00:47:15.527 and that was measured with actigraphy,

NOTE Confidence: 0.8296021

00:47:15.530 --> 00:47:17.800 so we're monitoring that again.

NOTE Confidence: 0.8296021

00:47:17.800 --> 00:47:19.156 They're coming in,

NOTE Confidence: 0.8296021

00:47:19.156 --> 00:47:21.868 so they start wearing the actigraphy,

NOTE Confidence: 0.8296021

00:47:21.870 --> 00:47:25.034 and they wear it until they're completed,

NOTE Confidence: 0.8296021

00:47:25.040 --> 00:47:28.680 which is usually it's taking.

NOTE Confidence: 0.8296021

00:47:28.680 --> 00:47:31.356 You know three months or so,

NOTE Confidence: 0.8296021

00:47:31.360 --> 00:47:34.843 so we have a very large data set of

NOTE Confidence: 0.8296021

00:47:34.843 --> 00:47:37.169 actigraphy on these participants,

NOTE Confidence: 0.8296021

00:47:37.170 --> 00:47:40.450 as well as they get into the protocol

NOTE Confidence: 0.8296021

00:47:40.450 --> 00:47:43.879 of and and into the treatment arm.

NOTE Confidence: 0.8296021

00:47:43.880 --> 00:47:46.670 We are monitoring all of that

NOTE Confidence: 0.8296021

00:47:46.670 --> 00:47:49.239 and what is interesting we can,

NOTE Confidence: 0.8296021

00:47:49.240 --> 00:47:52.180 we can tell you that.

NOTE Confidence: 0.8296021

00:47:52.180 --> 00:47:54.670 The variability of sleep duration

NOTE Confidence: 0.8296021

00:47:54.670 --> 00:47:56.662 there variability decreases when

NOTE Confidence: 0.8296021

00:47:56.662 --> 00:47:59.174 they come into the study and that

NOTE Confidence: 0.8296021

00:47:59.174 --> 00:48:01.380 I think is pretty interesting.

NOTE Confidence: 0.8296021

00:48:01.380 --> 00:48:04.117 So just by knowing that there they

NOTE Confidence: 0.8296021

00:48:04.117 --> 00:48:06.629 haven't gotten any instructions yet,

NOTE Confidence: 0.8296021

00:48:06.630 --> 00:48:09.252 they've just been asked is keep

NOTE Confidence: 0.8296021

00:48:09.252 --> 00:48:11.961 asleep blog and where in actigraph

NOTE Confidence: 0.8296021

00:48:11.961 --> 00:48:14.583 and between just over the course

NOTE Confidence: 0.8296021

00:48:14.583 --> 00:48:17.228 of time until they are randomized

NOTE Confidence: 0.8296021

00:48:17.228 --> 00:48:19.333 we see this kind of.

NOTE Confidence: 0.8586582

00:48:21.500 --> 00:48:22.790 Decrease in variability,

NOTE Confidence: 0.8586582

00:48:22.790 --> 00:48:25.800 so I think they become more aware

NOTE Confidence: 0.8586582

00:48:25.883 --> 00:48:28.585 of the importance of sleep or they

NOTE Confidence: 0.8586582

00:48:28.585 --> 00:48:30.681 become more sleep sensitized and

NOTE Confidence: 0.8586582

00:48:30.681 --> 00:48:32.831 that doesn't influence which is

NOTE Confidence: 0.8586582

00:48:32.831 --> 00:48:36.240 part of why we wanted to do this.

NOTE Confidence: 0.85471606

00:48:38.440 --> 00:48:40.882 Wait list control approach because on

NOTE Confidence: 0.85471606

00:48:40.882 --> 00:48:44.063 our pilot study we didn't have a wait

NOTE Confidence: 0.85471606

00:48:44.063 --> 00:48:46.704 list control we we measured them and

NOTE Confidence: 0.85471606

00:48:46.704 --> 00:48:49.432 then sent them on their way for eight

NOTE Confidence: 0.85471606

00:48:49.432 --> 00:48:53.368 weeks and had them come back and.

NOTE Confidence: 0.85471606

00:48:53.370 --> 00:48:55.386 And evaluated again, but we thought,

NOTE Confidence: 0.85471606

00:48:55.390 --> 00:48:58.297 you know, it might also be that now this

NOTE Confidence: 0.85471606

00:48:58.297 --> 00:49:01.219 is the second time in the lab and you

NOTE Confidence: 0.85471606

00:49:01.219 --> 00:49:04.488 know it might be a regression to the mean,

NOTE Confidence: 0.85471606

00:49:04.490 --> 00:49:06.994 so we wanted to add this wait list

NOTE Confidence: 0.85471606

00:49:06.994 --> 00:49:09.701 control so I'm glad I'm glad we did

NOTE Confidence: 0.85471606

00:49:09.701 --> 00:49:12.158 because I think looking at at the

NOTE Confidence: 0.85471606

00:49:12.158 --> 00:49:13.898 second and third overnight stay

NOTE Confidence: 0.85471606

00:49:13.898 --> 00:49:15.948 is going to be most important.

NOTE Confidence: 0.86724305

00:49:15.950 --> 00:49:17.650 Yeah, that's a really nice

NOTE Confidence: 0.86724305

00:49:17.650 --> 00:49:19.350 way to address that challenge

NOTE Confidence: 0.86724305

00:49:19.418 --> 00:49:20.998 or regression to the mean,

NOTE Confidence: 0.86724305

00:49:21.000 --> 00:49:23.888 and so there's a couple of more questions.

NOTE Confidence: 0.86724305

00:49:23.890 --> 00:49:24.712 Methodological, less.

NOTE Confidence: 0.86724305

00:49:24.712 --> 00:49:27.178 I'll just group them together and

NOTE Confidence: 0.86724305

00:49:27.178 --> 00:49:29.859 so the other one is your recovery.

NOTE Confidence: 0.86724305

00:49:29.860 --> 00:49:32.278 Sleep period was eight hours and

NOTE Confidence: 0.86724305

00:49:32.278 --> 00:49:34.725 often the patients tend to sleep

NOTE Confidence: 0.86724305

00:49:34.725 --> 00:49:36.625 much longer on the weekends,

NOTE Confidence: 0.86724305

00:49:36.630 --> 00:49:39.410 trying to make up the sleep, and

NOTE Confidence: 0.8625226

00:49:39.410 --> 00:49:41.395 so does the greater sleep

NOTE Confidence: 0.8625226

00:49:41.395 --> 00:49:42.983 extension change their response.

NOTE Confidence: 0.8625226

00:49:42.990 --> 00:49:45.843 We we can't say, but I think that's a

NOTE Confidence: 0.8625226

00:49:45.843 --> 00:49:48.336 really important question we we needed

NOTE Confidence: 0.8625226

00:49:48.336 --> 00:49:51.910 to draw the line somewhere and we rather

NOTE Confidence: 0.8625226

00:49:51.910 --> 00:49:54.255 than have participants have different.

NOTE Confidence: 0.8625226

00:49:54.260 --> 00:49:55.823 Durations of sleep.

NOTE Confidence: 0.8625226

00:49:55.823 --> 00:50:00.389 We decided to go for what might be more.

NOTE Confidence: 0.8625226

00:50:00.390 --> 00:50:01.304 Commonly experienced,

NOTE Confidence: 0.8625226

00:50:01.304 --> 00:50:04.046 many adults don't have the opportunity.

NOTE Confidence: 0.8625226

00:50:04.050 --> 00:50:06.936 Certainly I think you're right with

NOTE Confidence: 0.8625226

00:50:06.936 --> 00:50:09.782 early adulthood and teens they might

NOTE Confidence: 0.8625226

00:50:09.782 --> 00:50:12.722 be more likely to extend their sleep,

NOTE Confidence: 0.8625226

00:50:12.730 --> 00:50:15.466 and we know that early adulthood,

NOTE Confidence: 0.8625226

00:50:15.470 --> 00:50:18.893 those people in their late late teens

NOTE Confidence: 0.8625226

00:50:18.893 --> 00:50:22.670 early 20s can sometimes extend sleep.

NOTE Confidence: 0.8625226

00:50:22.670 --> 00:50:26.374 To an unusually long duration of 12 hours

NOTE Confidence: 0.8625226

00:50:26.374 --> 00:50:30.167 and even 14 hours that's been reported.

NOTE Confidence: 0.8625226

00:50:30.170 --> 00:50:35.000 So rather than deal with the.

NOTE Confidence: 0.8625226

00:50:35.000 --> 00:50:37.569 Large variation in in ad Lib sleep.

NOTE Confidence: 0.8625226

00:50:37.570 --> 00:50:40.864 We decided to cut it off at 8 hours,

NOTE Confidence: 0.8625226

00:50:40.870 --> 00:50:43.114 which might be more typical of

NOTE Confidence: 0.8625226

00:50:43.114 --> 00:50:45.289 people who are working and have

NOTE Confidence: 0.8625226

00:50:45.289 --> 00:50:47.713 to do other things or take care of

NOTE Confidence: 0.8625226

00:50:47.790 --> 00:50:50.050 children during their day times.

NOTE Confidence: 0.8625226

00:50:50.050 --> 00:50:52.619 But I think that's an interesting question.

NOTE Confidence: 0.8625226

00:50:52.620 --> 00:50:55.580 Can you actually sleep it out if you

NOTE Confidence: 0.8625226

00:50:55.580 --> 00:50:57.825 allow extended sleep rather than just

NOTE Confidence: 0.8625226

00:50:57.825 --> 00:51:00.690 the 8 hours of recovery as we chose?

NOTE Confidence: 0.86566716

00:51:02.230 --> 00:51:03.960 Great, thank you. Let's see.

NOTE Confidence: 0.86566716

00:51:03.960 --> 00:51:05.690 Then there's there's several other

NOTE Confidence: 0.86566716

00:51:05.690 --> 00:51:09.928 questions, and so I will have to.

NOTE Confidence: 0.86566716

00:51:09.930 --> 00:51:11.351 Focus a little bit on the kind

NOTE Confidence: 0.86566716

00:51:11.351 --> 00:51:12.760 of clinical end of things and so.

NOTE Confidence: 0.8743402

00:51:14.890 --> 00:51:16.927 My question is, do you think that

NOTE Confidence: 0.8743402

00:51:16.927 --> 00:51:18.748 the so-called short sleepers without

NOTE Confidence: 0.8743402

00:51:18.748 --> 00:51:20.528 any symptoms are biologically

NOTE Confidence: 0.8743402

00:51:20.528 --> 00:51:22.308 protected from potentially harmful

NOTE Confidence: 0.8743402

00:51:22.366 --> 00:51:23.958 changes of sleep restriction?

NOTE Confidence: 0.9021565

00:51:25.350 --> 00:51:31.542 Right, well I can. I can tell you that.

NOTE Confidence: 0.9021565

00:51:31.550 --> 00:51:34.486 Well, we don't know with regards to the

NOTE Confidence: 0.9021565

00:51:34.486 --> 00:51:37.536 Physiology, and I think that's a really

NOTE Confidence: 0.9021565

00:51:37.536 --> 00:51:39.889 important and exciting area to do.

NOTE Confidence: 0.9021565

00:51:39.890 --> 00:51:45.612 To study. We do know that.

NOTE Confidence: 0.9021565

00:51:45.612 --> 00:51:48.720 That people who claim to sleep shorter

NOTE Confidence: 0.9021565

00:51:48.720 --> 00:51:51.110 with regards to their performance,

NOTE Confidence: 0.9021565

00:51:51.110 --> 00:51:54.486 like if you look at Psycho motor vigilance

NOTE Confidence: 0.9021565

00:51:54.486 --> 00:51:57.436 tests, we do know that they are.

NOTE Confidence: 0.9021565

00:51:57.440 --> 00:51:59.860 Also they are impaired when

NOTE Confidence: 0.9021565

00:51:59.860 --> 00:52:02.280 they don't get adequate sleep.

NOTE Confidence: 0.9021565

00:52:02.280 --> 00:52:05.280 So there might be some.

NOTE Confidence: 0.9021565

00:52:05.280 --> 00:52:06.310 Definitely I.

NOTE Confidence: 0.9021565

00:52:06.310 --> 00:52:09.400 I think that there are different

NOTE Confidence: 0.9021565

00:52:09.400 --> 00:52:13.048 degrees of vulnerability to sleep loss.

NOTE Confidence: 0.9021565

00:52:13.050 --> 00:52:17.538 We have a lot of data on the

NOTE Confidence: 0.9021565

00:52:17.538 --> 00:52:20.268 neurobehavioural and to show that,

NOTE Confidence: 0.9021565

00:52:20.270 --> 00:52:24.374 but I do believe that there are also

NOTE Confidence: 0.9021565

00:52:24.374 --> 00:52:27.285 different degrees of sensitivity to

NOTE Confidence: 0.9021565

00:52:27.285 --> 00:52:30.255 sleep loss that system specific.

NOTE Confidence: 0.9021565

00:52:30.260 --> 00:52:33.638 So you might have more metabolic

NOTE Confidence: 0.9021565

00:52:33.638 --> 00:52:35.327 vulnerability than neurobehavioural.

NOTE Confidence: 0.9021565

00:52:35.330 --> 00:52:38.910 Vulnerability or you may have

NOTE Confidence: 0.9021565

00:52:38.910 --> 00:52:41.058 more autonomic vulnerability.

NOTE Confidence: 0.9021565

00:52:41.060 --> 00:52:46.397 So I think it needs a good systems approach.

NOTE Confidence: 0.9021565

00:52:46.400 --> 00:52:47.508 He's not one apart.

NOTE Confidence: 0.8548935

00:52:48.660 --> 00:52:51.246 And the last question that's here

NOTE Confidence: 0.8548935

00:52:51.246 --> 00:52:53.762 is an interesting one. It's in.

NOTE Confidence: 0.8548935

00:52:53.762 --> 00:52:56.138 Is there any information on sleep

NOTE Confidence: 0.8548935

00:52:56.138 --> 00:52:58.045 restriction and migraine headaches

NOTE Confidence: 0.8548935

00:52:58.045 --> 00:53:00.300 that you are familiar with?

NOTE Confidence: 0.80442935

00:53:01.580 --> 00:53:04.331 So Rami Burstein at our institution has

NOTE Confidence: 0.80442935

00:53:04.331 --> 00:53:07.073 done some work in Susie Birtish has

NOTE Confidence: 0.80442935

00:53:07.073 --> 00:53:09.670 done some work on migraine and and.

NOTE Confidence: 0.86218876

00:53:12.130 --> 00:53:15.232 I think that the the actual

NOTE Confidence: 0.86218876

00:53:15.232 --> 00:53:18.515 research in the area is still

NOTE Confidence: 0.86218876

00:53:18.515 --> 00:53:21.827 pretty pretty new and there are.

NOTE Confidence: 0.86218876

00:53:21.830 --> 00:53:24.530 There's some different findings clinically.

NOTE Confidence: 0.86218876

00:53:24.530 --> 00:53:28.712 I know that patients with migraine

NOTE Confidence: 0.86218876

00:53:28.712 --> 00:53:33.720 often complain of. You know of.

NOTE Confidence: 0.86218876

00:53:33.720 --> 00:53:35.904 Sleep loss bringing bringing

NOTE Confidence: 0.86218876

00:53:35.904 --> 00:53:39.724 on migraine and if they can get

NOTE Confidence: 0.86218876

00:53:39.724 --> 00:53:42.797 to sleep at an early point in

NOTE Confidence: 0.86218876

00:53:42.797 --> 00:53:45.629 the process there is anecdotal.

NOTE Confidence: 0.86218876

00:53:45.630 --> 00:53:47.678 Evidence if you will,

NOTE Confidence: 0.86218876

00:53:47.678 --> 00:53:50.750 that that sleep can actually turn

NOTE Confidence: 0.86218876

00:53:50.850 --> 00:53:53.460 it around for some patients,

NOTE Confidence: 0.86218876

00:53:53.460 --> 00:53:56.778 so prevent the full blown migraine

NOTE Confidence: 0.86218876

00:53:56.778 --> 00:54:00.524 attack if they get sleep at and

NOTE Confidence: 0.86218876

00:54:00.524 --> 00:54:03.374 at a critical point in time.

NOTE Confidence: 0.8132937

00:54:05.930 --> 00:54:07.770 But that's that's anecdotal.

NOTE Confidence: 0.8343092

00:54:08.530 --> 00:54:09.834 Great, thank you very

NOTE Confidence: 0.8343092

00:54:09.834 --> 00:54:11.138 much well the commotion.

NOTE Confidence: 0.8343092

00:54:11.140 --> 00:54:13.096 Thank you very much for a

NOTE Confidence: 0.8343092

00:54:13.096 --> 00:54:14.400 wonderful talk and answering.

NOTE Confidence: 0.8343092

00:54:14.400 --> 00:54:16.344 All these questions are fully and

NOTE Confidence: 0.8343092

00:54:16.344 --> 00:54:18.084 thank you everybody for attending

NOTE Confidence: 0.8343092

00:54:18.084 --> 00:54:20.014 yet another excellent addition of

NOTE Confidence: 0.8343092

00:54:20.014 --> 00:54:22.131 the Joint Seminar Series and Hope

NOTE Confidence: 0.8343092

00:54:22.131 --> 00:54:23.916 you guys have a great holiday and

NOTE Confidence: 0.8343092

00:54:23.916 --> 00:54:26.205 we will resume the joint seminars

NOTE Confidence: 0.8343092

00:54:26.205 --> 00:54:28.674 in January with a special guest

NOTE Confidence: 0.8343092

00:54:28.674 --> 00:54:31.264 James Nestore who is an author and.

NOTE Confidence: 0.8343092

00:54:31.270 --> 00:54:33.352 I will discuss his recent book

NOTE Confidence: 0.8343092

00:54:33.352 --> 00:54:35.660 Breathe The Science of the Lost Art.

NOTE Confidence: 0.90543306

00:54:37.960 --> 00:54:40.378 And then great. Good luck with

NOTE Confidence: 0.90543306

00:54:40.378 --> 00:54:41.587 the pipeline development.

NOTE Confidence: 0.90543306

00:54:41.590 --> 00:54:45.654 Obviously you guys are doing a great job.

NOTE Confidence: 0.90543306

00:54:45.660 --> 00:54:48.920 Super. Bye bye thanks very much.