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Daylight Savings Time Interaction with Health Outcomes

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Introduction

In this presentation, we will map out some of the observable physical activity and nutritional behaviors that can be indirectly impacted by Daylight Savings Time (DST).

We will do this by demonstrating the sequence of health events that are ultimately disrupted when we shift back an hour.

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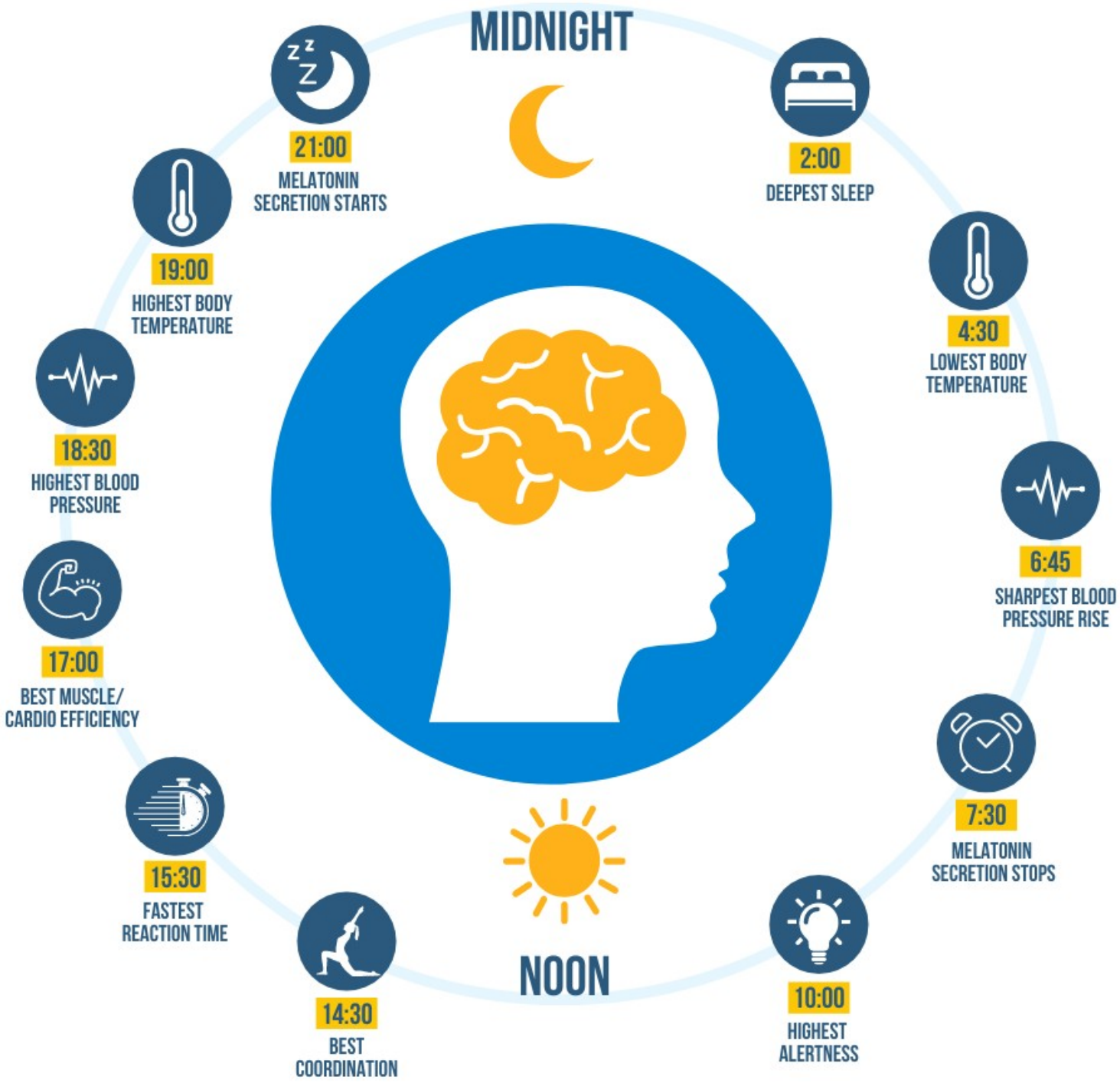
Though there is a lack of empirical evidence that DST *directly* impacts our health, there is strong evidence that DST disrupts human circadian rhythm and hormonal balance.

Understanding Circadian Rhythms

- Also known as our Sleep/Wake cycle.
- Runs on a 24-hour loop and has direct influence over our bodies.
- It controls when we are awake, tired, hungry, or thirsty.
- More importantly, this clock influences our heart, liver, muscle, and fat.
- A disruption in our circadian rhythm is a direct disruption of all of our bodily systems.[1,2]



Daylight Savings Time and Circadian Rhythm Connection

The disruption is more than just the change of an hour on the clocks.

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Studies have shown that in the week prior and the week following Daylight Savings Time, more hours than just 1 are lost in sleep time.

DST + Circadian Rhythms

- Studies have shown that in the week prior and the week following Daylight Savings, risk of acute heart attack symptoms increase.[2]
- There are 150,000 incidences of negative health effects in the United States.[3]
- Digestive system disorders and discomforts rose 3% in women over 60 and 6% in male youth under 10.[3]

Daylight saving time, circadian rhythms, and cardiovascular health

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Abstract

Very recently, the European Parliament, called to decide on possible abolition of the Daylight Saving Time (DST), approved a resolution calling the scientific community to conduct a more in-depth evaluation. The question is based on disruption of body's circadian rhythms. We review here the relationship between DST and cardiovascular health. The available evidence suggests the existence of an association between DST and a modest increase of occurrence of acute myocardial infarction, especially in the first week after the spring shift. Possible mechanisms include sleep deprivation, circadian misalignment and environmental conditions. The role of gender and individual preference in circadian rhythms (chronotype) will need further assessment.

Keywords Daylight saving time · Circadian rhythms · Chronobiology · Myocardial infarction · Gender · Sleep deprivation · Chronotype · Climate

DST + Circadian Rhythms + Health Behaviors

Obesity Risk and Nutrition Factors

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Before, during, and after DST, appetite signaling changes

- The fatty tissue that we all carry in our body is directly linked to a homeostatic balance.[1]
- These hormones signal our brain to notify us when we are hungry/full.[1]
- During a regulated 24-hour body clock, these signals are only when we are awake.[1]
- When the sleep cycle is changed, so is the signaling response.[1]
- This suggests that during DST disruption, individuals are at risk to intake more calories than usual and consume them at hours considered “unhealthy”.[1]

DST + Circadian Rhythms + Health Behaviors

Physical Activity

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Before, during, and after DST, individuals might find themselves sluggish, weary, and unmotivated

- Sleep pattern disruptions have a direct effect on energy levels.[2]
- Intrinsic motivation plays a large role in whether an individual will participate in physical activity or not.[4]
- Individuals are more likely to be active outside if they have daylight available. [5, 6]
- Rural communities would benefit physically from having an additional hour of daylight.[7]

Key Takeaways

-Even a slight shift in our homeostatic balance, such as a change in sleep schedule, can send our bodies into a frenzy.

-This can change our appetite levels and our energy levels leaving us sluggish and unmotivated.

-We can draw conclusions based on what we scientifically know to be true of circadian rhythms and health behavior patterns.

Citations

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Questions?