



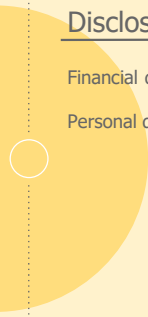
Meal Timing Matters:

Supporting Metabolic Health through Circadian Alignment

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Disclosures

Financial disclosures – Honorarium from WAND

Personal disclosure – I work night shift!

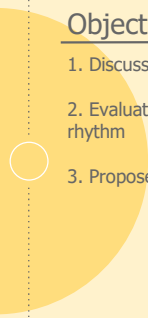








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Objectives

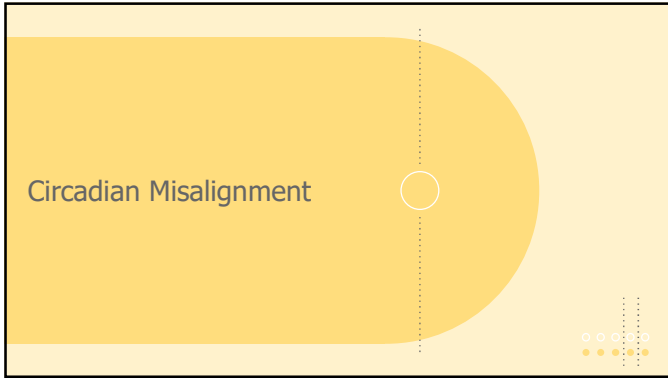
1. Discuss the impact of circadian misalignment on metabolic health
2. Evaluate the research on meal timing as it relates to circadian rhythm
3. Propose strategies for improving distorted meal timing patterns



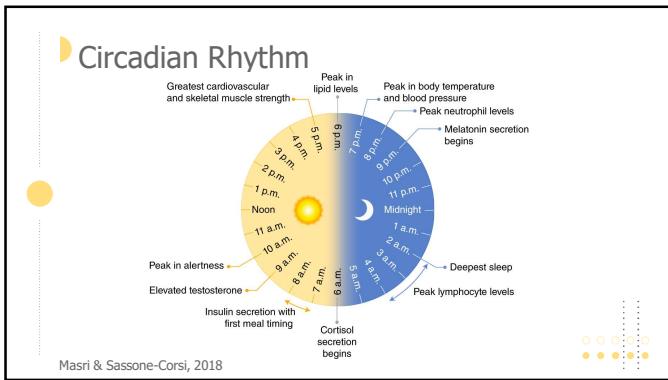




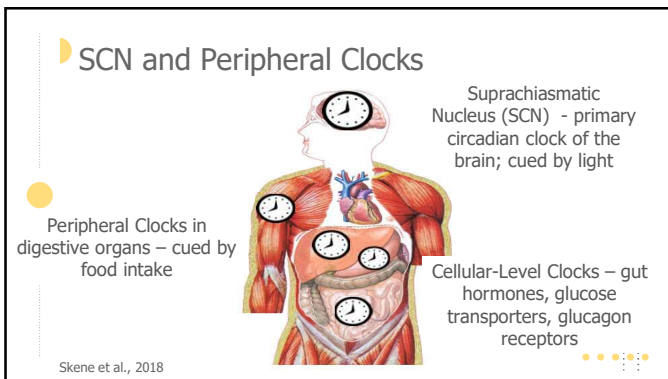
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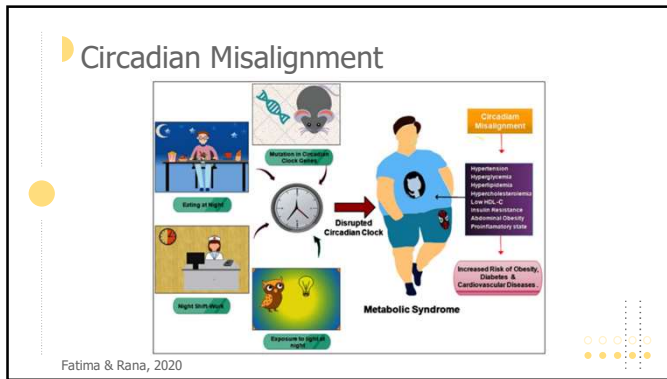
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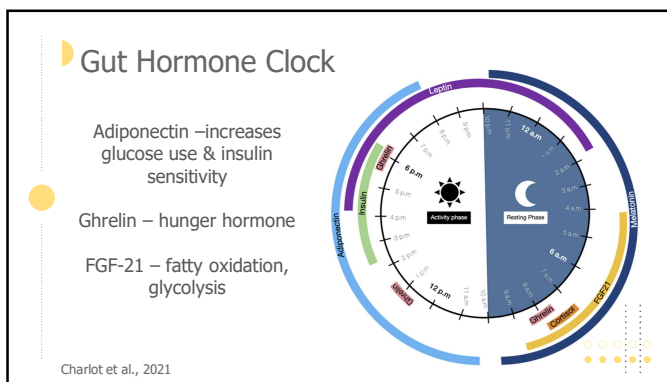
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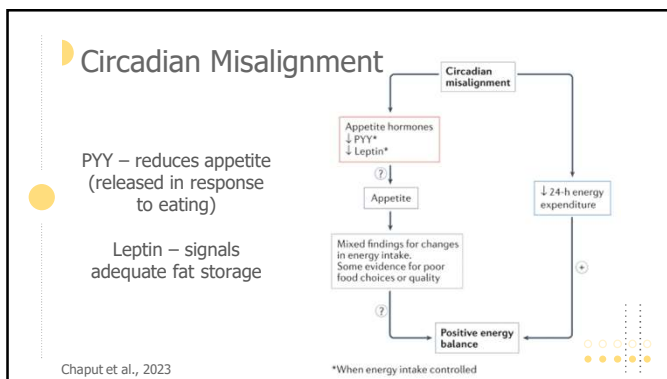
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Circadian Misalignment Takeaways

We have several circadian clocks in our bodies; our cells and organs are designed to function best with daylight.

When we eat outside of our circadian rhythm, we create circadian misalignment.

With this knowledge, how can we minimize negative outcomes or optimize positive outcomes?



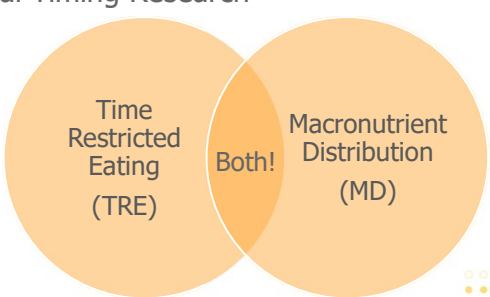
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Meal Timing Research



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Meal Timing Research



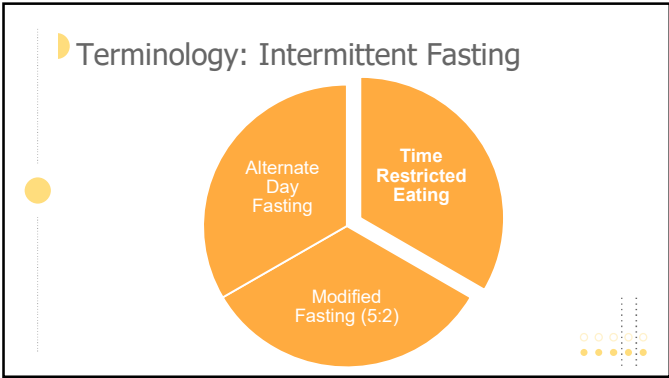
Time Restricted Eating (TRE)

Macronutrient Distribution (MD)

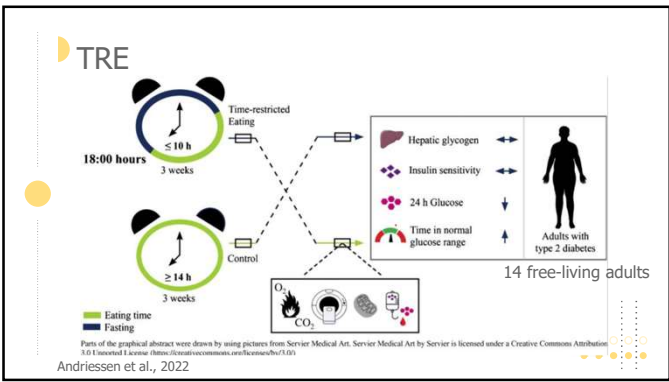
Both!



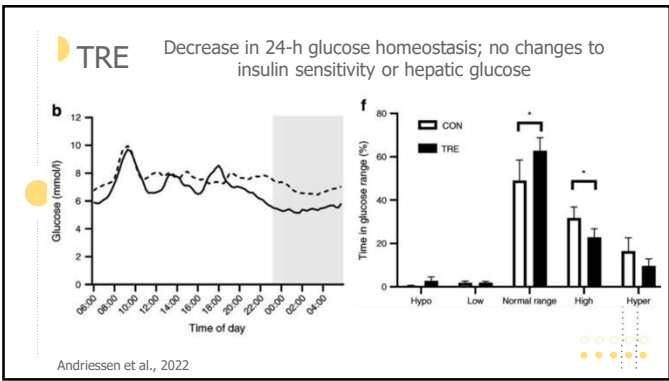
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TRE

90 racially-diverse adults with obesity

Three arms:

- 8-hour TRE (12-8pm)
- 25% continuous calorie restriction (CR)
- Control eating > 10-hour

After 1 year, average 4.6-5.4 kg weight loss and increased insulin sensitivity for TRE and CR groups

Lin et al., 2023

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TRE Review

Swiatkiewicz et al., 2021

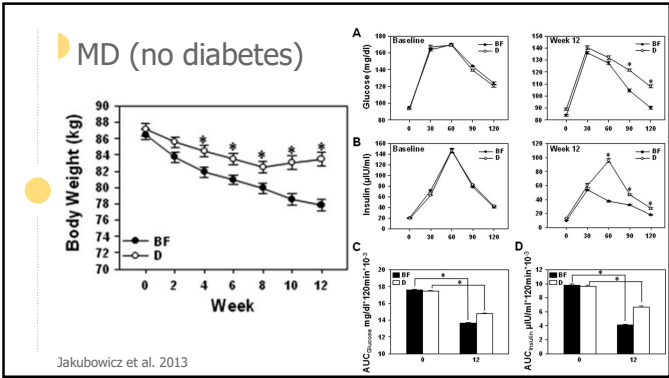
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MD (no diabetes)

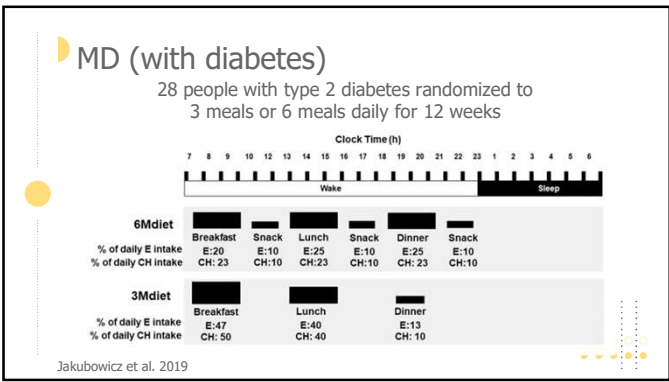
93 free-living women with overweight/obesity & metabolic syndrome randomized to evening-heavy vs. morning-heavy meals for 12 weeks

Jakubowicz et al. 2013

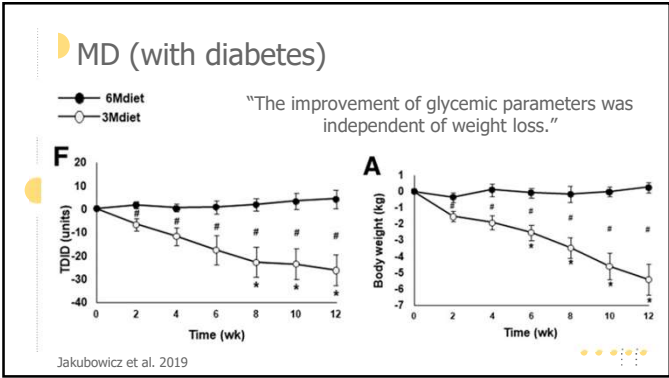
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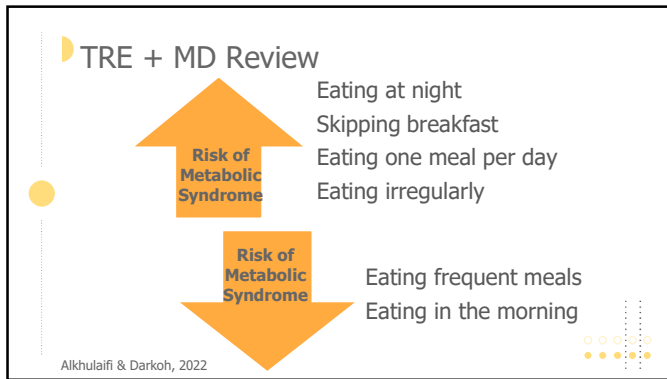


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What about Meds?

Uldal et al. reviewed TRE studies with patients using:

- Metformin
- Sulfonylureas
- TZDs
- Glinides
- Acarbose
- DPP-4 Inhibitors
- SGLT-2 Inhibitors
- Insulin

Only one hypoglycemic event reported – control patient on insulin

Uldal et al., 2022

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Meal Timing Research Takeaways

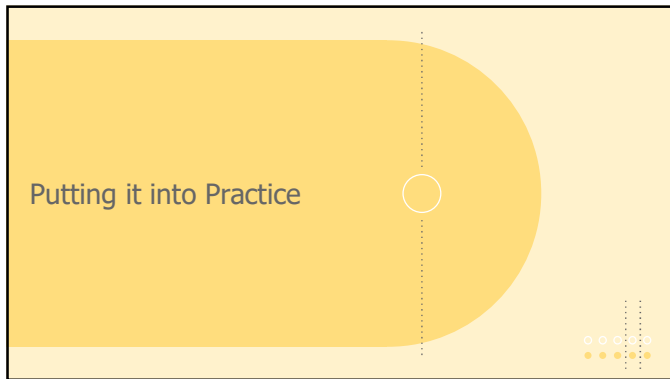
I've shared the exciting studies! There are probably several we haven't heard about that are not exciting.

Most human studies are small and short-term.

Longer-term studies show that TRE (and IF) is equally effective as consistent calorie reduction for weight loss. Cardiometabolic outcomes can vary based on metabolic profile.

What do we do with this information?

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Scenario: Distorted Meal Timing

I don't even eat that much. In the morning I have coffee and a slice of toast. I pack a turkey sandwich for lunch but some days I don't have time for it. When I get home, I have dinner with the family. The kids like ice cream for dessert so I'll have a couple bites with them. Sometimes I have a beer or two before bed and a handful of peanuts.

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Restoring Circadian Meal Timing

Some research suggests that...

- eating more of your calories or carbs earlier in the day
- limiting food in the evening and overnight
- having a longer break between dinner and breakfast

...better aligns with your body's natural cycle and can help with your health.

Are you interested in talking about this kind of eating plan?

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Overcoming Challenges

Challenge	Ideas
No time in the morning	Prep the night before Protein shake/powder with coffee Healthy restaurant options
Not hungry in the morning	Extend the fast after evening eating Consider changing schedule Maybe morning eating isn't a good fit
Breakfast isn't appealing	Non-traditional breakfast foods Maybe morning eating isn't a good fi
No desire to change	Find a different desired change! Decision balance worksheet – pros/cons of changing and not changing

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Scenario: Magic Diet

My cousin started this new diet where he only eats for six hours of the day and can eat whatever he wants. He already lost 15 pounds in 2 weeks. I want to do that diet.

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Meeting Patients Where They Are

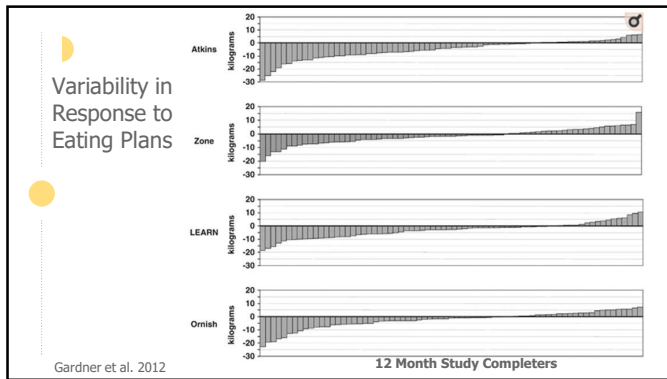
What do you know about TRE or MD? What interests you in it?

What eating window is most realistic for you? How does this affect your family and social dynamics?

Let's go through your medication list and think about how your eating timing affects those.

Let's set a trial period and see how it goes.

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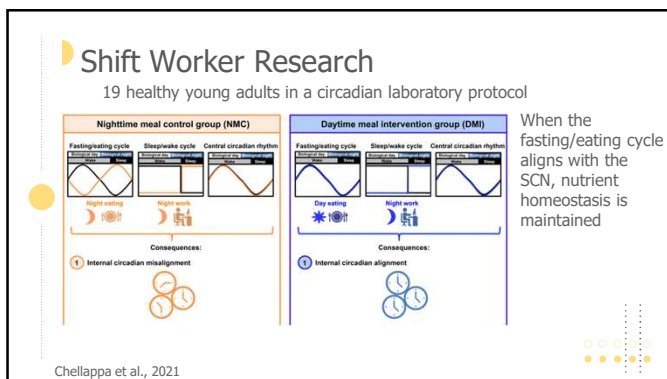


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General Consensus on Meal Timing

- 1) Maintain a fasting period overnight. Try to extend it from whatever is normal for you right now.
- 2) Eat your bigger meals earlier in the day. If that doesn't work for you, at least do #1.
- 3) Eating from 8am-4pm is ideal based on our circadian rhythm... but is it realistic? Eating from 12-8pm doesn't align as well but it can still limit late-night snacking.

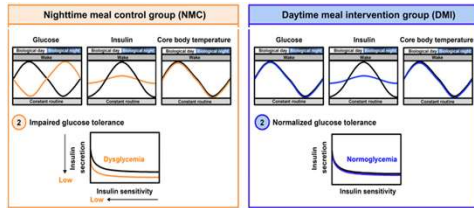
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Shift Worker Research

Aligning the fasting/eating cycle with the SCN maintains nutrient homeostasis... so eat during the day!



Chellappa et al., 2021

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Ideal vs. Reality

5:30pm – dinner

7pm (or 11pm?) – work starts

7:30am – work ends

8am – breakfast, go to bed

1pm – lunch, back to bed

5:30pm – do it again!

6pm – groggily wake up, chug tea

7pm (or 11pm?) – work starts

Overnight – eat junk food (if lucky) between births, stat c-sections, and hemorrhages. Ideally drink a second tea by 3am

4-5am – why is this my life?!?!?

7:30am – work ends

8am – fall into bed, fitfully sleep

1pm – wake up to use bathroom and eat cheez-its, back to bed

6pm – do it again, possibly crying

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Supporting Shift Workers

Individualize recommendations and be creative

- Sleep as much as you can
- Try to have an overnight fast. Stay hydrated but eat if hungry
- Pack protein-based snacks
- Eat a light breakfast if it's comfortable
- Have dinner at home if possible

Remind patients to be kind to themselves!

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Practice Takeaways

Meal timing interventions are rarely harmful and may be beneficial.

- Be open to new strategies. We don't have the science (yet) to know what will work for each individual.
- Be flexible. It's never all-or-nothing in nutrition.
- Test it out yourself to gain some firsthand experience.



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Thank you!



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