Exercise Intensity & Time on Melatonin Levels

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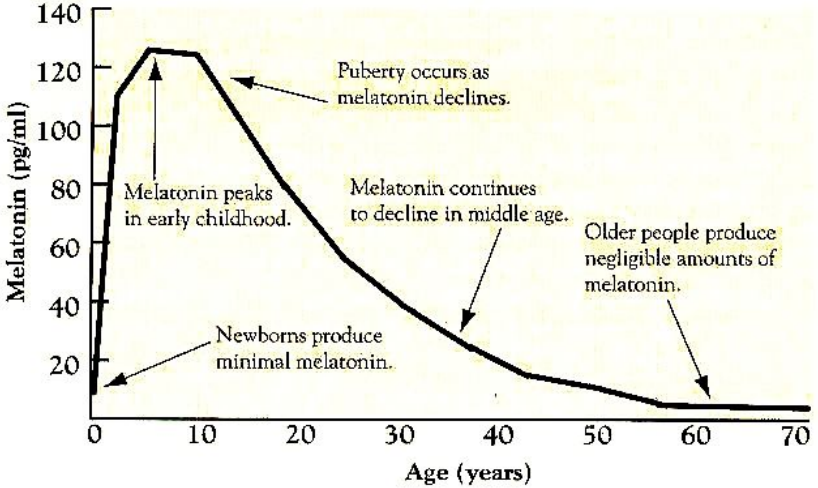
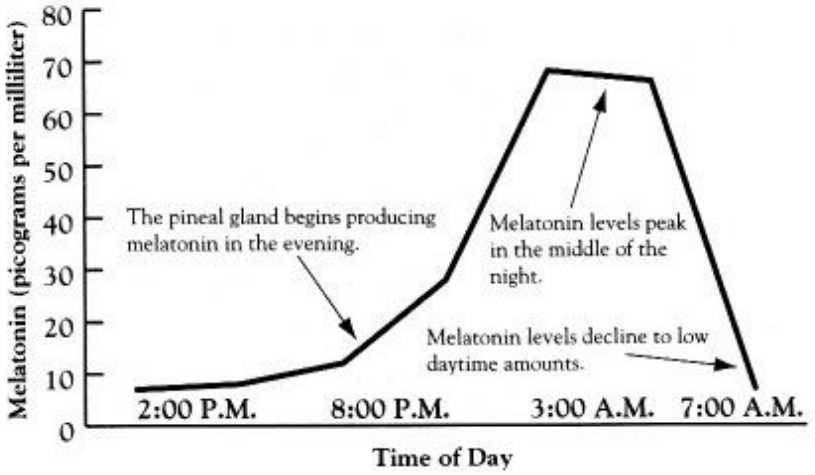
Melatonin is...

- hormone that controls your biological clock
- secretion decreases by age
- affected by exposure to light & exercise





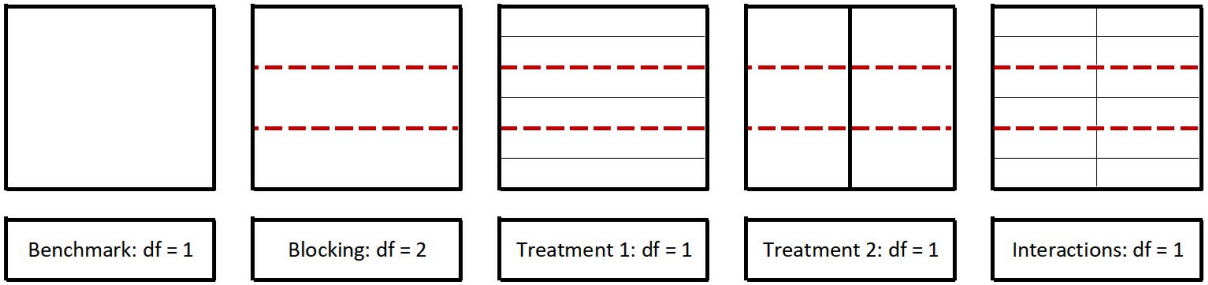
Experimental Design

- Purpose:
  - Investigate relation between exercise intensity & exercise time on melatonin secretion levels
- Design: 2^2 factorial design

Response Variable	Blood Melatonin		
Treatment 1: Time of Exercise	Daytime	Nighttime	
Treatment 2: Intensity	Moderate	High	
Blocking: Age	20-35	35-50	50-65

  - Participants: 132 healthy males, 20 - 65 y/o split into 3 blocks
  - Collect data at 10 PM
    - before exercise
    - day of exercise
    - day after

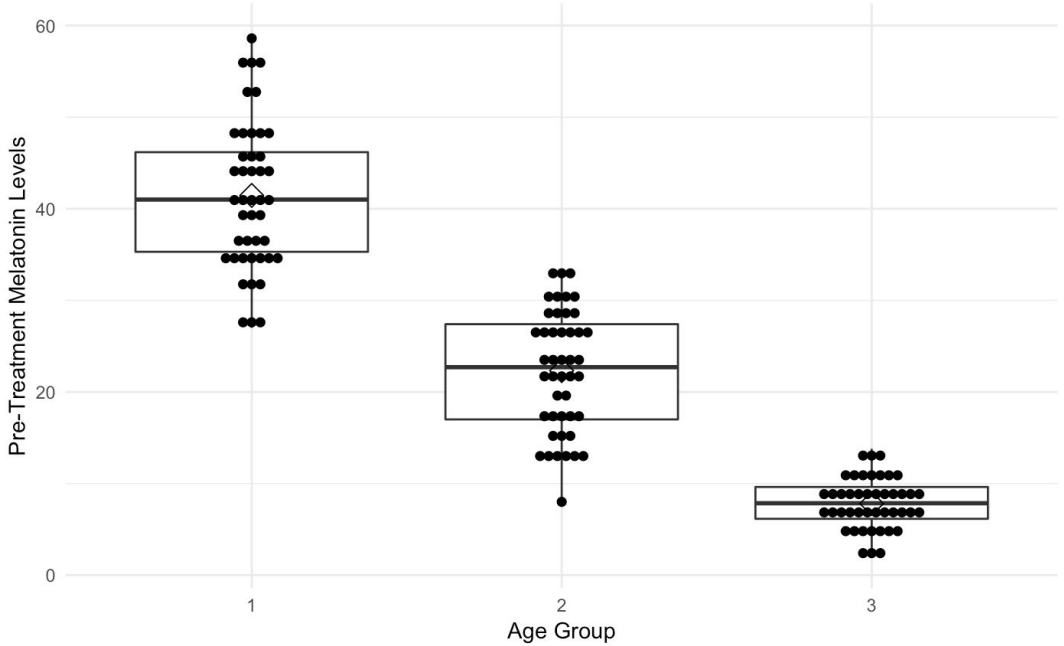
Factor Diagram



Model: $y_{ijkl} = \mu_i + \alpha_j + \beta_k + \alpha\beta_{jk} + \delta_l + \varepsilon_{ijkl}$

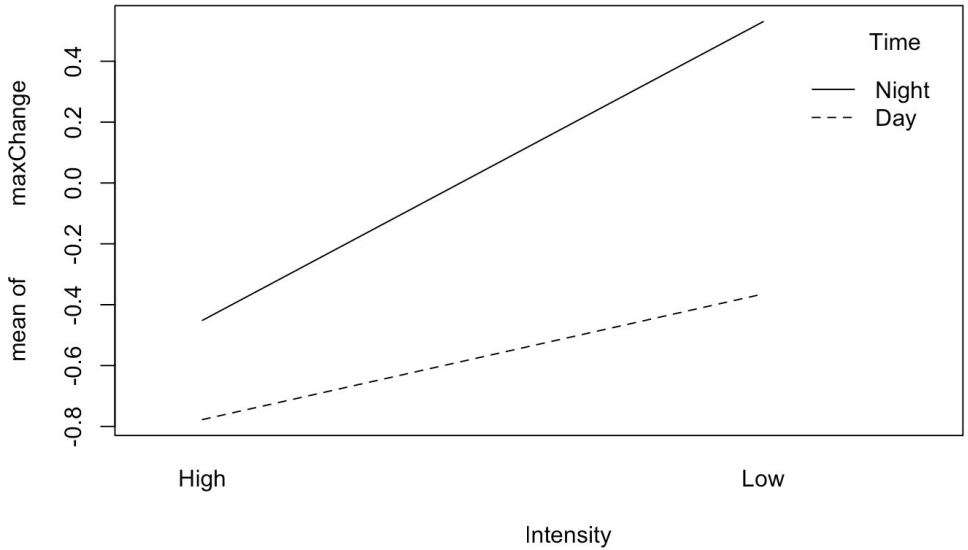
Analysis (1)

- Melatonin levels varies by age
  - significant factor in linear model analysis
  - Boxplot results



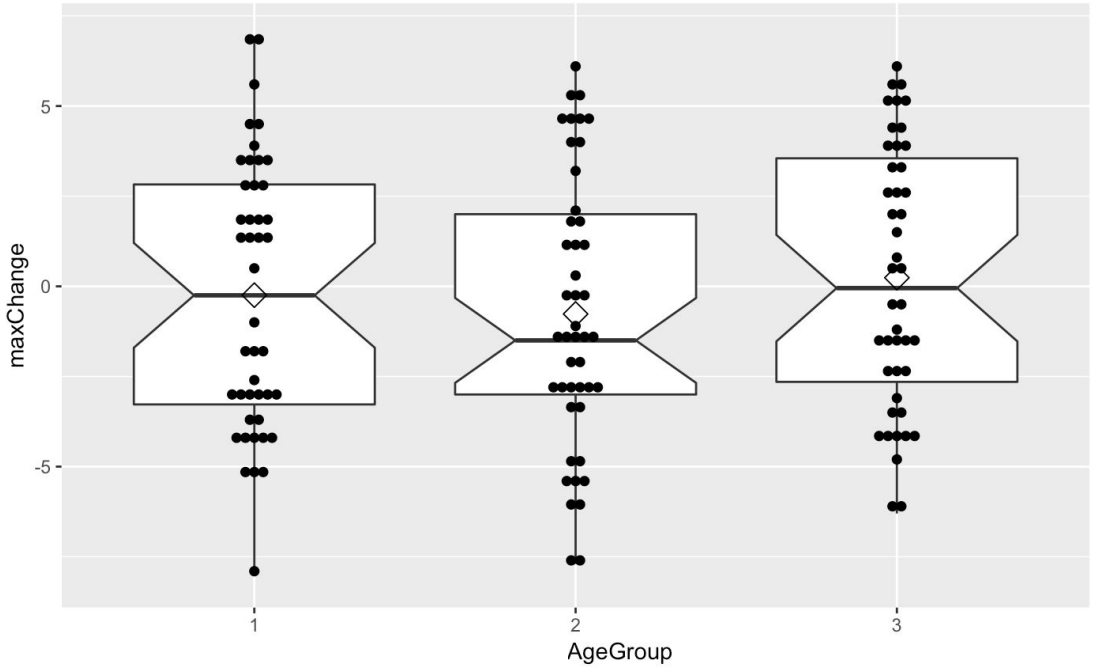
Analysis (2)

- Two Way ANOVA with blocking:
  - None are significant
  - Daytime exercise renders lower melatonin levels than previous day



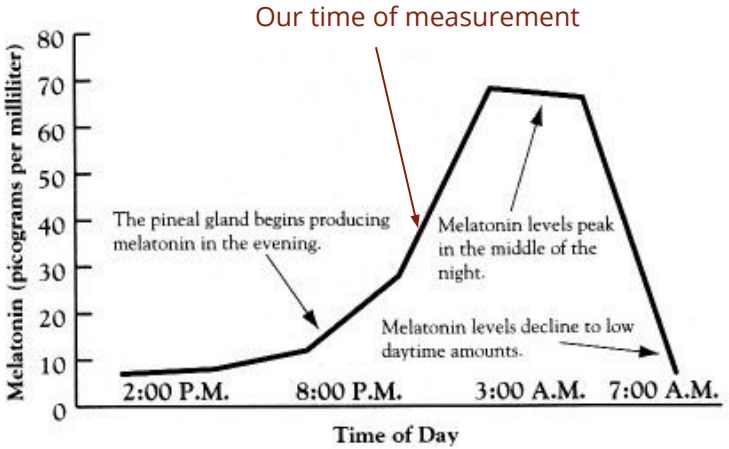
Analysis (3)

- Melatonin levels vs age
  - Changes varies between individuals
  - Average is 0
  - Lower levels for 36-50 year olds



Conclusion

- Possible error sources:
  - Time of measurement
  - Length of experiment
  - Relativity of intensity and length of exercise
  - Choice of exercise



▼ Exercise

Arm Curl Test
Arm Strength
Bungy Jump 25 m
Bungy Jump 50 m
Climb Tree
Hop 100 m Outdoors
Jog Downhill 200 m
Jog on the Spot
Jog Uphill 200 m
Jumping
Multistage Shuttle Run Test
Run Indoors 100 m
Run Indoors 5 km
Run Outdoors 1 km
Run Outdoors 100 m
Run Outdoors 5 km
Swim Freestyle 1500 m
Swim Freestyle 200 m
Swim Freestyle 50 m