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4-19-2021

## The Relationship Between Physical Activity, Sleep Behaviors, and Gastrointestinal Symptoms During COVID-19

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### Recommended Citation

Wachowiak, Jena, "The Relationship Between Physical Activity, Sleep Behaviors, and Gastrointestinal Symptoms During COVID-19" (2021). *Celebrating Scholarship and Creativity Day*. 137.  
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# The Relationship Between Physical Activity, Sleep Behaviors, and Gastrointestinal Symptoms During COVID-19

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## Introduction

- The COVID-19 pandemic has created living environments that may have impacted physical activity, sleep, and gastrointestinal (GI) symptoms.

## Objective

- To determine the relationship between physical activity, sleep behaviors, and GI symptoms during the current COVID-19 pandemic in college students.



## Methods

- College Students (n=459; ages 18-23)
- Participants completed an online survey in April 2020 which included:
  - IPAQ-sf
  - PSQI
  - GI Symptoms Questionnaire
- Spearman rho correlation coefficients used to analyze data

**Table 1. Descriptive Statistics for GI symptoms, Sleep Behaviors, and Physical Activity.**

Variable	Mean (SD)
GI Total	5.62 (5.43)
Sleep Duration (hr)	7.77 (1.23)
Sleep Quality	2.71 (1.15)
Physical Activity Total Min	113.51 (81.83)
Vigorous + Moderate Min	61.22 (53.16)
Vigorous Min	31.48 (31.16)
Moderate Min	35.55 (30.85)
Walking Min	49.05 (56.96)

**Table 2. Overall Sample Correlations**

Variable	1	2	3	4	5	6	7	8
1. GI Total	1							
2. Sleep Duration (hr)	0.11*	1						
3. Sleep Quality	0.03	-0.07	1					
4. PA Total Min	0.01	-0.11*	-0.02	1				
5. Vigorous + Moderate Min	0.11*	-0.03	-0.03	0.83**	1			
6. Vigorous Min	0.05	-0.09	-0.07	0.63**	0.78**	1		
7. Moderate Min	0.06	0.01	0.02	0.70**	0.79**	0.34**	1	
8. Walking Min	0.02	-0.06	-0.01	0.66**	0.18**	0.11*	0.24**	1

\* $p < 0.05$ . \*\* $p < 0.01$ .

## Results

- Higher GI scores were significantly related to higher vigorous and moderate intensity physical activity minutes in the overall sample ( $rs=0.11, p<0.05$ ); and for females ( $rs=0.13, p<0.05$ ).
- Higher GI scores were significantly related to longer sleep duration in the overall sample ( $rs=0.11, p<0.05$ ) and for males ( $rs=0.26, p<0.01$ ).
- Males exhibited longer sleep duration but lower sleep quality ( $rs=-0.23, p<0.05$ ).
- Higher physical activity minutes were significantly related to shorter sleep duration in the overall sample ( $rs=-0.11, p<0.05$ ) and for females ( $rs=-0.12, p<0.05$ ).

## Conclusion

- GI symptom occurrence may increase with greater duration of vigorous and moderate intensity activity and longer sleep duration.
- A focus on promoting **lower intensity exercise and improved sleep behaviors** is warranted to decrease GI symptoms.