Evaluation of the virtual Exercise is Medicine on Campus campaign: Effects on college students' physical activity perceptions and behaviors

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Master of Public Health: Physical Activity Emphasis

Major Professor: Dr. Emily Mailey

Outline

- Background
- Project Description
- Results
- Discussion
- Conclusion
- APE Report
- Competencies

Physical Activity Barriers in College Students

- High proportion of college students' physical activity levels remain below recommended standards and may decrease as they become older (Huang, 2003).
- Barriers include:
  - Lack of time
  - Laziness
  - Lack of motivation/willpower

  (Ebben & Brudzynski, 2008; Silliman, 2004).

The Pandemic and its Effects on College Students

- Increase in stress and anxiety (Son et al., 2020)
- Increase sedentary time and leisure-time screen activities (Meyer et al., 2020)
- Decrease in the time spent on moderate and vigorous physical activities, time spent on walking and doing sports (Rodríguez-Larrad, 2021)
- Increase in sitting time and a reduction in the amount of time spent on physical activity (Ammar, 2020)

Table 2. Responses to the physical activity questionnaire recorded before and during home confinement.

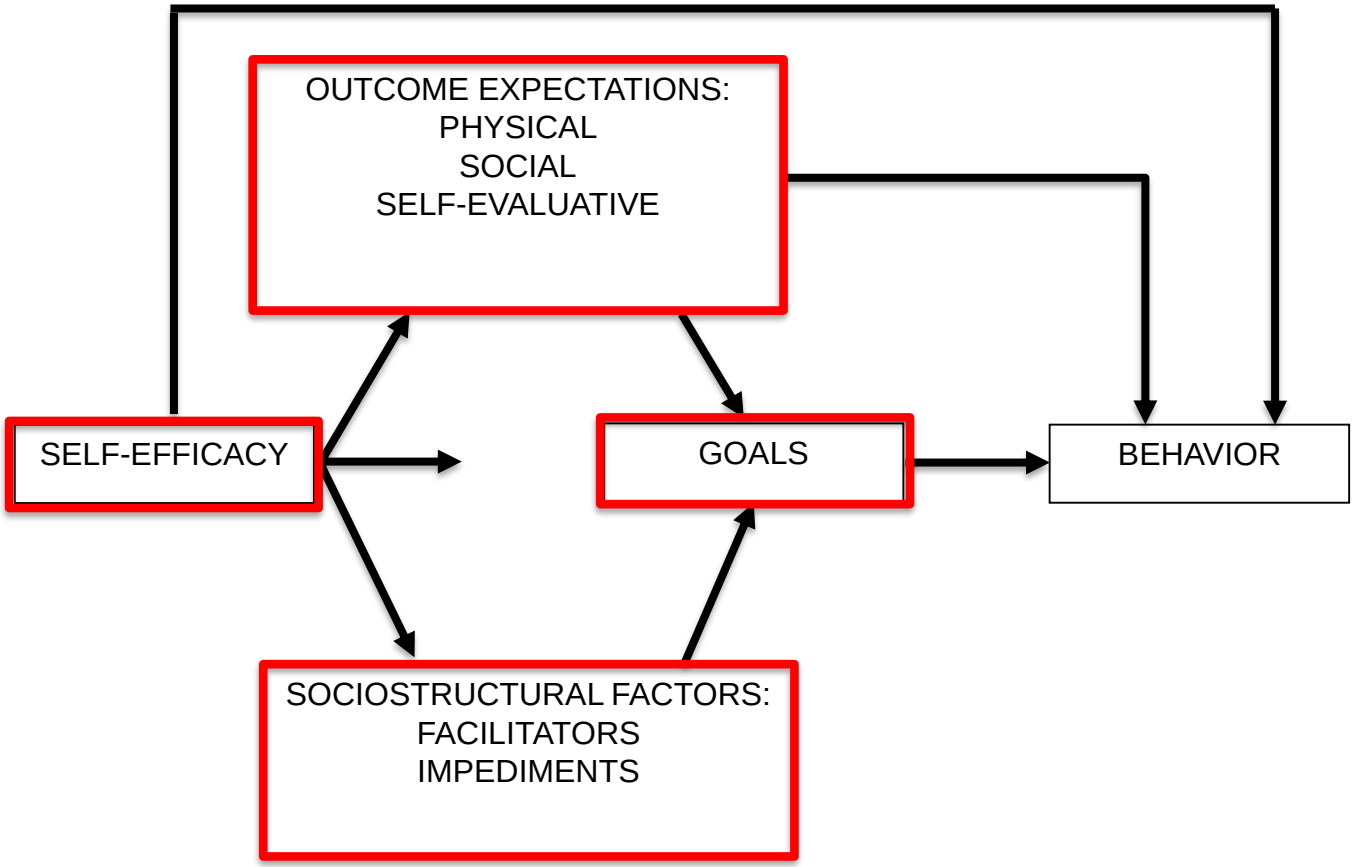
		before Confinement	during Confinement	Δ (Δ%)	*t* Test	*p* Value	Cohen's d
Vigorous intensity	Days/week	1.97 ± 2.11	1.52 ± 2.03	0.45 (22.7%)	7.751	<0.001	0.374
	min/week	38.7 ± 58.1	26.0 ± 47.8	12.83 (33.1%)	9.759	<0.001	0.542
	MET values	1168 ± 2468.7	737.2 ± 1844.5	430.8 (36.9%)	6.683	<0.001	0.315
Moderate intensity	Days/week	1.79 ± 2.08	1.36 ± 1.95	0.43 (24.0%)	7.898	<0.001	0.396
	min/week	32.1 ± 49	21.4 ± 37.3	10.72 (33.4%)	7.858	<0.001	0.343
	MET values	446.4 ± 920.2	291.5 ± 772.7	154.8 (34.7%)	5.247	<0.001	0.204
Walking	Days/week	3.59 ± 2.58	2.33 ± 2.48	1.26 (35.0%)	15.806	<0.001	0.677
	min/week	37.2 ± 46.8	24.6 ± 34.1	12.64 (34.0%)	9.343	<0.001	0.389
	MET values	578.3 ± 917.1	331.4 ± 640.2	246.8 (42.7%)	9.039	<0.001	0.361
All PA	Days/week	5.04 ± 2.51	3.83 ± 2.82	1.21 (24.0%)	15.611	<0.001	0.482
	min/week	108 ± 114.2	71.8 ± 88.2	36.19 (33.5%)	12.510	<0.001	0.387
	MET values	2192.6 ± 3300.7	1360.2 ± 2545.2	832.5 (38.0%)	9.146	<0.001	0.283
Sitting	Hours/day	5.31 ± 3.65	8.41 ± 5.11	3.10 (28.6%)	−25.030	<0.001	1.130

Ammar et al., 2020

Social Cognitive Theory (SCT)

- Acknowledges the role of environment in changing behavior
- Reciprocal Determinism emphasizes the dynamic interaction between people, their behavior, and their environments (Bandura, 1998)
- This theory assumes that knowledge of health risks and benefits create preconditions for change
  - Motivation
  - Behavioral capacity
  - Observational learning

Social Cognitive Model (Bandura, 2004)



Exercise is Medicine (EIM)

- A global health initiative managed by the American College of Sports Medicine (ACSM), to make physical activity assessment and promotion a standard in clinical care
- EIM encourages health care providers to include physical activity when designing treatment plans and to refer patients to exercise professionals

Exercise is Medicine On Campus (EIM-OC)

- Calls upon universities and colleges to promote physical activity as a vital sign of health
- Encourages faculty, staff and students to work together toward improving the health and well-being of the campus community

EIM-OC at K-State

- Kinesiology department and the Kinesiology Student Association
- October has been EIM-OC month at K-State for four years
- Previous years activities:
  - Health and fitness assessments
  - Annual campus walk with Willie the Wildcat and a prize giveaway
  - Distinguished lecture series
- In 2020, most activities took place in a virtual setting and promotion of the campaign was mostly through social media, emails and announcements

Purpose of the Study

- To evaluate the reach and effectiveness of the virtual EIM-OC campaign and its effects on college students' physical activity behaviors and SCT determinants of physical activity
- To assess physical activity behavior and barriers among college students during the COVID-19 pandemic

Project Description

- **Study Design**
  - This pre-post study was designed to be during the month of October at K-State
  - Online baseline survey/questionnaire at the end of September and a follow up survey at the beginning of November
- **Participant recruitment**
  - Information about the study was shared to be posted on Canvas by professors
  - Advertised through K-State Today and college/department social media pages
  - Participants have to be enrolled in classes at K-State either virtually or in person
- **Survey completion**
  - Students who passed the screening questions, including the inclusion criteria, were invited to complete the baseline survey
  - A month later, a follow up survey was sent to students who completed the baseline survey

Project Description

- **EIM-OC Month**
  - Weekly virtual events
  - Partnerships with Counseling Services and the Rec to promote physical activity and wellbeing
  - Daily posts on the K-State EIM-OC Instagram account and on the Kinesiology Facebook page
  - The EIM-OC website was updated by adding resources about parks and trails around Manhattan and posted about the virtual classes being offered by the Rec

EIM-OC month

Your Prescription for Health
ExeRcise is Medicine® On Campus
www.ExerciseisMedicine.org

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Physical Activity Challenges

Week of 10/5 – Rock it at the Rec

Week of 10/12 – Step Away the Stress

Week of 10/19 – Emoji Exercise Story

Week of 10/26 – Fill Your Park Prescription

To be entered in the prize drawing for one of the weekly challenges, post a photo of yourself completing the activity on your Instagram, Twitter, or Facebook with the challenge hashtag or tag us in your photo

@KStateKines kstatekines eim.ksu

Your Prescription for Health
ExeRcise is Medicine® On Campus
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2020 EVENTS

LUNCH AND LEARNS *(via Zoom)* – 12 p.m.

Zoom links available at hhs.k-state.edu/kines

October 5	October 15	October 21	October 23	October 27
Health benefits of exposure to nature and nature-based physical activity	*Staying active during the COVID-19 pandemic*	*Exercise, immune function and the COVID-19 pandemic*	*Multimodality imaging during cardiovascular stress testing*	*Exercise, COVID-19 and the physiology of masks*

DISTINGUISHED LECTURE SERIES IN KINESIOLOGY

Thursday, October 29 – 2:00 p.m.

"Park Rx: Nature prescriptions as a therapeutic intervention"

Robert Zarr, MD, MPH

Founder and Medical Director, Park Rx America; Pediatrician, Unity Health Care

Follow us on social media to participate in EIM Bingo and weekly physical activity challenges for a chance to win prizes!

@KStateKines kstatekines eim.ksu

Exercise is Medicine® On Campus

KANSAS STATE UNIVERSITY | Department of Kinesiology

E	I	M	O	C
Complete a workout from a fitness app	Attend a free Intro to CrossFit class at K-State CrossFit	Call a friend or family member while you walk	Walk or jog a lap around City Park	Air-squats at Ahearn
Play a sport with a friend or family member	Try a Zoom class from the Rec	Stand during your next Zoom class or meeting	Try the Fit Trail at CiCo Park	Burpees on Bosco Plaza
Rake or make a pile of leaves and jump into it	Participate in an EIM-OC weekly challenge	FREE ★	Walk or bike to an errand when you would normally drive	Jumping Jacks by Justin
Go for a walk in your neighbor-hood and find a Powercat	Try a new type of physical activity	Try a mindfulness meditation	Get at least 30 min. of physical activity every day for a week	Lunges by the Library
Walk or jog a lap at the WWI Memorial Stadium	Stretch for 15 minutes	Park in the farthest spot from your destination	Break a sweat	Mountain climbers by McCain

Directions: For each item completed, record what you did and the date and time you completed the activity. By Monday, 11/2/2020, submit a picture of your EIMOC card with completed squares marked off along with your list of activities to eim.oc.ksu@gmail.com.

We will have a grand prize drawing for those who complete the entire card (blackout) and additional prize drawings for those who have at least one EIMOC (horizontal, vertical, or diagonal). *As you complete the squares, sharing with us on social media is encouraged!*

@KStateKines kstatekines eim.ksu

Distinguished Lecture Series in Kinesiology

Presented by:
Department of Kinesiology &
Kinesiology Student Association
Kansas State University

Robert Zarr, MD, MPH

Founder and Medical Director, *Park Rx America*
Pediatrician, *Unity Health Care*

Park Rx: Nature prescriptions as a therapeutic intervention

October 29, 2020
2:00 – 3:00 PM (CST)
https://ksu.zoom.us/j/95136413722

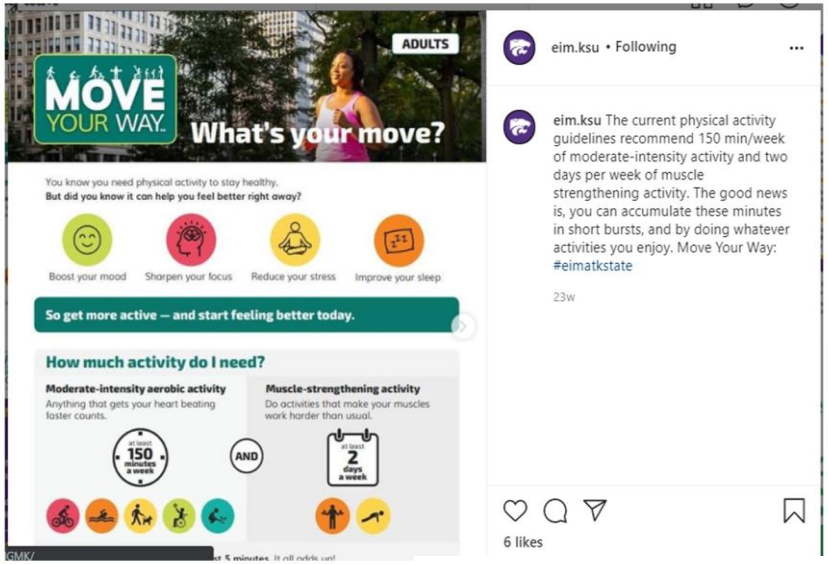
Dr. Robert Zarr is a board-certified pediatrician at Unity Health Care, located in Washington, DC, where he cares for low-income and immigrant populations. He is Founder and Medical Director of Park Rx America, a community health initiative to prescribe nature to patients and families to prevent and treat chronic disease and promote wellness. He previously served as the Park Rx Advisor to the National Park Service in his national advocacy to connect people to parks.

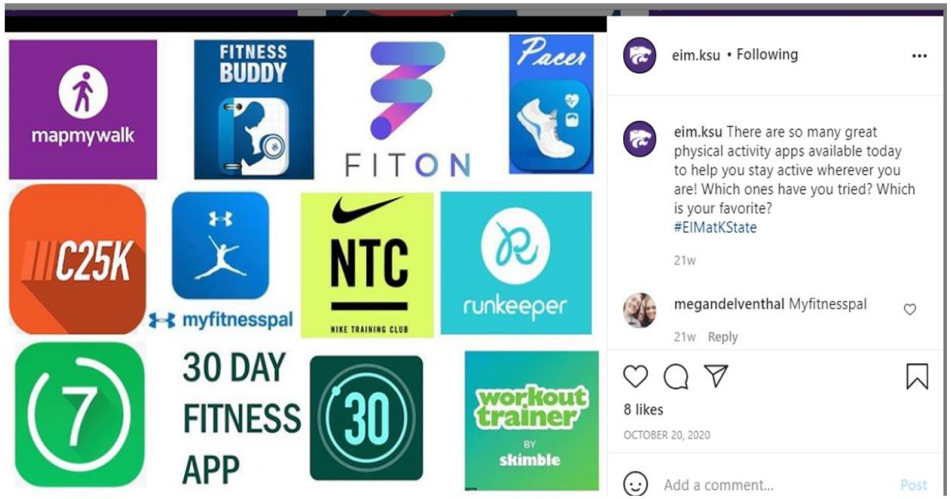
KANSAS STATE
College of Health and Human Sciences

https://parkrxamerica.org

KANSAS STATE UNIVERSITY

Social Media Posts


ADULTS
MOVE YOUR WAY.
What's your move?
You know you need physical activity to stay healthy.
But did you know it can help you feel better right away?
Boost your mood
Sharpen your focus
Reduce your stress
Improve your sleep
So get more active — and start feeling better today.
How much activity do I need?
Moderate-intensity aerobic activity
Anything that gets your heart beating faster counts.
at least 150 minutes a week
AND
Muscle-strengthening activity
Do activities that make your muscles work harder than usual.
at least 2 days a week
eim.ksu • Following
eim.ksu The current physical activity guidelines recommend 150 min/week of moderate-intensity activity and two days per week of muscle strengthening activity. The good news is, you can accumulate these minutes in short bursts, and by doing whatever activities you enjoy. Move Your Way: #eimatkstate
23w
6 likes


mapmywalk
FITNESS BUDDY
FITON
Pacer
C25K
myfitnesspal
NTC
NIKE TRAINING CLUB
runkeeper
7
30 DAY FITNESS APP
30
workout trainer
BY
skimble
eim.ksu • Following
eim.ksu There are so many great physical activity apps available today to help you stay active wherever you are! Which ones have you tried? Which is your favorite?
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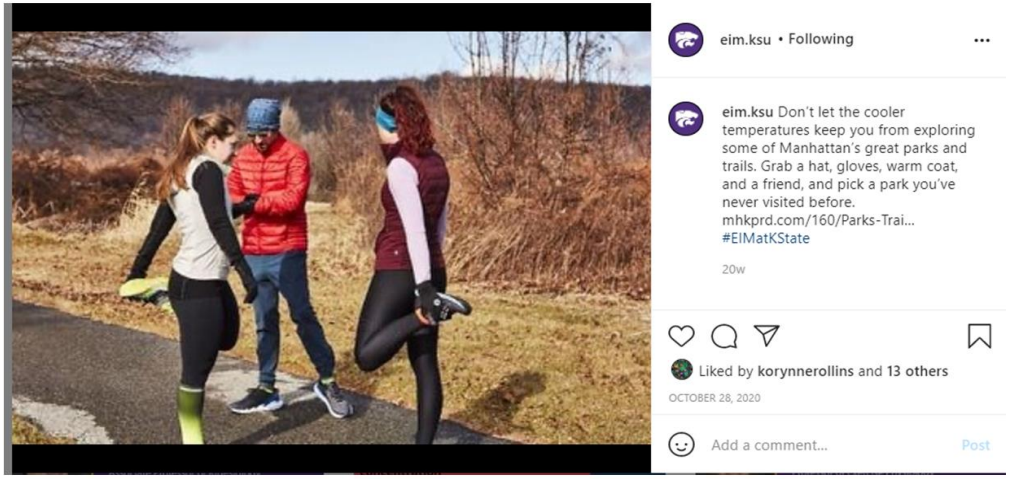
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eim.ksu Don't let the cooler temperatures keep you from exploring some of Manhattan's great parks and trails. Grab a hat, gloves, warm coat, and a friend, and pick a park you've never visited before.
mhkprd.com/160/Parks-Trai...
#EIMatKState
20w
Liked by korynnerollins and 13 others
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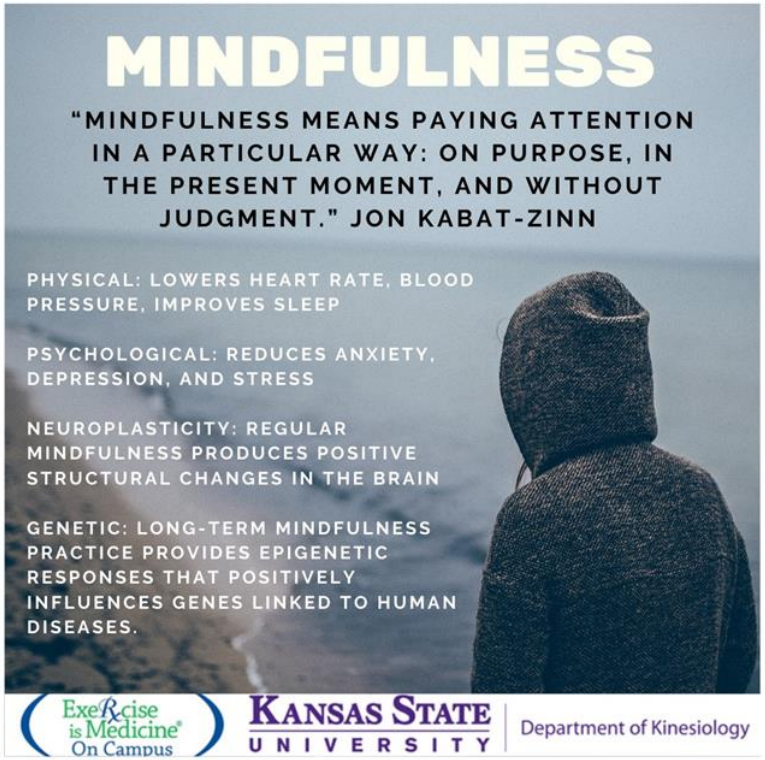
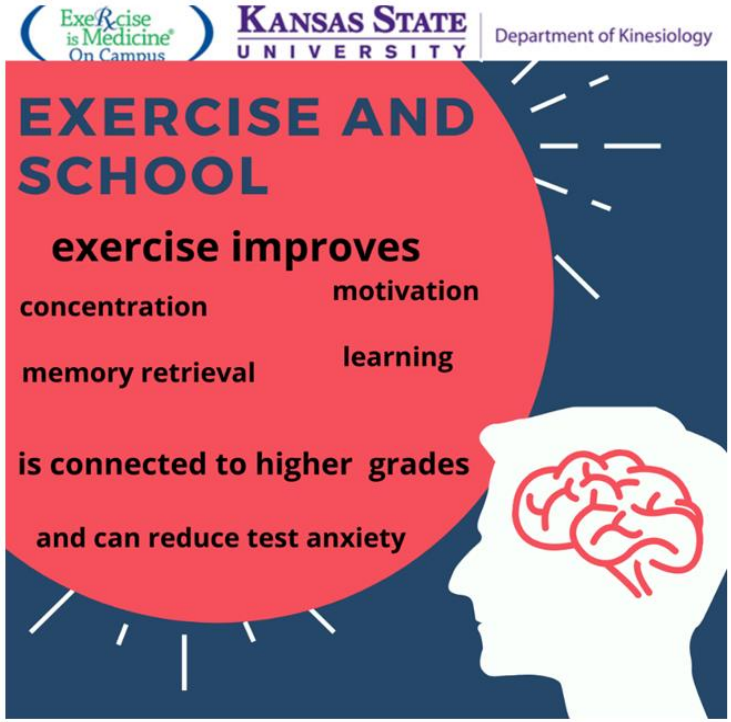
Social Media Posts





Measures

1. Demographics

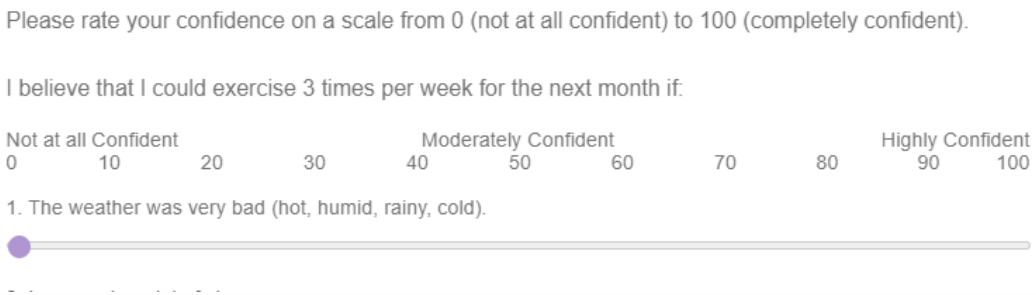
Gender, race/ethnicity, year in school and major, where they currently lived, online or in person classes and if they were required to quarantine

2. Self-Efficacy

Modified version of Barriers-Specific Self-Efficacy scale (BARSE) (McAuley, 1992)

Five items used were relevant to barriers that the college students face (e.g., weather, stress, lack of resources, and school/work responsibilities)

Sample question:

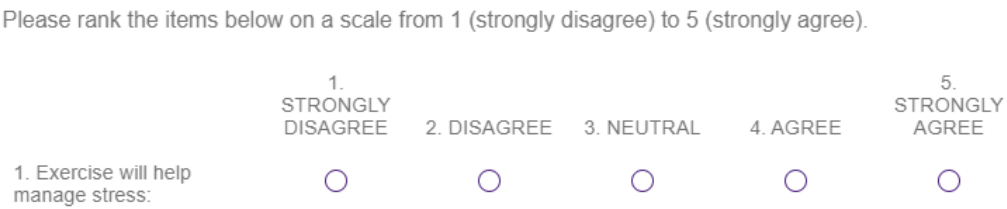


Measures

3. Outcome Expectations

Self-evaluative outcome expectation subscale from the Multidimensional Outcome Expectations for Exercise Scale (MOEES) (Wojcicki et al., 2009)

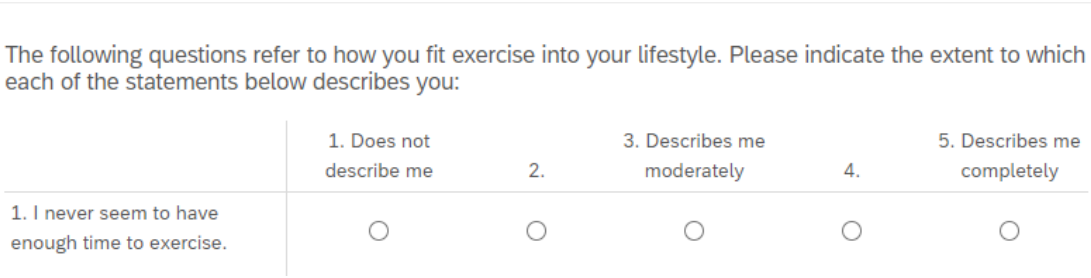
Sample question:



4. Self-Regulation

Exercise Planning and Scheduling Scale (EPS) (Rovniak et al., 2002)

Sample question:



Measures

5. Physical Activity Environment

Six questions were adapted from the IPAQ- Environmental Module developed in 2002 by the International Physical Activity Prevalence Study

Please rank the items below on a scale from 1 (strongly disagree) to 5 (strongly agree).

	1. STRONGLY DISAGREE	2. DISAGREE	3. NEUTRAL	4. AGREE	5. STRONGLY AGREE
1. It is easy for me to access places to be physically active indoors in my community.	○	○	○	○	○
2. It is easy for me to access places to be physically active outdoors in my community.	○	○	○	○	○
3. My campus promotes physical activity.	○	○	○	○	○
4. I often see others being physically active in my community.	○	○	○	○	○
5. I have friends to be physically active with in my community.	○	○	○	○	○
6. If I want to be physically active in my community, I can.	○	○	○	○	○

Measures

6. Physical Activity

- International Physical Activity Questionnaire (IPAQ) Short-form (Booth, 2000)
- Participants reported their daily physical activity in terms of frequency and duration of vigorous, moderate, and walking activities over the last seven days
  - MET-minutes per week were calculated for each variable (vigorous, moderate, and walking) by multiplying the total minutes per week by the MET value for each activity
- Participants were classified as engaging in low, moderate or high physical activity according to published scoring instructions (Booth, 2000)

Measures: Program Evaluation

- Open ended questions to assess barriers and resources
- Awareness
  - Did you know that October was Exercise is Medicine On Campus month at K-State?
- Reach
  - If they heard about the EIM-OC events
  - Did you participate?
- Recommendations for improvements to EIM-OC

Results

Participants Characteristics

- A total of 469 individuals completed the baseline survey. Of these, 337 individuals completed the follow-up survey (71.85%).
- 77.2% participants were female
- 88.3% participants were white
- 17.5% were kinesiology majors
- 50.5% participants reported they were part of the College of Health and Human Sciences (HHS)
- Participants who completed the survey were relatively evenly distributed across year in school

Results: Reach of EIM Campaign

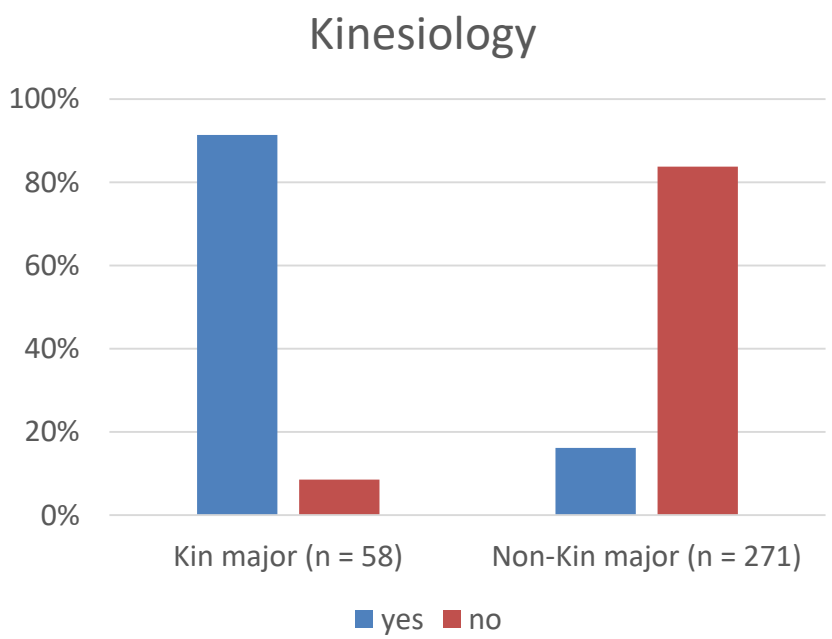
Lunch and Learns	
Topic	**Participants**
Health benefits of exposure to nature and nature-based physical activity	21
Staying active during the COVID-19 pandemic	23
Exercise, immune function and the COVID-19 pandemic	48
Multimodality imaging during cardiovascular stress testing	23
Exercise, COVID-19 and the physiology of masks	60

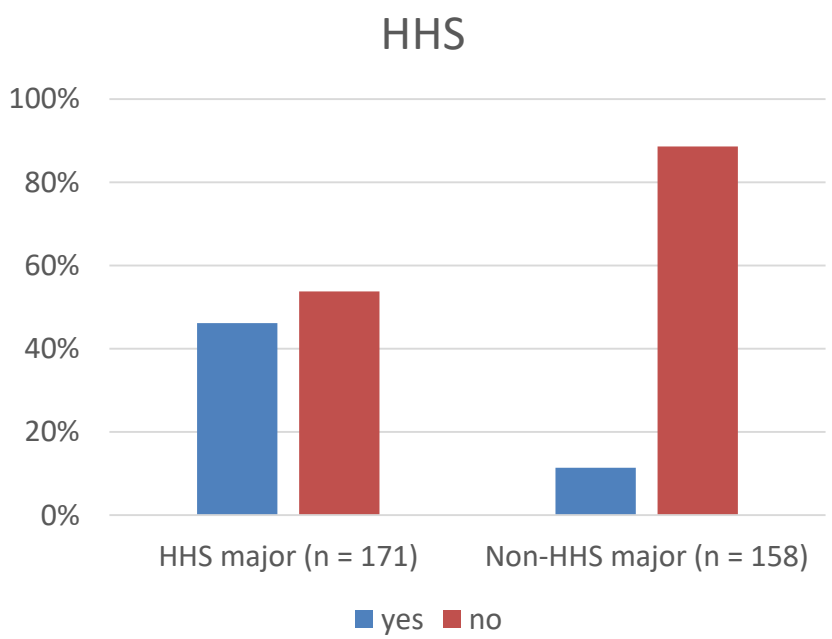
Social Media Challenges	
Name	**Participants**
Rock it at the Rec	4
Step Away the Stress	1
Emoji Exercise Story	17
Fill your Park Prescription	2
Monthlong Bingo	0

337 individuals who completed the follow up survey, 97 (28.8%) said they had heard of EIM-OC month at K-State

Results: Awareness of EIM-OC Campaign

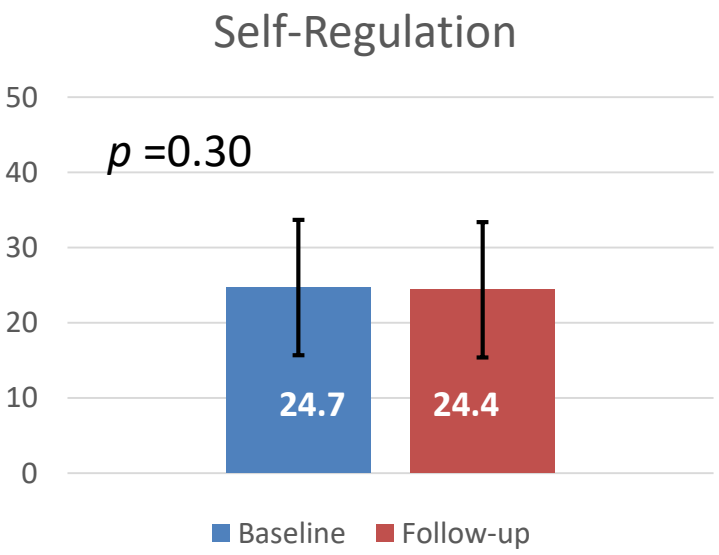
Have you heard of EIM-OC month at K-State?

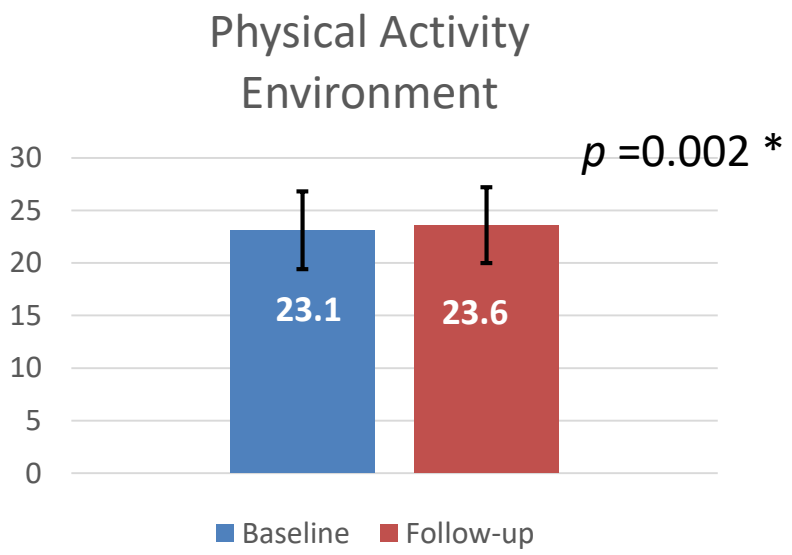




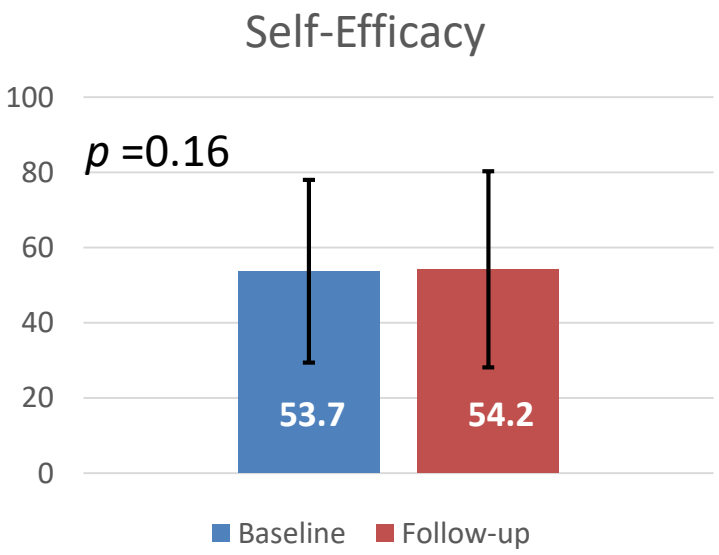
total of 337 at follow-up*

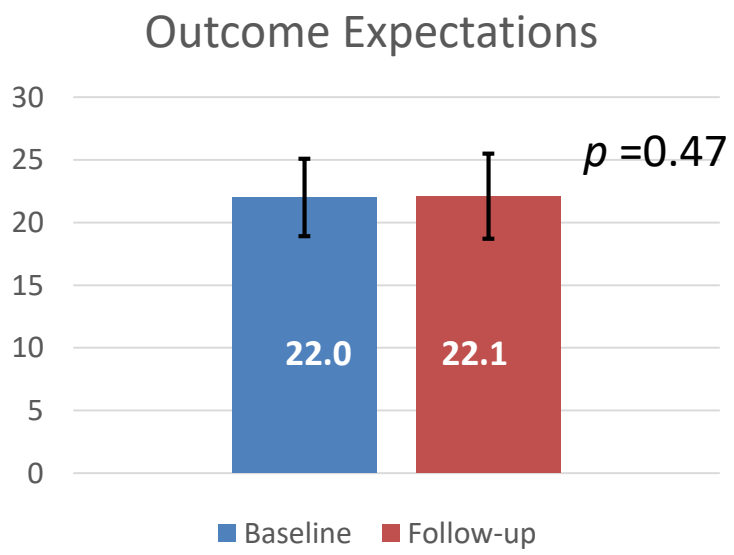
Results: Social Cognitive Theory Variables



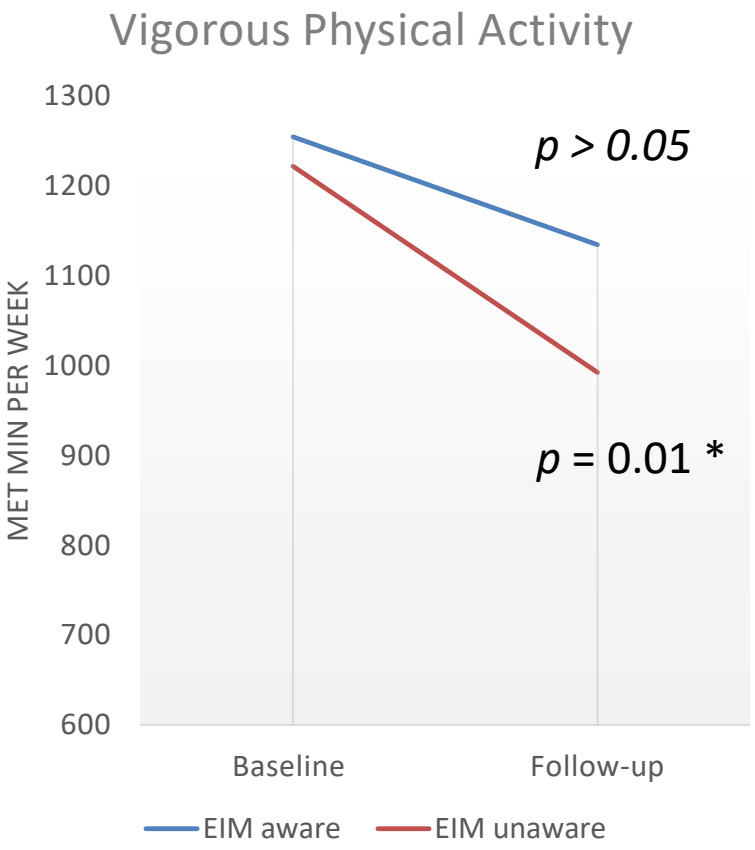


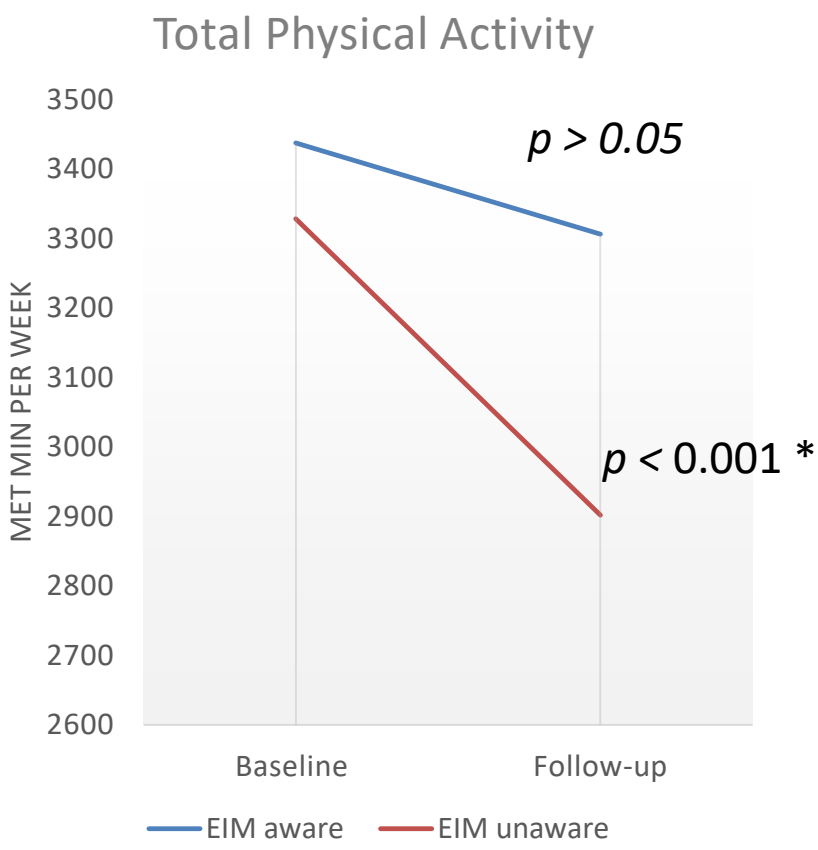
Results: Social Cognitive Theory Variables





Results: Physical Activity in Total Sample and by EIM Awareness





Recommendations for Improving EIM-OC

Improvement Category	Participant quote
Greater variety of promotion strategies	"With everyone being on campus less this semester I have noticed that there is a lack of knowledge about upcoming events."
Reach out of the Kinesiology department	"I think to make it more well-known; I do not think people hear about it unless they are kinesiology majors."
Offer more incentives and prizes to increase attendance and participation (food or items)	"People love prizes so I would incorporate more of those and maybe partner with the rec more."
Events that breed competition/ bigger and more events	"Incorporate fun exercise challenges like a 5k, strength competition, relay race, and other group activities."

Physical Activity Barriers

Most common barriers reported at baseline and follow-up

Baseline	Follow-up
1. COVID-related restrictions (n = 299)	1. Busy/Lack of time (n = 153)
2. Busy/Lack of time (n = 164)	2. School (n = 131)
3. Motivation/Laziness (n = 147)	3. Weather (n = 124) *
4. School (n = 136)	4. Motivation/Laziness (n = 99)
5. Lack of resources / Distance (n = 87)	5. COVID-related restrictions (n = 81) *

Physical Activity Resources

Most common resources reported at baseline and follow-up

Baseline	Follow-up
1. Park/ outdoors/ neighborhood/sidewalks/trails (n = 166)	1. Rec/memorial stadium/ CrossFit (n = 108)
2. Rec/memorial stadium/ CrossFit (n = 138)	2. Park/ outdoors/ neighborhood/sidewalks/trails (n = 92)
3. Online workouts/apps (n = 110)	3. Online workouts/apps (n = 68)
4. YMCA/Gym (n = 20)	4. None (33)
5. None (n = 17)	5. YMCA/Gym (n = 15)

Key Findings

- Limited reach of the EIM-OC campaign
  - Over 70% of participants had not heard of EIM-OC
  - The reach of EIM-OC at K-State was high within, but not outside of the Kinesiology department
  - Participation in the social media challenges was minimal and there was low engagement in many of the virtual activities
- Effectiveness
  - No changes in the SCT variables studied other than a small increase in perceptions of the environment
  - Campaign helped increase awareness of campus resources for physical activity
  - Overall, results showed decreases in total physical activity, which appeared to be attenuated by awareness of EIM-OC

Key Findings

- Considerations
  - Half of the participants were classified as high active, compared to those typically reported in college students
  - People tend to overreport their physical activity when using the IPAQ
  - Results from the sample might not be representative of all college students, or the K-State population
- Strengths
  - The EIM-OC campaign has never been evaluated at K-State
  - This study can be repeated and different measures can be taken to evaluate the reach and effectiveness of the campaign

Future Recommendations (Partnerships)

- Partnerships with more departments such as health providers, and counseling services
- Collaborating with the university's student health center to create a referral program that links the health care professionals to the exercise practitioners
- A referral program at Slippery Rock University, was successful as patients improve their exercise self-efficacy, healthy behaviors, and health-related physical fitness (Lynn et al., 2015)

Future Recommendations (Reach)

- Reach outside of the Kinesiology department
- As stated by some participants:
  - "Finding a way to reach students outside of the department of Kinesiology may go a long way in promoting exercise is medicine campus wide."
- Start promoting early to build a social media network and have a greater reach on students before October
- Offer more incentives and prizes, and incorporate events that breed competition

Additional Future Recommendations

- **More ambassadors from different colleges and departments**
- Getting more students to volunteer and help promote EIM-OC early on will be beneficial
- Less than half of institutions that had registered for EIM-OC reported having an EIM certified ambassador. Therefore, we emphasize the need to get more ambassadors involved in the EIM-OC campaigns. (Wilson et al., 2018)
- **Both in person and virtual events**
- We suggest a combination of both in-person and virtual events in the future when it is safe to do so

Conclusion

- Decreases in total physical activity, which appeared to be attenuated by awareness of EIM-OC
- Better promotion strategies needed to reach more students outside of the kinesiology department
- Implementations of some changes should be considered in future studies to have a better impact on students' physical activity behaviors.
- Evaluating the campaign for the first time at K-State creates new opportunities to improve in the upcoming years

Master of Public Health Applied Practice Experience

Site: OneHealthLessons.com

One Health Lessons

- OneHealthLessons.com is a website that offers lessons for students aged 6-18+ about different One Health-related topics, including COVID-19, water and food-related diseases
- Their goal is to educate and inspire the next generation to see the world as one, and as stated in their website “To get every child on the planet caring about One Health”
- Project led by Dr. Deborah Thomson, and the platform currently has free COVID-19 lessons in fifteen languages and those lessons are currently translated into 60+ other languages

Learning objectives

- Understand how a public health agency functions and the different ways to provide helpful information to different populations
- To interact professionally with a multidisciplinary team of public health professionals and to gain experience and strengthen my interpersonal communication skills
- I was part of a class of fourteen interns from different countries such as Nigeria, Uganda, China, Canada, and Brazil

Responsibilities and Products

- Increase awareness of OneHealthLessons.com and inspire educators in North America to want to use the lessons
- Taught five COVID-19 lessons to children, one of them in Mexico
- Assisted in acquiring new language translation teams
- Worked closely with the Promotions- Asia Intern and the Senior Promotions Intern.
- Attended team meetings and created flyers to promote events

- **Products developed**
  - Creation of one blog entry for OneHealthLessons.com's blog section
  - Database of new volunteers to translate and disseminate One Health Lessons
  - Creation of Spanish flyer to promote the Arts and Music contest
  - Creation of video narrating my experience as an intern for One Health Lessons

MPH Foundational Competencies

Number and Competency		Description
8	Apply awareness of cultural values and practices to the design or implementation of public health policies or programs	Creation of a blog entry
14	Advocate for political, social or economic policies and programs that will improve health in diverse populations.	Outreach and promotion about free COVID-19 lessons to increase awareness of the pandemic.
16	Apply principles of leadership, governance and management, which include creating a vision, empowering others, fostering collaboration and guiding decision making	Creation of a video to encourage engagement with OHL.
18	Select communication strategies for different audiences and sectors	Creation of a flyer to promote events in Spanish speaking countries.
21	Perform effectively on interprofessional teams	Participation and collaboration with a very diverse team of interns from many different countries.

MPH Emphasis Area Competencies

MPH Emphasis Area: Physical Activity		
Number and Competency		**Description**
1	Population health	Investigate the impact of physical activity on population health and disease outcomes.
2	Social, behavioral and environmental influences	Investigate social, behavioral and environmental factors that contribute to participation in physical activity.
3	Theory application	Examine and select social and behavioral theories and frameworks for physical activity programs in community settings.
4	Developing and evaluating physical activities interventions	Develop and evaluate physical activity interventions in diverse community settings.
5	Support evidence-based practice	Create evidence-based strategies to promote physical activity and communicate them to community stakeholders.

MPH Emphasis Area Competencies

MPH Emphasis Area: Physical Activity		
Number and Competency		Description
1	Population health	Investigate the impact of physical activity on population health and disease outcomes.

- Determining barriers related to physical activity in a population and how it affects their health.
- In KIN 612 developed a policy to impact the physical activity of a specific population
- KIN 616, I learned about multiple factors that lead to obesity.
- KIN 805 project where we targeted a specific population and focused on how that population's physical activity had an impact on their health.
- I evaluated the impact that Exercise is Medicine on Campus campaign had on college students.

MPH Emphasis Area Competencies

MPH Emphasis Area: Physical Activity		
Number and Competency		**Description**
2	Social, behavioral and environmental influences	Investigate social, behavioral and environmental factors that contribute to participation in physical activity.

- KIN 610 conducting a mock community needs assessment including social, cultural, and environmental elements to support a physical activity intervention.
- KIN 616 I learned that obesity is caused by multiple factors but physical inactivity and diet are the biggest two factors.
- Evaluated the students' physical activity during the EIM-OC campaign, as well as barriers and resources that facilitate or impede participation in physical activity.

MPH Emphasis Area Competencies

MPH Emphasis Area: Physical Activity		
Number and Competency		Description
3	Theory application	Examine and select social and behavioral theories and frameworks for physical activity programs in community settings.

- Utilize Social Cognitive Theory variables to examine college students' physical activity behaviors and perceptions during the Covid-19 pandemic.
- KIN 805 covered health behavior theories and created a new theory that would help increase physical activity in a specific target population.
- KIN 610, KIN 818 and KIN 612 discussed some theories and how they can be applied in different scenarios with different populations to help increase physical activity participation.

MPH Emphasis Area Competencies

MPH Emphasis Area: Physical Activity		
Number and Competency		Description
4	Developing and evaluating physical activities interventions	Develop and evaluate physical activity interventions in diverse community settings.

- Physical Activity Intervention Research PAIR laboratory
- Thesis project, used past research to evaluate students' physical activity levels and behaviors.
- KIN 610 we developed skills for creating and evaluating physical activity interventions in diverse community settings.
- KIN 805 also addressed this competency on the final project for the class where I developed a proposed intervention to help former collegiate athletes increase or maintain physical activity behaviors after graduating university.

MPH Emphasis Area Competencies

MPH Emphasis Area: Physical Activity		
Number and Competency		Description
5	Support evidence-based practice	Create evidence-based strategies to promote physical activity and communicate them to community stakeholders.

- Every course used evidence-based practice in every class, project, and assignment.
- Created a survey from previous evidence-based practice material for thesis project.
- KIN 610 and KIN 612 helped developed the ability to collaboratively communicate with public health officials and other community partners to promote physical activity in community settings.

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QUESTIONS?