Project**REST**

Sleep and Health in Student Athletes:
Next Steps Toward Developing a Technology Platform for Dissemination and Implementation

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The problem

- Poor sleep health among student athletes continues to be an under-addressed problem
- Sleep problems are common among student athletes
- Many potential causes of poor sleep in student athletes, including
  - Competing demands of academics and athletics
  - Over-scheduling
  - Frequent travel
  - Social and other pressures
- Lack of enough quality sleep can lead to
  - Performance impairments and slowing
  - Academic problems
  - Problems with mental health
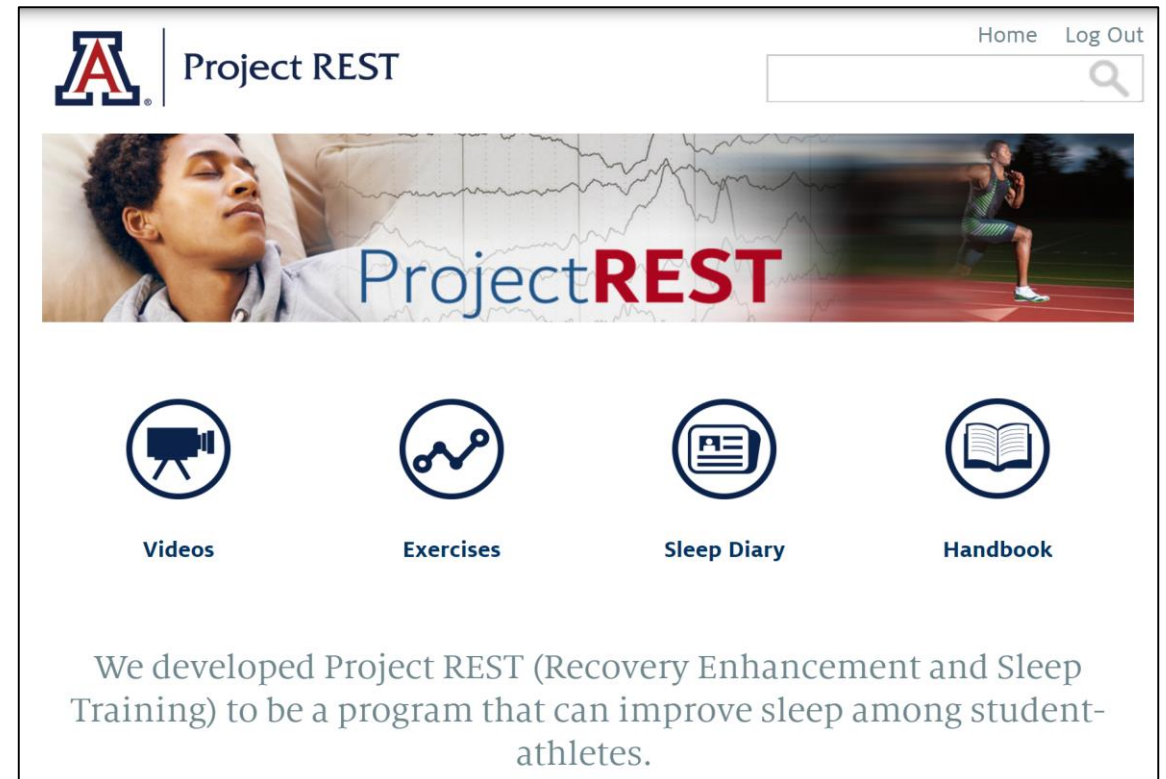 - Increased illness and decreased recovery
  - And more!

Original study

- We conducted a study of student athletes, supported by a previous NCAA grant

- This study included a survey of N=190 athletes and an intervention in N=40

- Intervention included several components
  - 2-hour in-person training session
  - Informational handouts
  - 24/7 access to peer support
  - 24/7 sleep tracking using wearable device
  - Weekly drawings for $10 and $100 for participation

- Main findings
  - Poor sleep quality, short sleep duration, insomnia symptoms, and daytime sleepiness were associated with more depression and anxiety, lower mental well-being, and decreased social support (Jaszewski et al., 2017).
  - Reduced sleep latency, advanced wake time, improved sleep quality score, lower insomnia severity score, lower anxiety score, decreased drowsy driving, increased morning energy, increased evening energy, and increased total energy. (Grandner et al., 2017)
  - Improved perceptions of sleep, stress, academic performance, athletic performance, social life, family life, mental health, physical health, energy level, and ability to focus (Athey et al., 2017)
  - Feedback was that the educational sessions were critical, especially learning about sleep and what to do in the face of sleep problems and how sleep impacts daytime functioning (Alfonso-Miller et al., 2017)

Moving forward

- Intervention was successful and well-received, but it was very intensive and required in-person training that was difficult to schedule

- Hands-on approach made it difficult to export to other programs

- Feedback from students and staff indicated a desire for more on-demand information rather than classroom-type lectures

- Because of this, we asked these questions:
    - Can we create a set of on-demand videos that essentially go through all of the content of the educational sessions?
    - In order to make this program easier to disseminate across multiple sites, what if we only keep the core elements (e.g., education and simple tracking)?
    - Would this increase feasibility and acceptability?

This project: Phase 1

- Creation of a set of 38 videos that provide all of the educational content, broken up into shorter components that can be accessed from any mobile device.

- Creation of handouts and exercises to accompany these videos.

- Creation of a website to host all of this content in a protected way.

We developed Project REST (Recovery Enhancement and Sleep Training) to be a program that can improve sleep among student-athletes.

This project: Phase 2

- Conduct a pilot study, randomizing groups to either (1) access to the online system and videos or (2) handouts with all of the educational information.

- We recruited N=44 student athletes to participate (61% female, 23% minority, 50% A- or above.
  - N=22 randomized to each condition

What happened with the groups

- Students given the handouts were encouraged to read them and students given access to the website were encouraged to log in.

- The degree to which students read the handouts cannot be measured, but only N=12 of the N=22 students given access to the website ever logged in.

  - And of these, only N=6 of 12 spent considerable time with the videos and were deemed "high-viewers" (M=133.36 mins, SD=49.00) versus the rest, who were "low-viewers" (M=7.58 mins, SD=5.25).
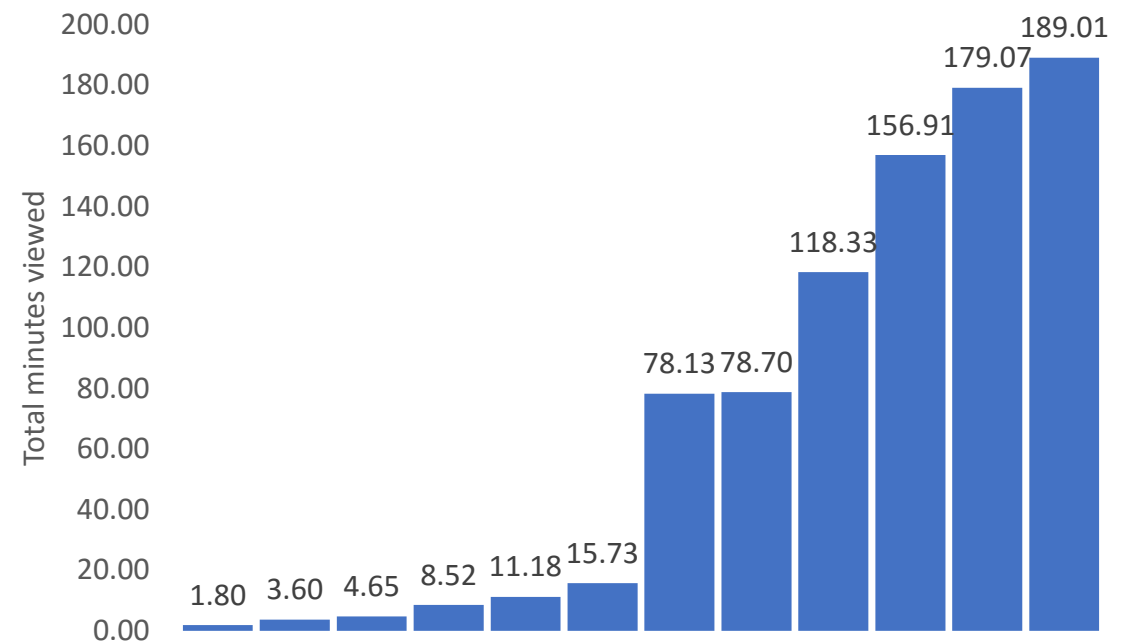
Results

- When we examine those in the information only condition, compared to those in the online condition that were low-viewers and high-viewers, a pattern of results emerges:
    - Decreased sleep latency
    - Increased sleep duration
    - Increased sleep quality
    - Decreased insomnia
    - Variable changes in other outcomes
- Less robust changes than the previous (more intensive) approach

Variable	Units	Info Only		Online (Non-Viewer)		Online (Viewer)	
		Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
Sleep Latency	Minutes	-7.33	10.82	-9.67	10.71	-5.00	8.10
Sleep Duration	Hours	1.25	3.13	0.38	0.41	0.71	0.58
PSQI Score	Points	-1.33	1.73	-0.83	1.17	-1.00	2.10
ISI Score	Points	-2.00	3.64	-3.50	8.19	-1.17	3.71
MSPSS Score	Points	-6.56	21.10	-3.33	4.41	-5.00	9.74
CESD Score	Points	-0.78	4.71	-1.83	3.13	0.17	2.48
PSS Score	Points	-1.89	3.82	-1.83	2.32	1.83	3.54
ASSIST Score	Points	-1.44	4.03	-1.67	2.88	0.17	2.04

What did you learn?

	Info Only	Videos (Non-Viewers)	Videos (Viewers)
How sleep is important to health	100%	83%	100%
How sleep is important to daytime functioning	100%	83%	100%
How sleep is important to athletic performance	100%	83%	100%
How sleep is important for mental well-being	100%	83%	100%
How to tell if my sleep is good or bad	100%	67%	100%
How I actually sleep	100%	67%	83%
How good or bad sleep affects the next day	100%	67%	100%

What changed?

	Info Only	Videos (Non-Viewers)	Videos (Viewers)
My sleep is better	89%	50%	83%
I am more satisfied with my sleep	89%	50%	67%
I fall asleep easier	78%	67%	67%
Awakenings at night are less of a problem	67%	50%	67%
My sleep timing is better	78%	67%	67%
I know what to do if I have trouble sleeping	100%	50%	100%
I know what to do if I am sleepy during the day	89%	33%	100%
I am more energized during the day	89%	33%	67%

Improvements in other areas?

Improvements in:	Info Only	Videos (Non-Viewers)	Videos (Viewers)
Stress	89%	33%	83%
Academic Performance	78%	50%	50%
Athletic Performance	89%	50%	67%
Social Life	78%	33%	67%
Family Life	78%	33%	67%
Mental Health	100%	50%	83%
Physical Health	89%	67%	67%
Energy Level	100%	50%	83%
Ability to Focus	89%	67%	83%

Implications and lessons learned

- We now have a set of videos and handouts that provide extensive education on sleep science basics, recognizing sleep problems, and dealing with sleep problems.

- Student athletes who participated perceived overall improvements in their knowledge about sleep, quality of their sleep, amount of sleep, and other aspects of functioning, and these are supported by documented changes to sleep variables.

- But simply disseminating this information may not be enough for a lot of student athletes.
  - Value of in-person sessions, tracking with a wearable, daily feedback, and 24/7 support may have made the difference.

Future directions

- Explore the benefits of these programs at other sites, perhaps obtain a larger sample

- Determine the optimal combination of on-demand access to information, hands-on treatment, tracking, and other components

- Continue to refine and implement the system

Project**REST**

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- Questions?
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