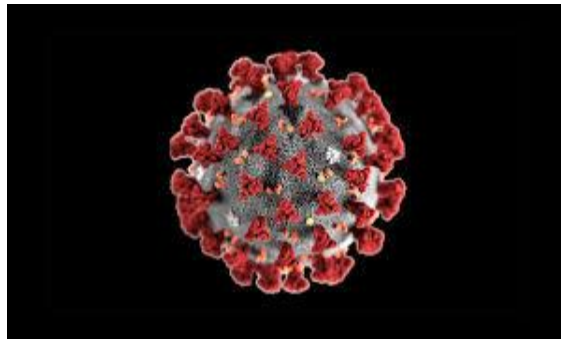


# The Impact of School Closures and Sport Cancellations on the Health of Adolescent Athletes



Timothy A. McGuine PhD, Kevin Biese MA, Scott B Hetzel MS, Stephanie Kliethermes PhD, Claudia L. Reardon MD, David Bell PhD, M. Alison Brooks MD & Andrew Watson MD.

University of Wisconsin School of Medicine and Public Health, Madison, Wisconsin USA

Contact: [mcguine@ortho.wisc.edu](mailto:mcguine@ortho.wisc.edu)

# Disclosures

## Financial COI

Neither I, nor any family member(s), have any relevant financial relationships to be discussed, directly or indirectly, referred to or illustrated within the presentation.

## Recent Research Support



## Sports Medicine Advisory Committees





# INTRODUCTION





FOR IMMEDIATE RELEASE: March 13, 2020  
Contact: [GovPress@wisconsin.gov](mailto:GovPress@wisconsin.gov) or 608-219-7443

### **Gov. Evers Directs DHS to Mandate Statewide Closure of All K-12 Wisconsin Schools**

MADISON — Gov. Tony Evers today directed Department of Health Services (DHS) Secretary-designee Andrea Palm to issue an agency order mandating the statewide closure of all K-12 schools, public and private, as part of the state's efforts to respond to and contain the spread of COVID-19 in Wisconsin. A copy of DHS Secretary-designee Palm's order can be found [here](#).

**BACKGROUND:** In March of 2020, Wisconsin schools were closed and interscholastic sports cancelled in an attempt to slow the spread of the COVID-19.

The impact that these actions have had on the health of adolescent athletes has not been presented to date.

Child health experts have stated that school closures may have profound societal, economic, and psychosocial consequences for students and need to be further studied.

**OBJECTIVE:** To identify how COVID-19 related school closures and sport cancellations in Wisconsin have impacted the health of adolescent athletes.



**METHODS**

**Participants:** 3,243 adolescent athletes in Wisconsin (58% female, Age:  $16.2 \pm 1.2$  yrs., from 71/72 Wisconsin counties)



**Recruitment:** Social media (Facebook, Twitter), Mass e-mail campaign

**Data Collection:** May 2020

**Methods:** Short (6.8 minute) online survey



**Additional Variables:** All sports (high school and club) in the last 12 months, Location (Zip code and county)

**Compare:** Previous WI (Historical) data

**Qualtrics**

How do you feel about today's course topic? lol jk, u up?

	Strongly Disagree	Disagree	Neither agree nor disagree	Agree	Strongly Agree
Today's topic was relevant to the overall course.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
The instructor explained the topic clearly.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
I feel confident that I can complete the	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>



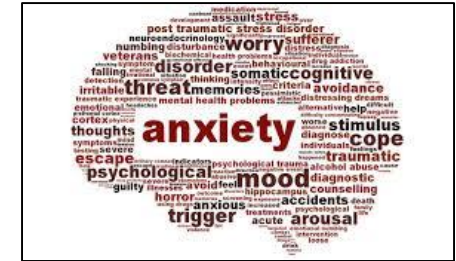
# Assessments

## Mental Health (MH)

## General Anxiety Disorder-7 Item (GAD-7)

Scores: 0 – 21, (higher scores = increased anxiety)

## Anxiety Categories: Mild to Severe



# Patient Health Questionnaire-9 Item (PHQ-9)

Scores: 0 – 27, (higher scores = increased depression)

## Depression Categories: Mild to Severe



## Physical Activity (PA)

# Pediatric Functional Activity Brief Scale (PFABS)

Scores: 0 – 30 (higher scores = greater physical activity)

## Health Related Quality of Life (HRQoL)

# Pediatric Quality of Life Inventory 4.0 (PedsQL)

Scores: 0 – 100 for Physical, Psychosocial and

## Total quality of life scores

(higher scores = better quality of life)

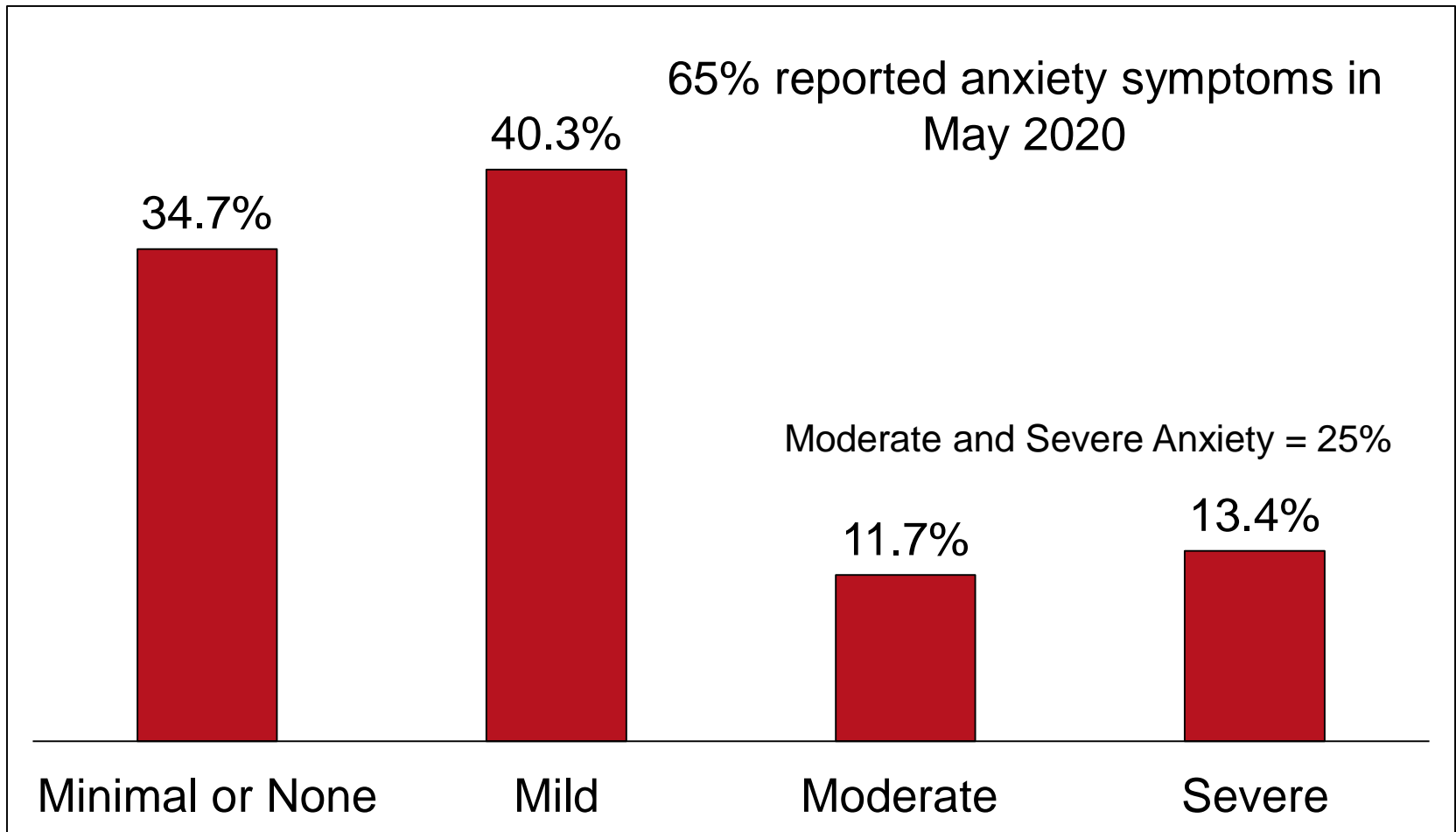




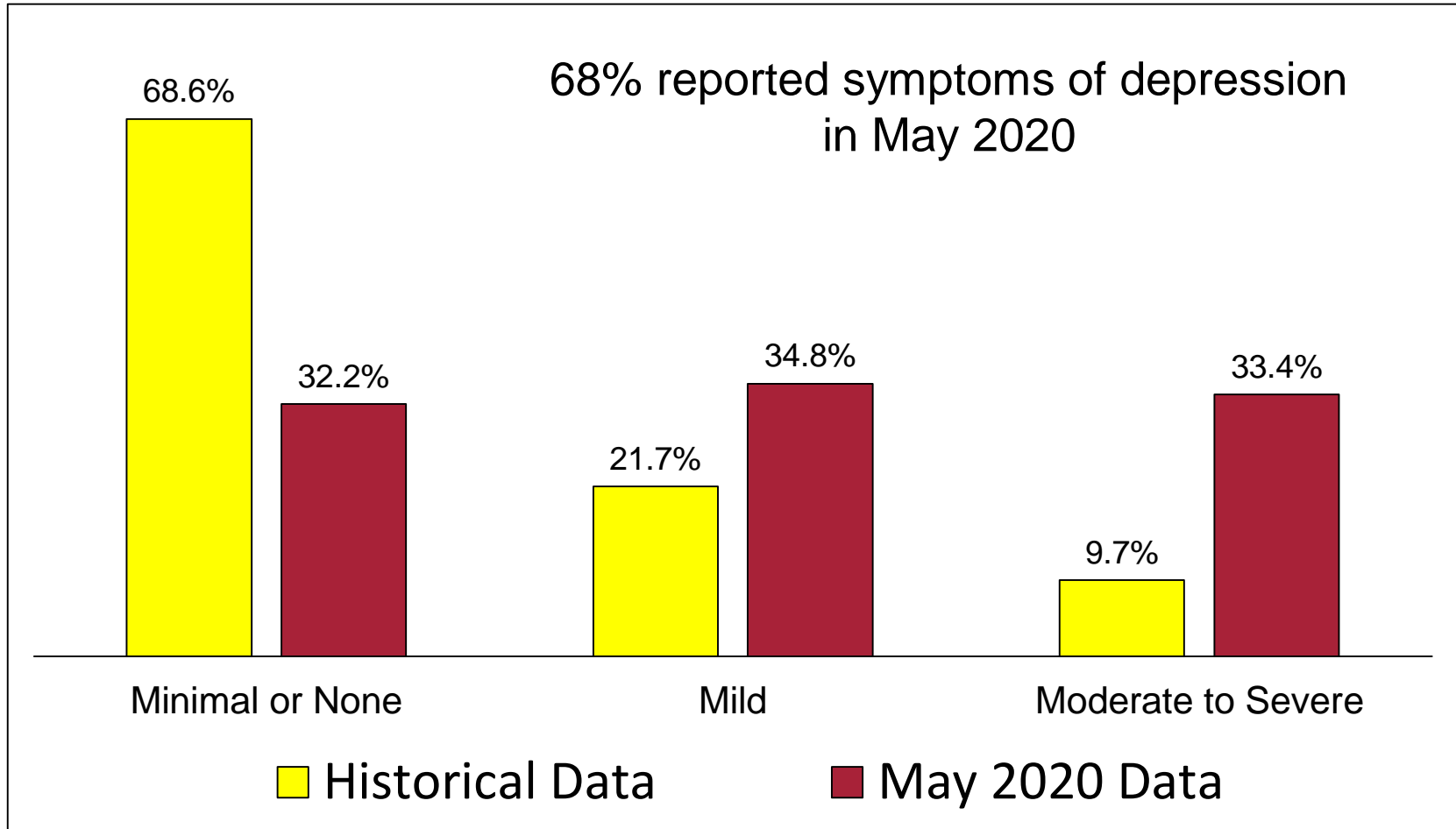
**RESULTS**



## Prevalence of Anxiety Symptoms in Adolescent Athletes During COVID-19 Related School Closures and Sport Cancellations in Wisconsin

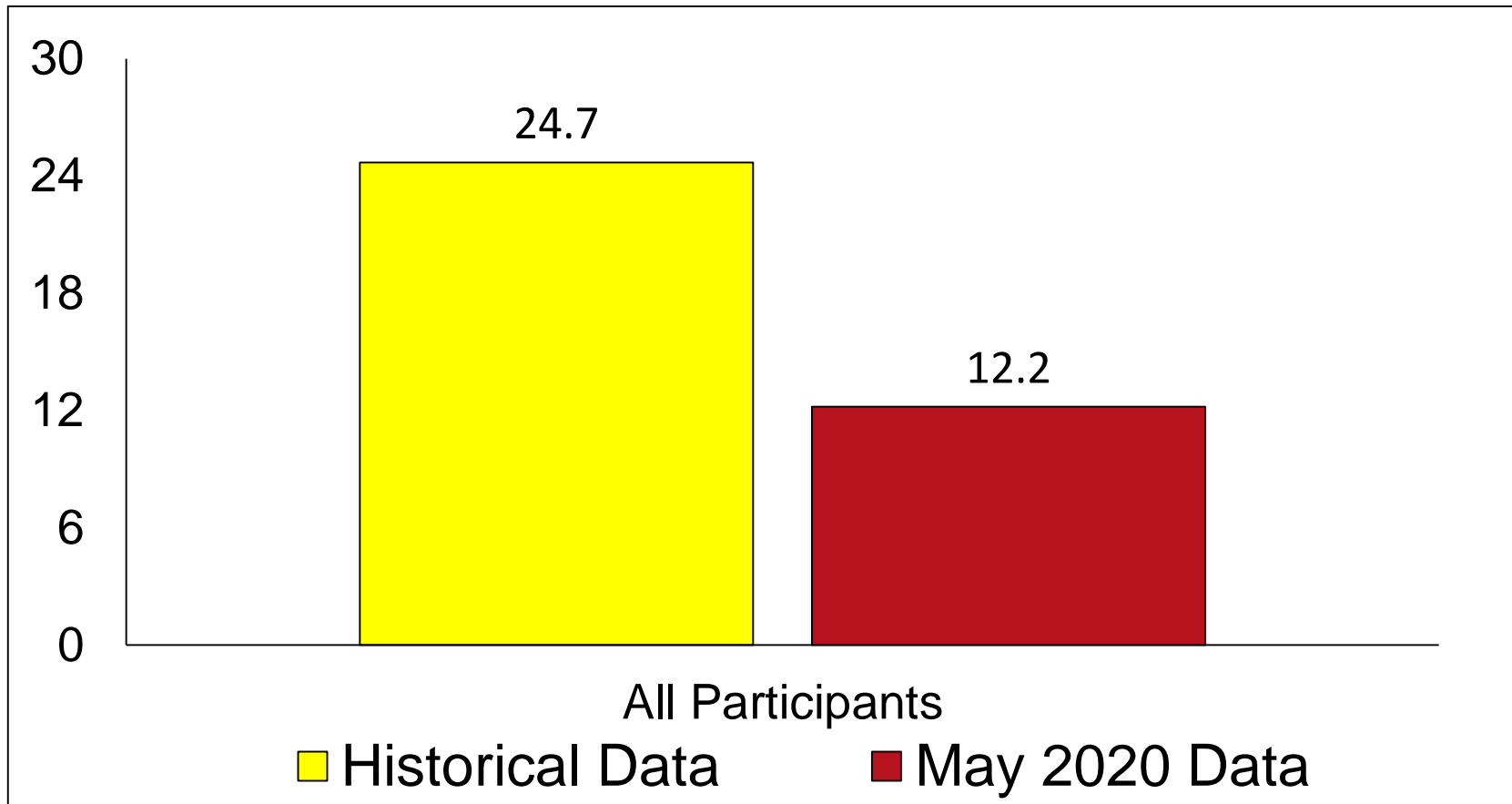



## Prevalence of Depression Symptoms in Adolescent Athletes During COVID-19 Related School Closures and Sport Cancellations in Wisconsin



Moderate to Severe Depression was 3.5X higher during May 2020 ( $p < 0.001$ )

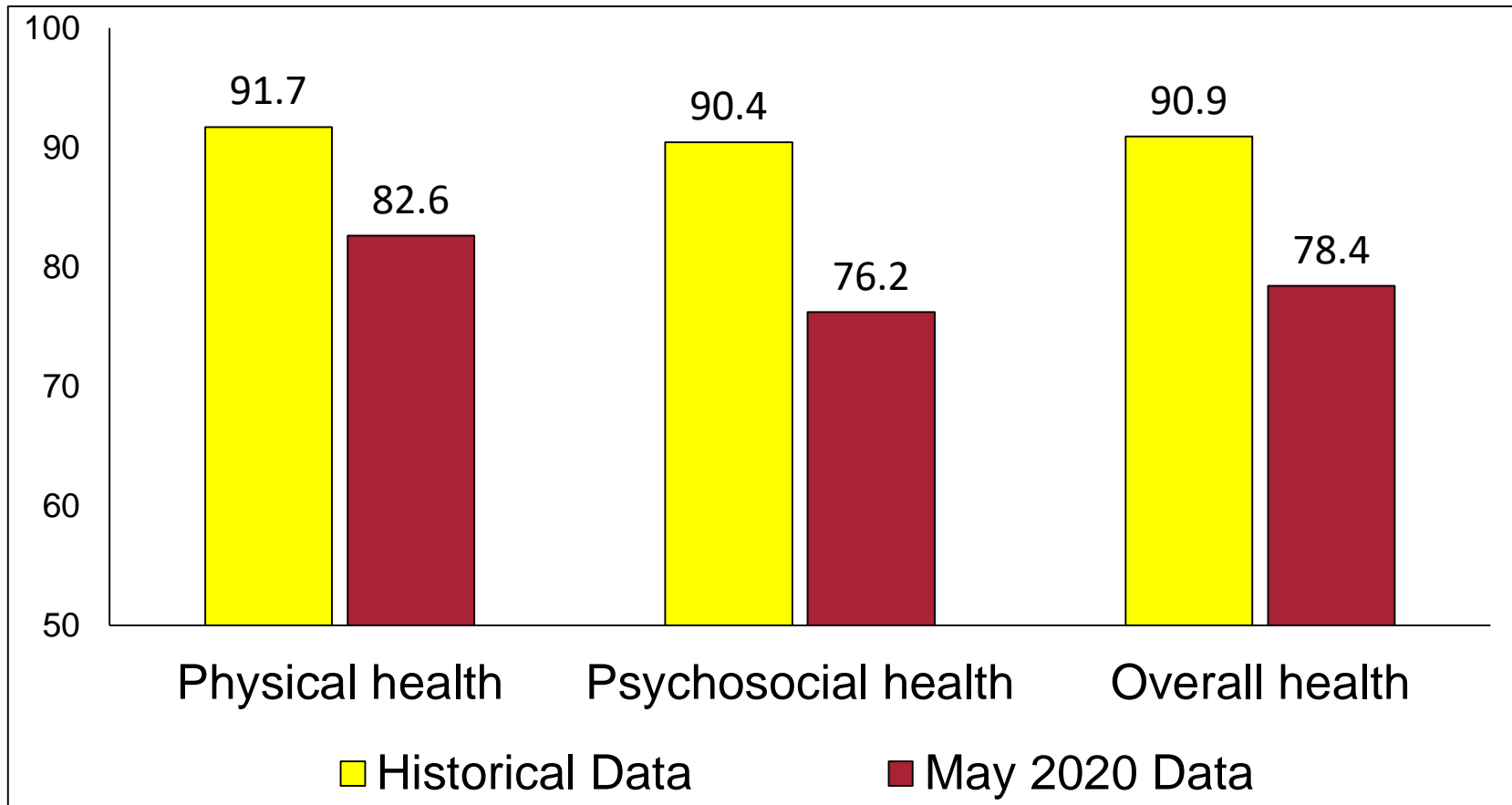
## Decrease of Physical Activity of Adolescent Athletes During COVID-19 Related School Closures and Sport Cancellations in Wisconsin



**Physical Activity**  **50% in May 2020 ( $p < 0.001$ )**



## Decreases in the Health Related Quality of Life of Adolescent Athletes During COVID-19 Related School Closures and Sport Cancellations in Wisconsin



**Quality of Life**  **in May 2020 ( $p < 0.001$ )**



**DISCUSSION**

# Mental Health

Estimates = 66,000 Wisconsin adolescent athletes at risk for depression.

In the short term, mental health disorders can impact whether these students use drugs/alcohol, stay in school, engage with peers or graduate from high school.



In the long term, these disorders can become chronic and influence whether these individuals go on to college, use drugs/alcohol extensively or form meaningful lifelong relationships.



# Mental Health

Previous studies have demonstrated that prolonged quarantines can negatively impact mental health.

Schools play an **important role** in providing access to mental health services for **disadvantaged** students.



Medical providers, parents, and policy-makers must recognize the mental health strain the current pandemic is placing on adolescent athletes.

# Physical Activity

Physical Activity was 50% lower than levels reported prior to COVID-19

Physical activity has a beneficial effect on a wide range of health outcomes in adolescents.



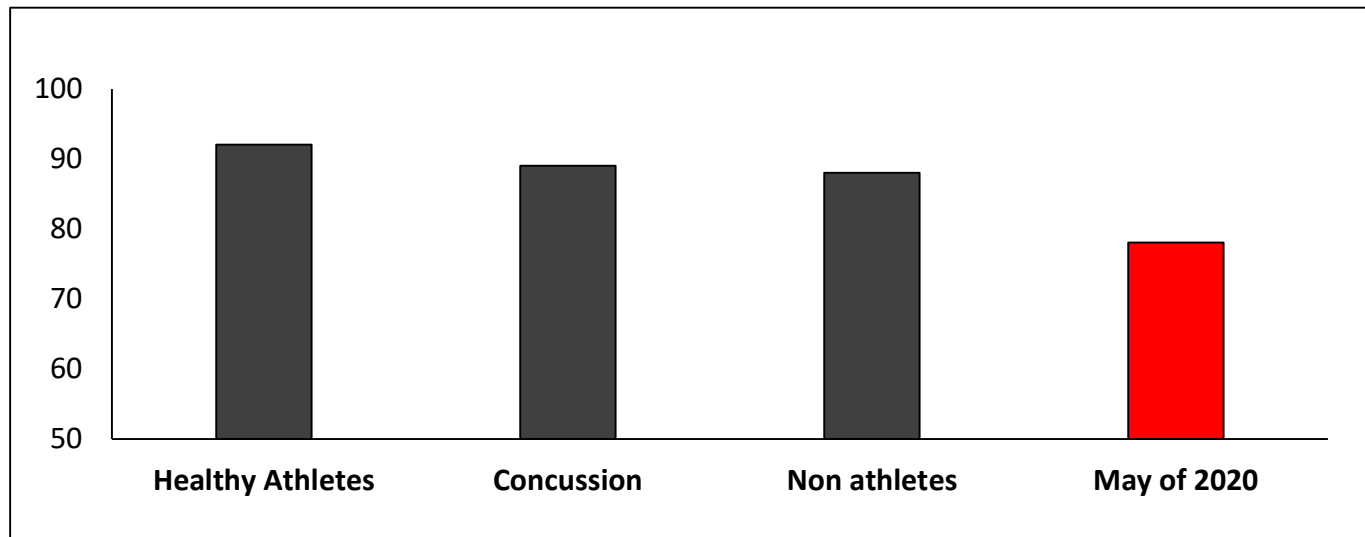
Exercise and organized sports are widely recognized as powerful antidepressant and anti-anxiety interventions.

The negative effects of the COVID-19 pandemic on anxiety or depression are likely going to be perpetuated by continued lower rates of exercise and organized sport opportunities.

Limiting exercise and organized sports opportunities during the 2020/21 academic year can be expected to exacerbate these harmful health conditions and outcomes.

# Health Related Quality of Life

The quality of life scores in May 2020 were lower than previous research on healthy adolescents, non athletes and athletes with significant sports injuries such as a concussion.



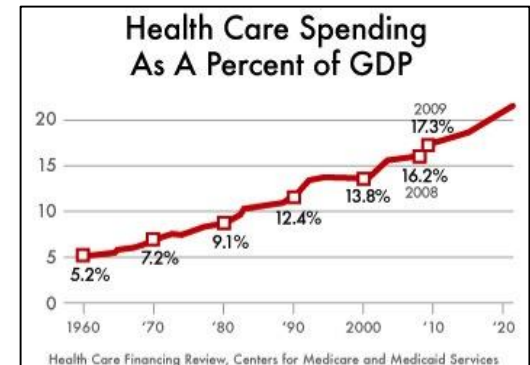
Quality of life scores were much lower than reported previously in Wisconsin student athletes during the 2015 – 2018 school years.



COVID-19 related school closures in Wisconsin are associated with worsening mental health, physical activity and health related quality of life



The negative psychosocial effects may result in additional health care utilization and spending in future years.

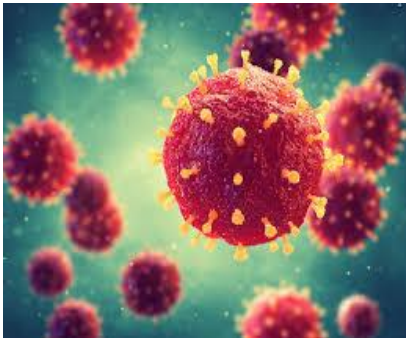




**CONCLUSIONS**



COVID-19 related school closures and sport cancellations appear to be associated with significant, negative impacts on the health and well-being of adolescent athletes.



Public health experts and school administrators need to consider the impacts (benefits and risks) of prolonged school closures and sport cancellations when considering steps to limit the spread of COVID-19 in Wisconsin.



# Next Steps....

Manuscript submission - June 2020

WI State Legislature meeting – June

Collected data the US.

N = **13,500+ responses** (46/50 states)

Economic variables (% poverty)

State level reports



# Tim McGuine PhD, ATC

University of Wisconsin  
School of Medicine and Public Health

[mcguine@ortho.wisc.edu](mailto:mcguine@ortho.wisc.edu)

