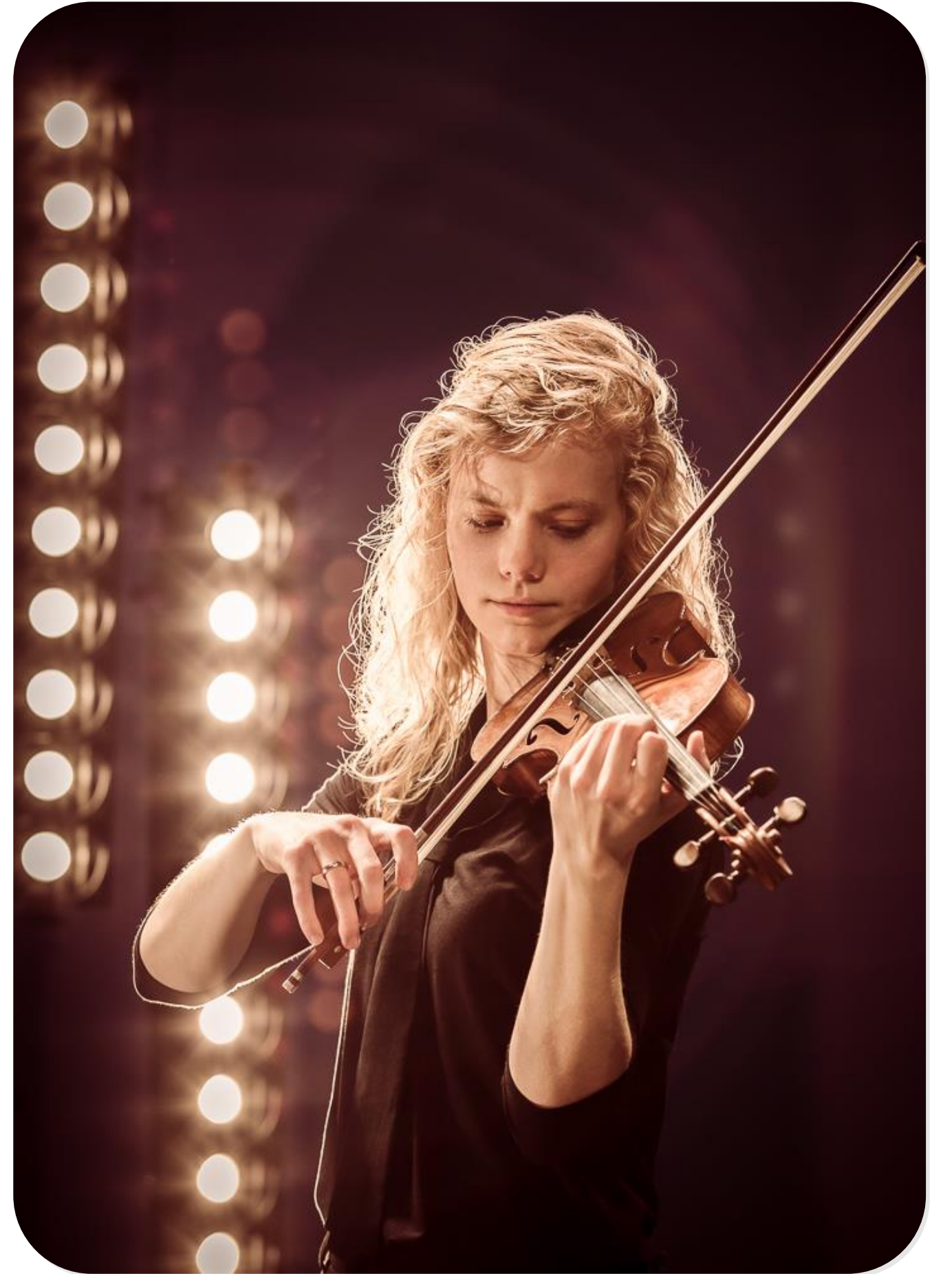




# Monitoring the health and wellbeing of Codarts circus students

Janine Stubbe





5 days a week, 8 hours per day

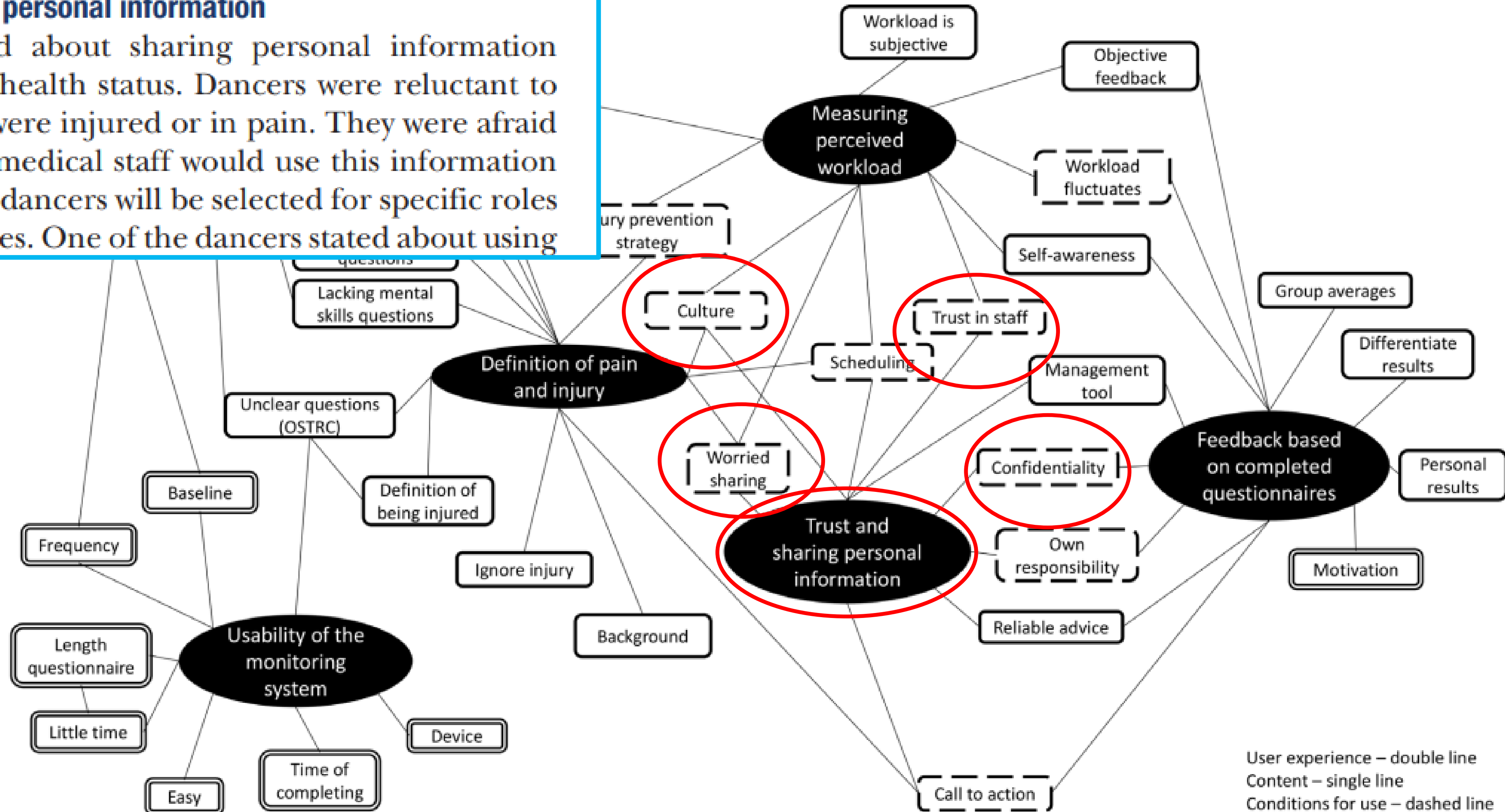
Multiple performances per year

Different teachers (guest teachers)

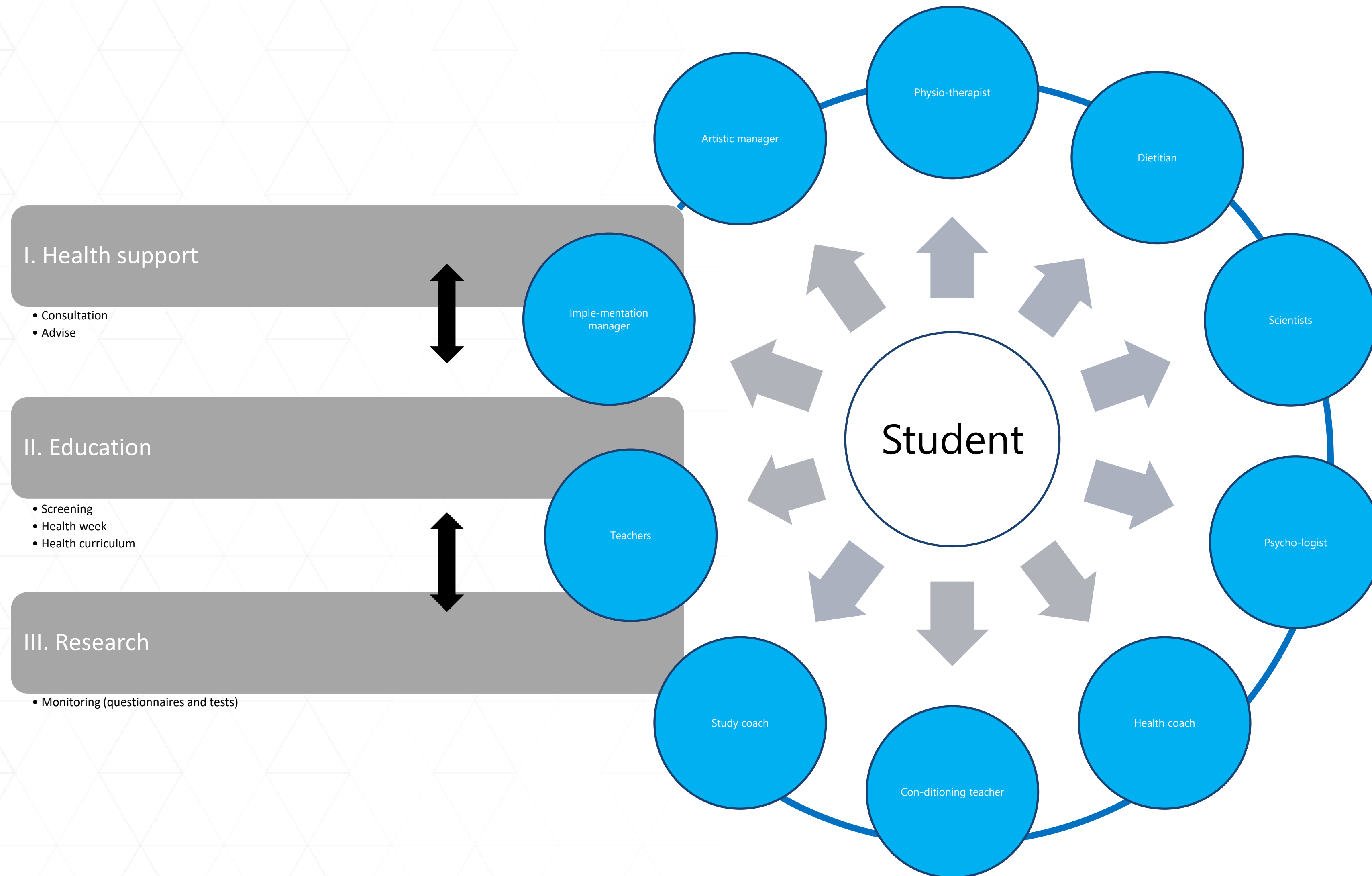
# Create a safe environment

## Trust and sharing personal information

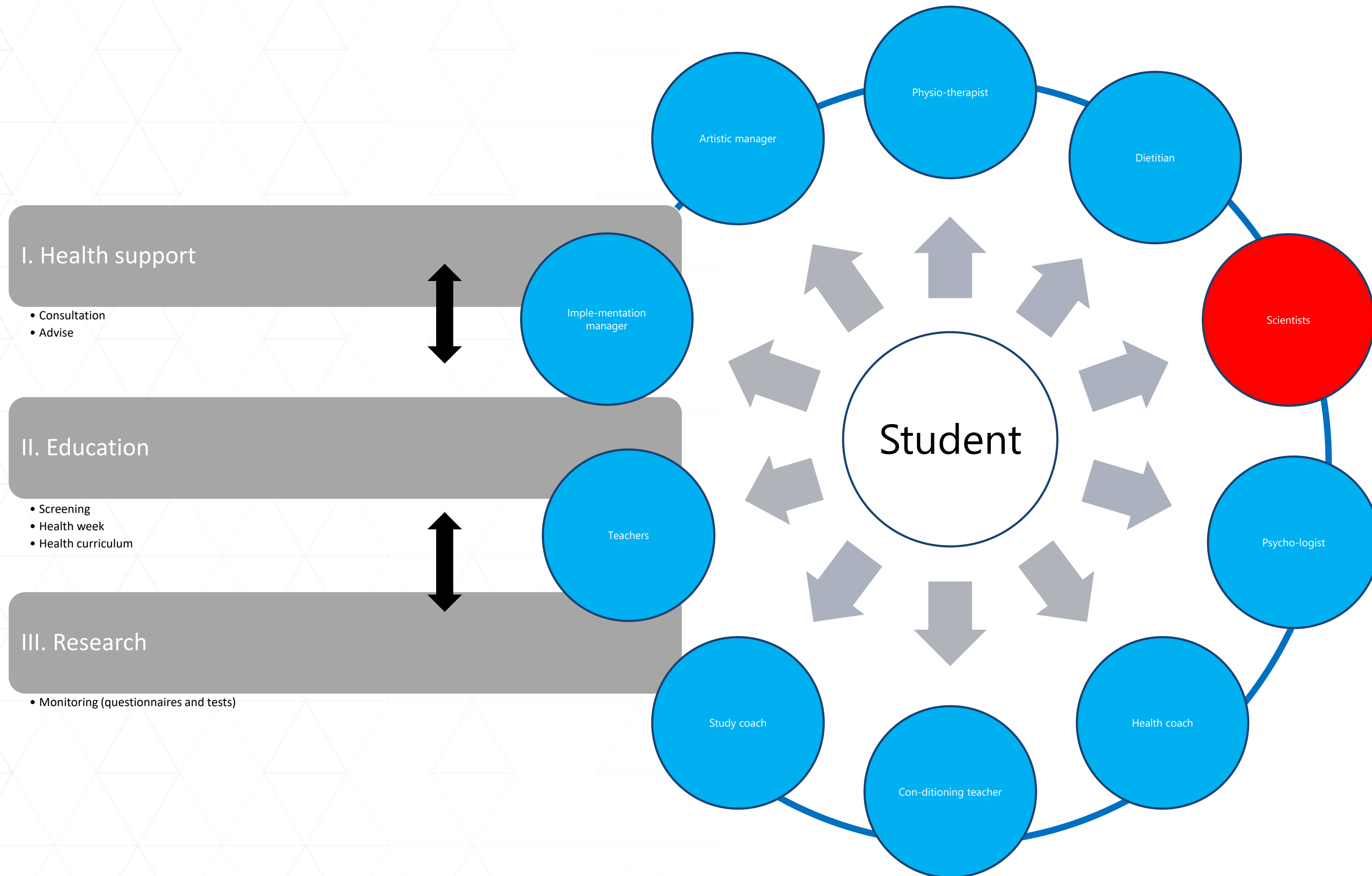
Dancers worried about sharing personal information regarding their health status. Dancers were reluctant to fill in that they were injured or in pain. They were afraid the artistic and medical staff would use this information to decide which dancers will be selected for specific roles and performances. One of the dancers stated about using



# Team Around The Artist (TATA)



# Team Around The Artist (TATA)





**Janine  
Stubbe**

Human movement scientist



**Rogier  
van Rijn**

Health scientist



**Stephanie Keizer-  
Hulsebosch**

Dance scientist



**Annemiek  
Tiemens**

Dance scientist



**Angelo  
Richardson**

Data scientist



**Suze  
Steeemers**

Music scientist



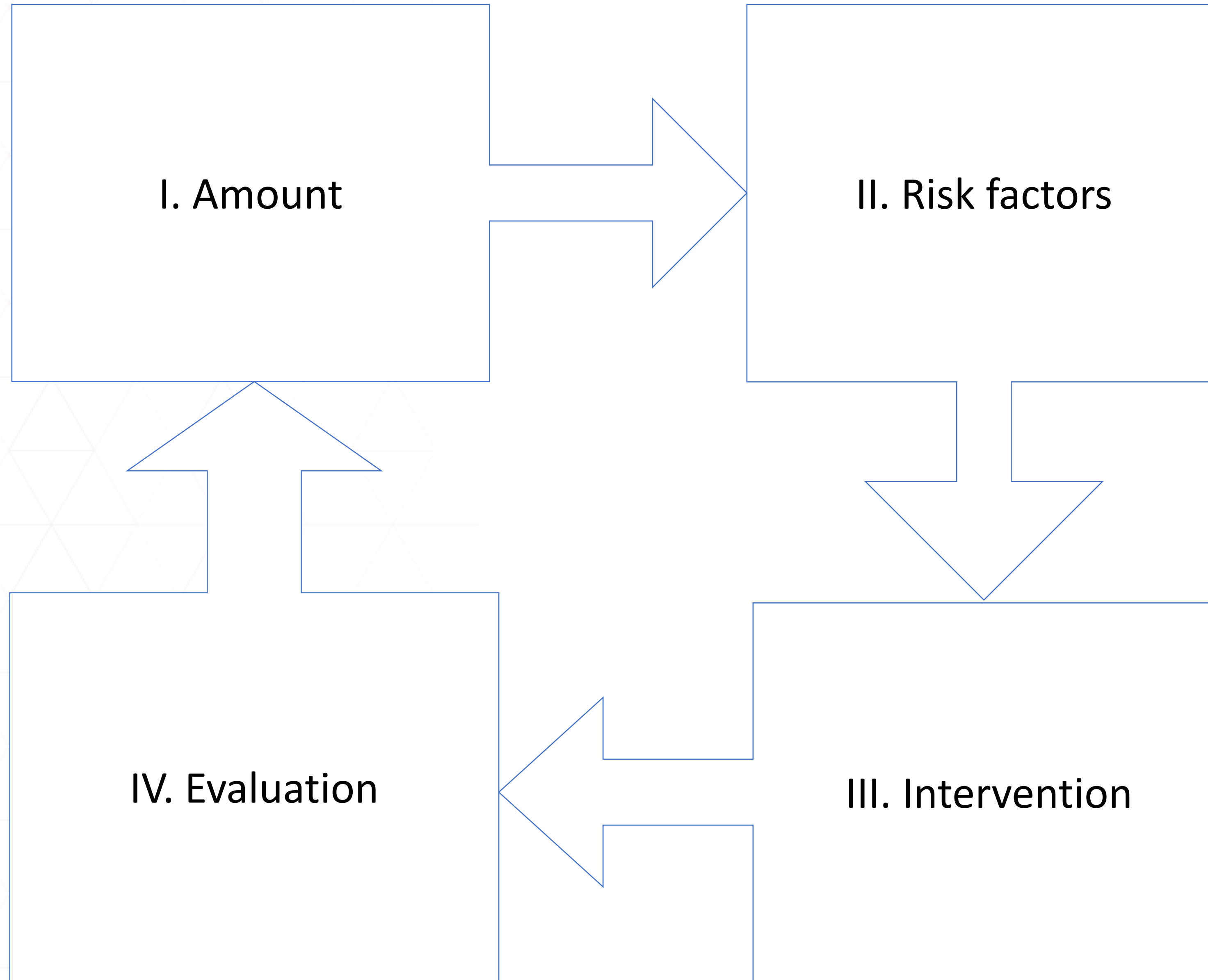
**Maurice  
Buiten**

Software engineer

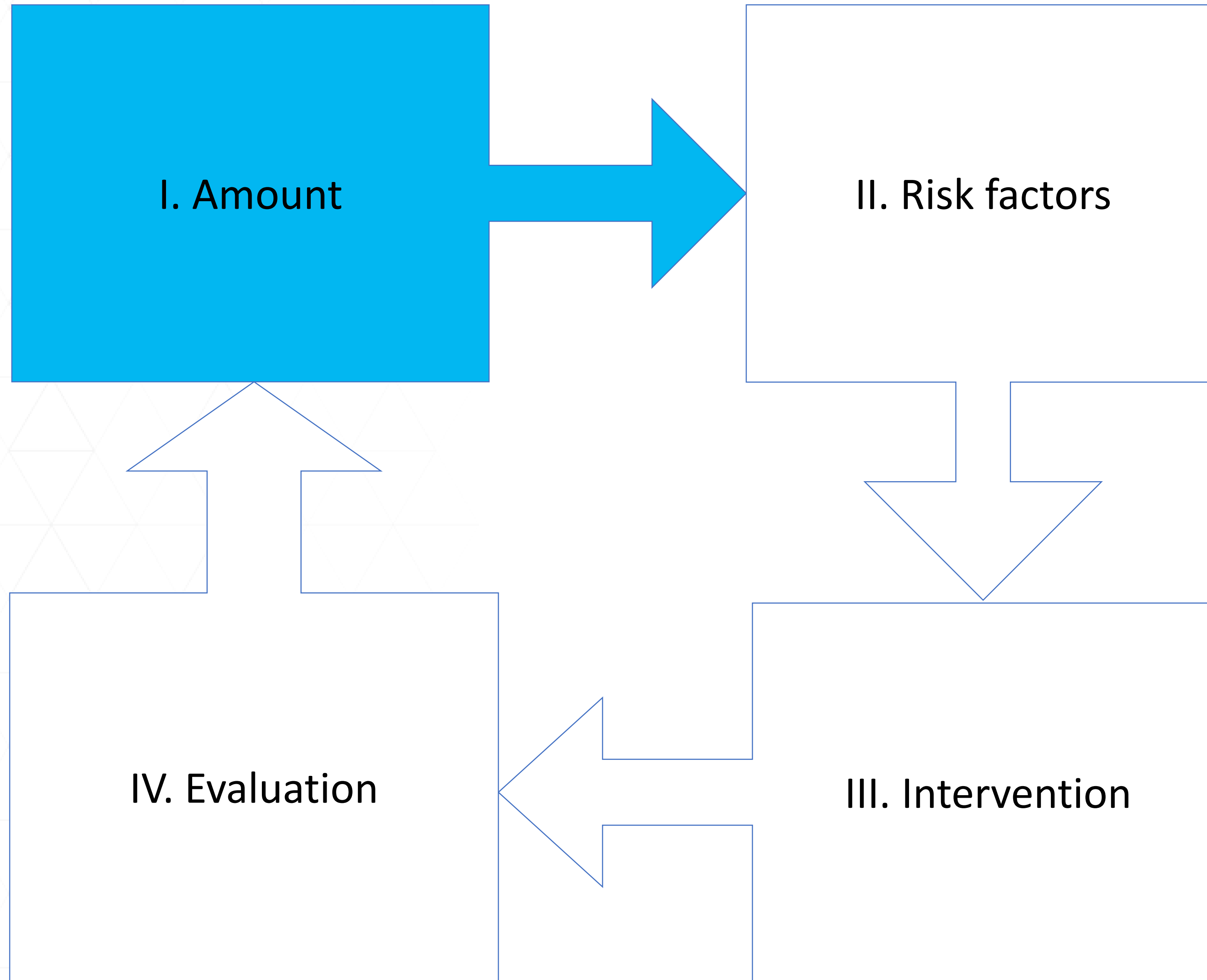


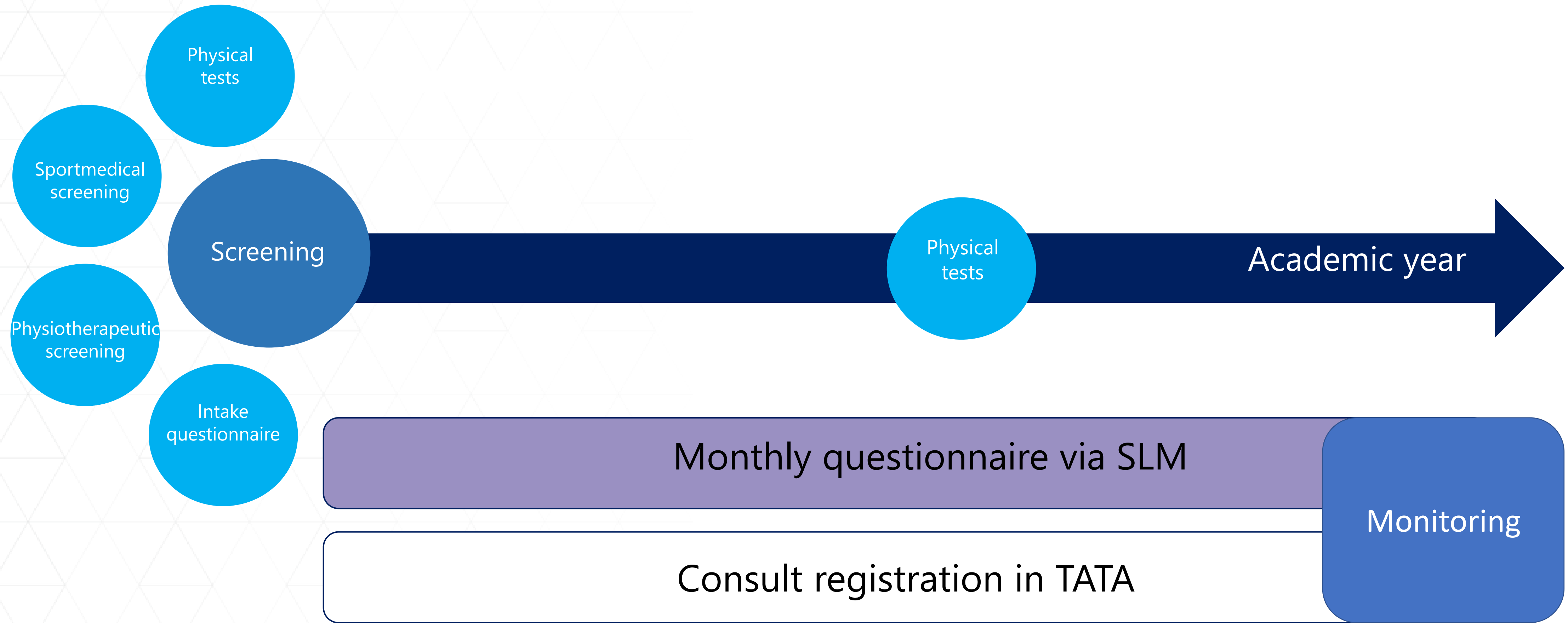
**Larissa  
Plaatsman**

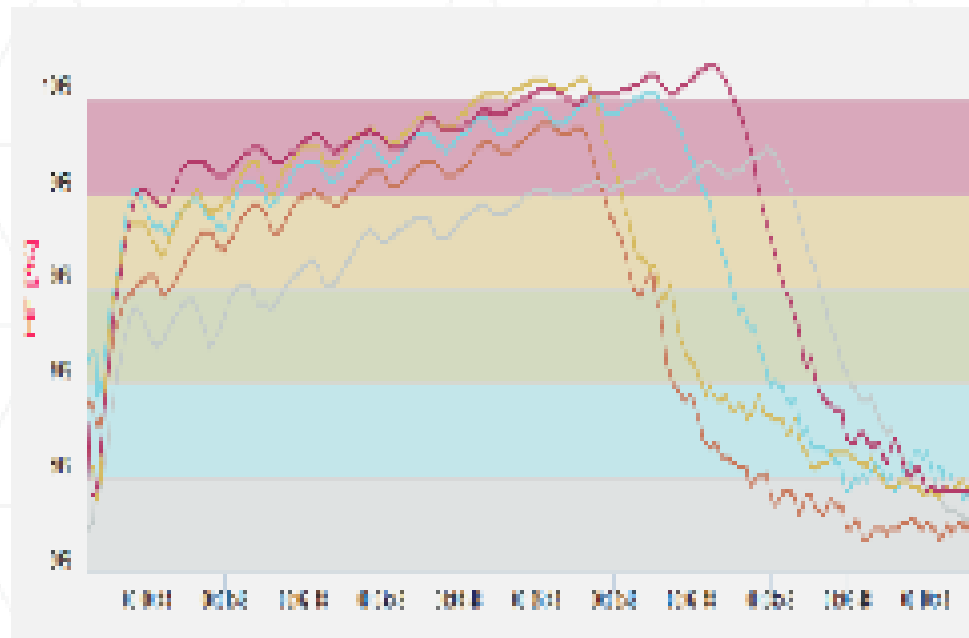
Human movement scientist











**262 Interval Shuttle Run tests**



**2151 jump tests**



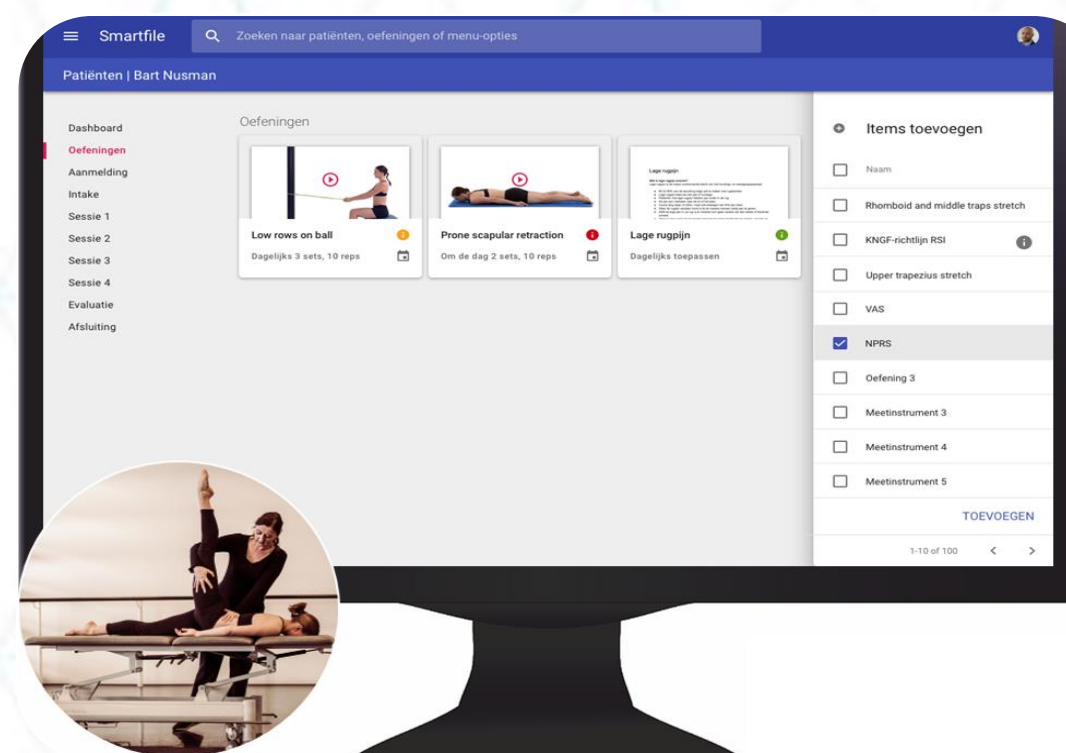
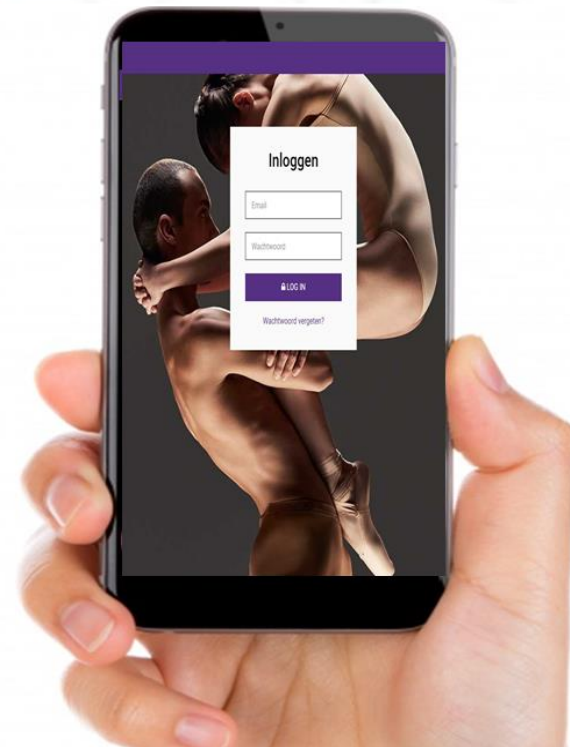
**1541 specific ankle tests**



**8331 monthly questionnaires**

# Performing artist and Athlete Health Monitor (PAHM)

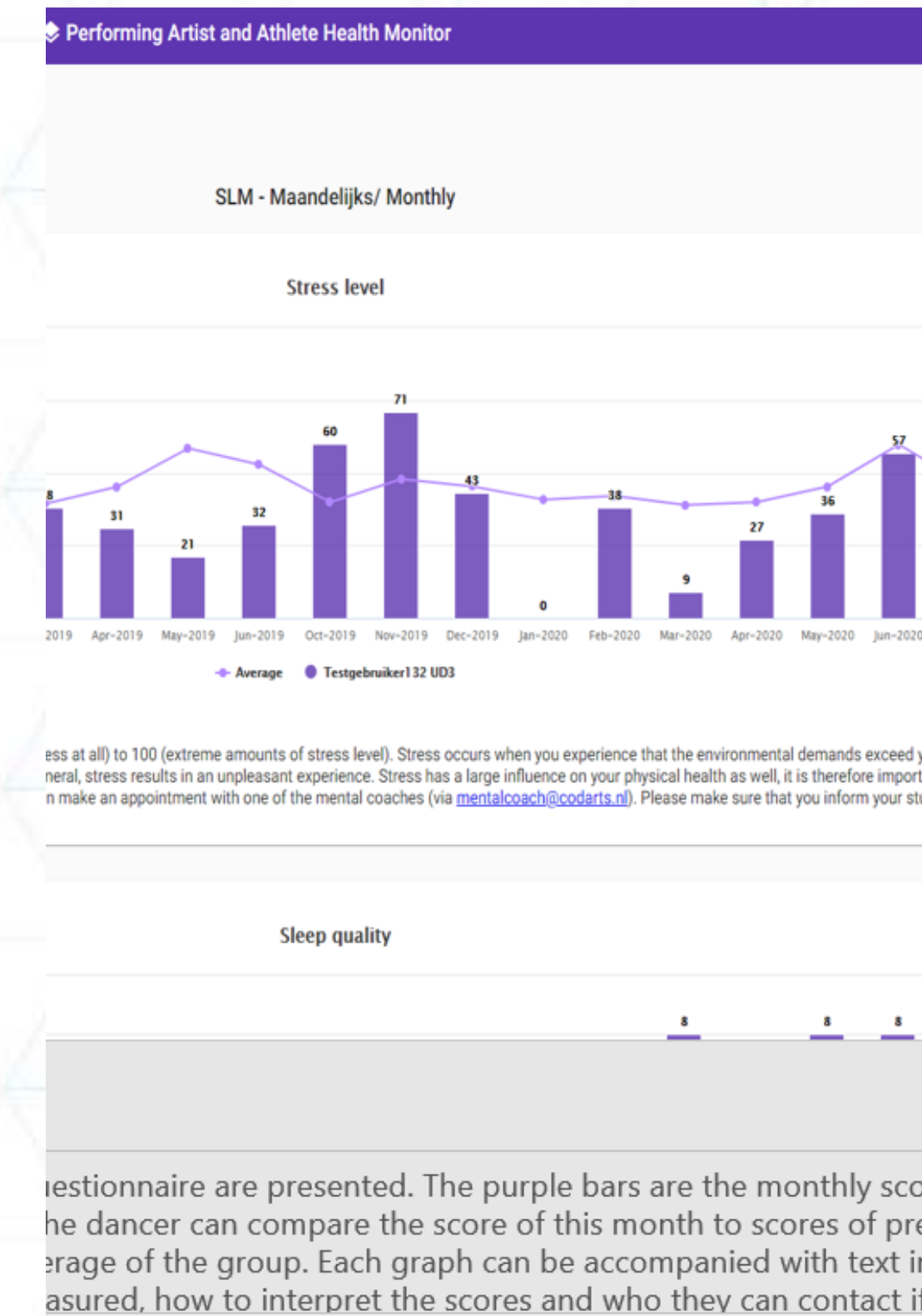
## Collect



## Analyze



## Visualize



## LOGIN

Email \*

Password \*

LOGIN

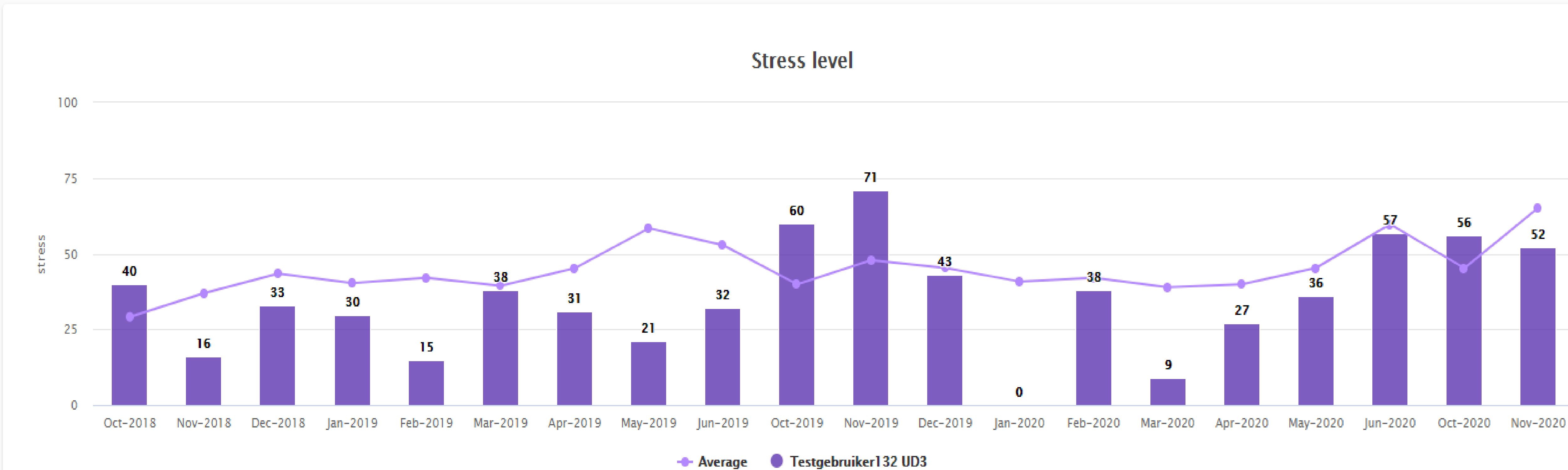
[FORGOT PASSWORD](#)

> 2,000 performing artists and athletes

Response rate > 80%

← RESULTS

SLM - Maandelijks/ Monthly



Above you find your stress scores, the scale ranges from 0 (no stress at all) to 100 (extreme amounts of stress level). Stress occurs when you experience that the environmental demands exceed your abilities to cope with these demands when the situation is important for you. In general, stress results in an unpleasant experience. Stress has a large influence on your physical health as well, it is therefore important to keep an eye on your own stress level. For questions or advice about stress you can make an appointment with one of the mental coaches (via [mentalcoach@codarts.nl](mailto:mentalcoach@codarts.nl)). Please make sure that you inform your study coach as well!

# Circus-specific extension of the International Olympic Committee 2020 consensus statement: methods for recording and reporting of epidemiological data on injury and illness in sport

Stephanie Greenspan <sup>1,2</sup> David Munro <sup>3,4</sup> Joanna Nicholas <sup>5</sup>  
Janine Stubbe,<sup>6,7,8,9</sup> Melanie I Stuckey <sup>10</sup> Rogier M Van Rijn <sup>6,7</sup>

**To cite:** Greenspan S, Munro D, Nicholas J, *et al*. Circus-specific extension of the International Olympic Committee 2020 consensus statement: methods for recording and reporting of epidemiological data on injury and illness in sport. *BMJ Open Sport & Exercise Medicine* 2022;**8**:e001394. doi:10.1136/bmjsem-2022-001394

► Additional supplemental material is published online only. To view, please visit the journal online (<http://dx.doi.org/10.1136/bmjsem-2022-001394>).

Accepted 7 August 2022

## ABSTRACT

In-depth knowledge of injury and illness epidemiology in circus arts is lacking. Comparing results across studies is difficult due to inconsistent methods and definitions. In 2020, the International Olympic Committee (IOC) consensus group proposed a standard method for recording and reporting epidemiological data on injuries and illnesses in sports and stated that sport-specific extension statements are needed to capture the context of each sport. This is the circus-specific extension to be used with the IOC consensus statement. International circus arts researchers in injury and illness epidemiology and performing arts medicine formed a consensus working group. Consensus statement development included a review of literature, creation of an initial draft by the working group, feedback from external reviewers, integration of feedback into the second draft and a consensus on the final document. This consensus statement contains circus-specific information on (1) injury

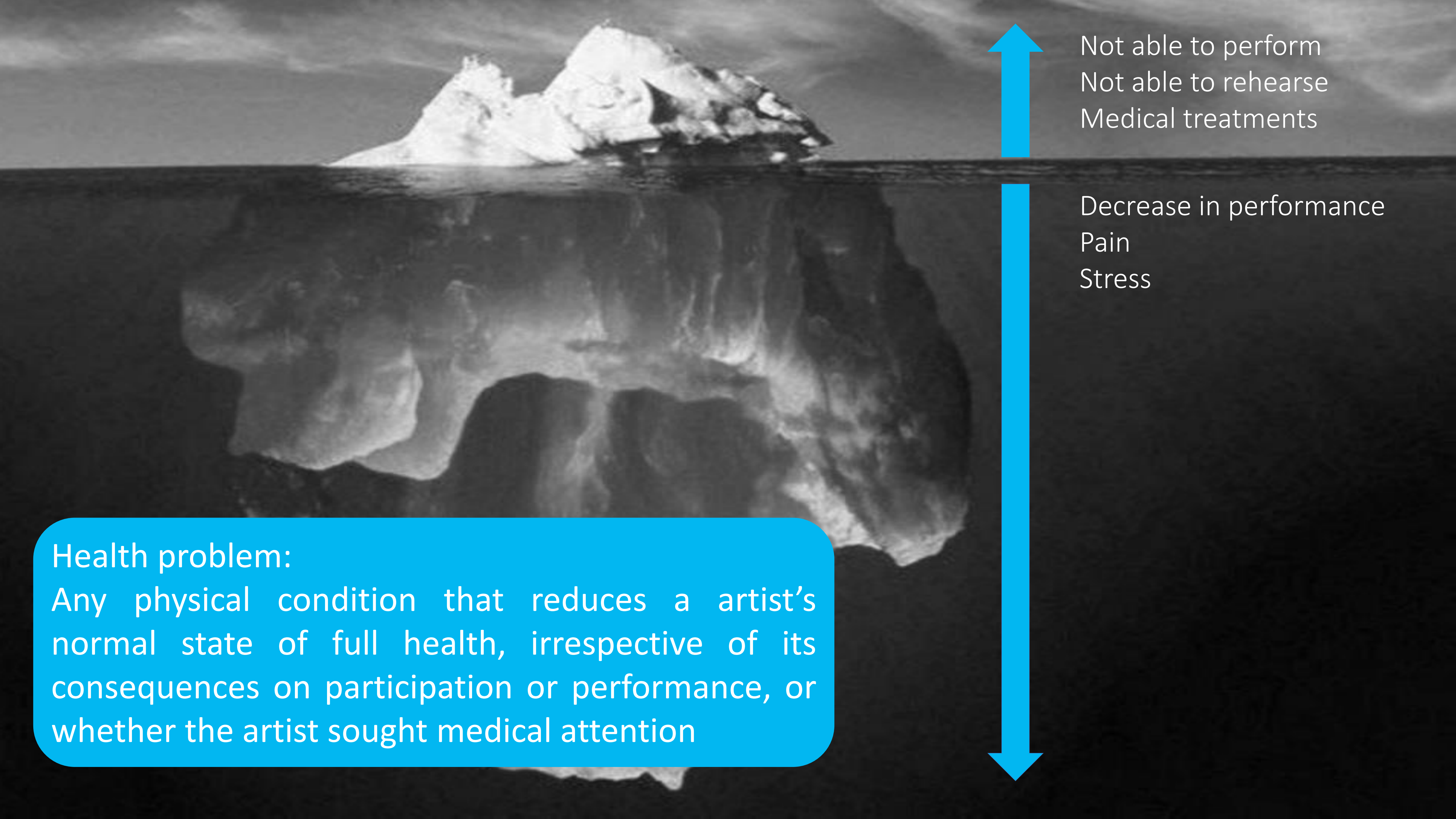
## Key messages

### What is known

- ⇒ The International Olympic Committee (IOC) published a consensus statement for recording and reporting of epidemiological data on injury and illness in sports and recommended the development of extension statements to provide sport-specific guidance.
- ⇒ Circus arts is an athletic performing art with increasing scientific study of injury related to participation, yet there are no guidelines to inform data collection and reporting of this complex activity.

### What are the new findings

- ⇒ The Surveillance of Injuries in Research on Circus consensus group developed an extension statement to be used in partnership with the IOC statement to guide the recording and reporting of injury data in



Not able to perform  
Not able to rehearse  
Medical treatments



Decrease in performance  
Pain  
Stress

**Health problem:**  
Any physical condition that reduces a artist's normal state of full health, irrespective of its consequences on participation or performance, or whether the artist sought medical attention



# OSTRC Questionnaire on Health Problems

## Question 1

*Have you had any difficulties participating in normal training and competition due to injury, illness or other health problems during the past week?*

- Full participation without health problems
- Full participation, but with injury/illness
- Reduced participation due to injury/illness
- Cannot participate due to injury/illness

## Question 2

*To what extent have you reduced your training volume due to injury, illness or other health problems during the past week?*

- No reduction
- To a minor extent
- To a moderate extent
- To a major extent
- Cannot participate at all

## Question 3

*To what extent has injury, illness or other health problems affected your performance during the past week?*

- No effect
- To a minor extent
- To a moderate extent
- To a major extent
- Cannot participate at all

## Question 4

*To what extent have you experienced symptoms/health complaints during the past week?*

- No symptoms/health complaints
- To a mild extent
- To a moderate extent
- To a severe extent

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Original article

BMJ Open  
Sport &  
Exercise  
Medicine

# Prospective cohort study on injuries and health problems among circus arts students

Janine H Stubbe,<sup>1,2,3</sup> Angelo Richardson,<sup>1,2</sup> Rogier M van Rijn<sup>1,2</sup>

**To cite:** Stubbe JH, Richardson A, van Rijn RM. Prospective cohort study on injuries and health problems among circus arts students. *BMJ Open Sport & Exercise Medicine* 2018;4:e000327. doi:10.1136/bmjsem-2017-000327

Accepted 30 March 2018

## ABSTRACT

**Aim** The amount of injuries, illnesses and mental health problems was calculated among circus arts students, using a method designed to capture more than just time-loss and/or medical injuries. Furthermore, injury incidence rate, injury incidence proportions, anatomical injury location and severity of injuries were assessed.

**Methods** A total of 44 first-year, second-year and third-year circus arts students were prospectively followed during one academic year. Every month, all students were asked to complete questionnaires by using the online Performing Artist and Athlete Health Monitor, which includes the Oslo Sports Trauma Research Centre

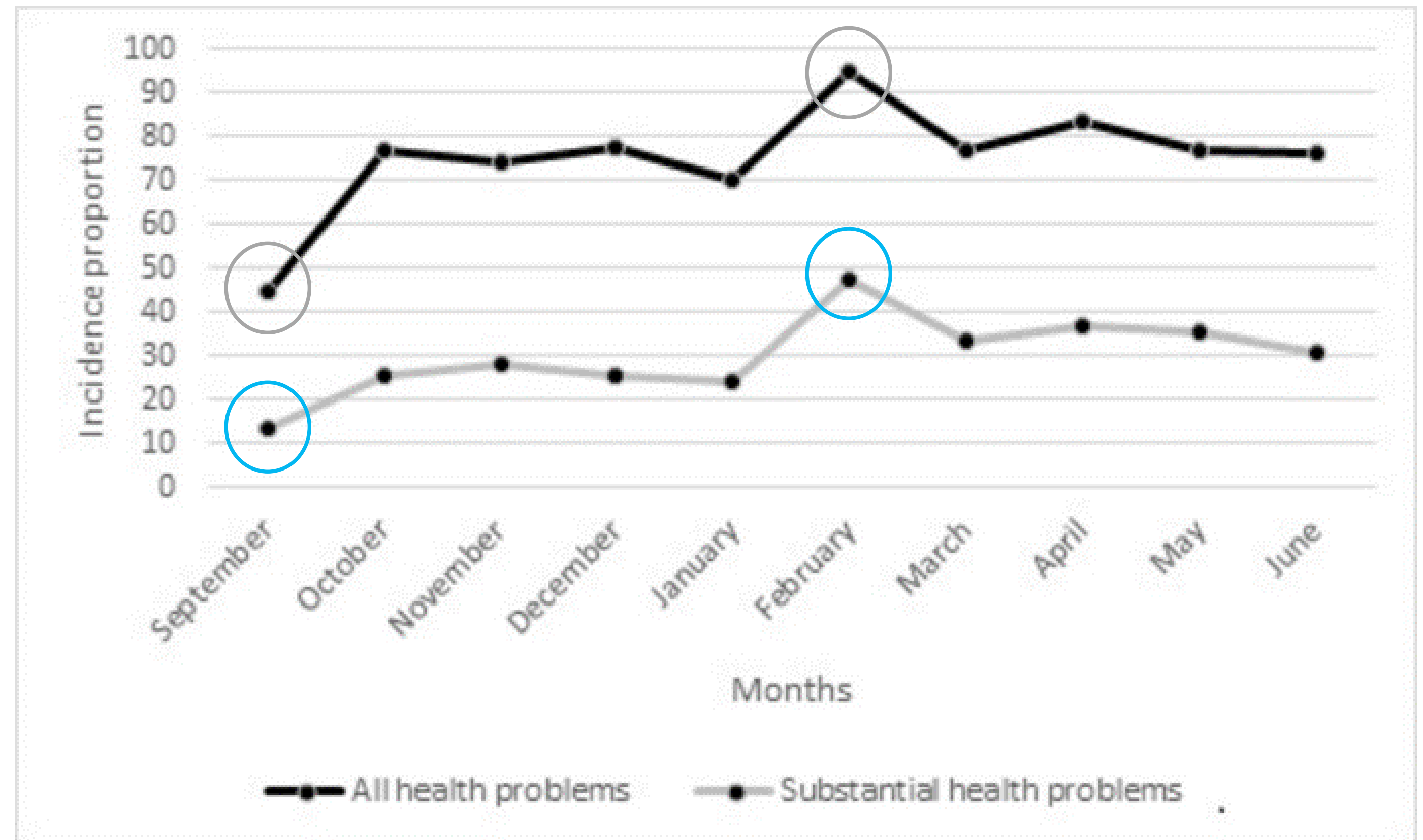
## What are the findings?

- ▶ Our study showed that the burden of injuries is high in circus arts students. The injury incidence rate was 3.3 injuries per 1000 hours (95% CI 2.7 to 3.9). Monthly incidence proportion for all injuries ranged from 31.6% to 69.0% and from 6.8% to 34.1% for substantial injuries.
- ▶ The new injury recording method, using the Performing Artist and Athlete Health Monitor, captures a complete picture of the burden of health problems in circus students.

# Health problems

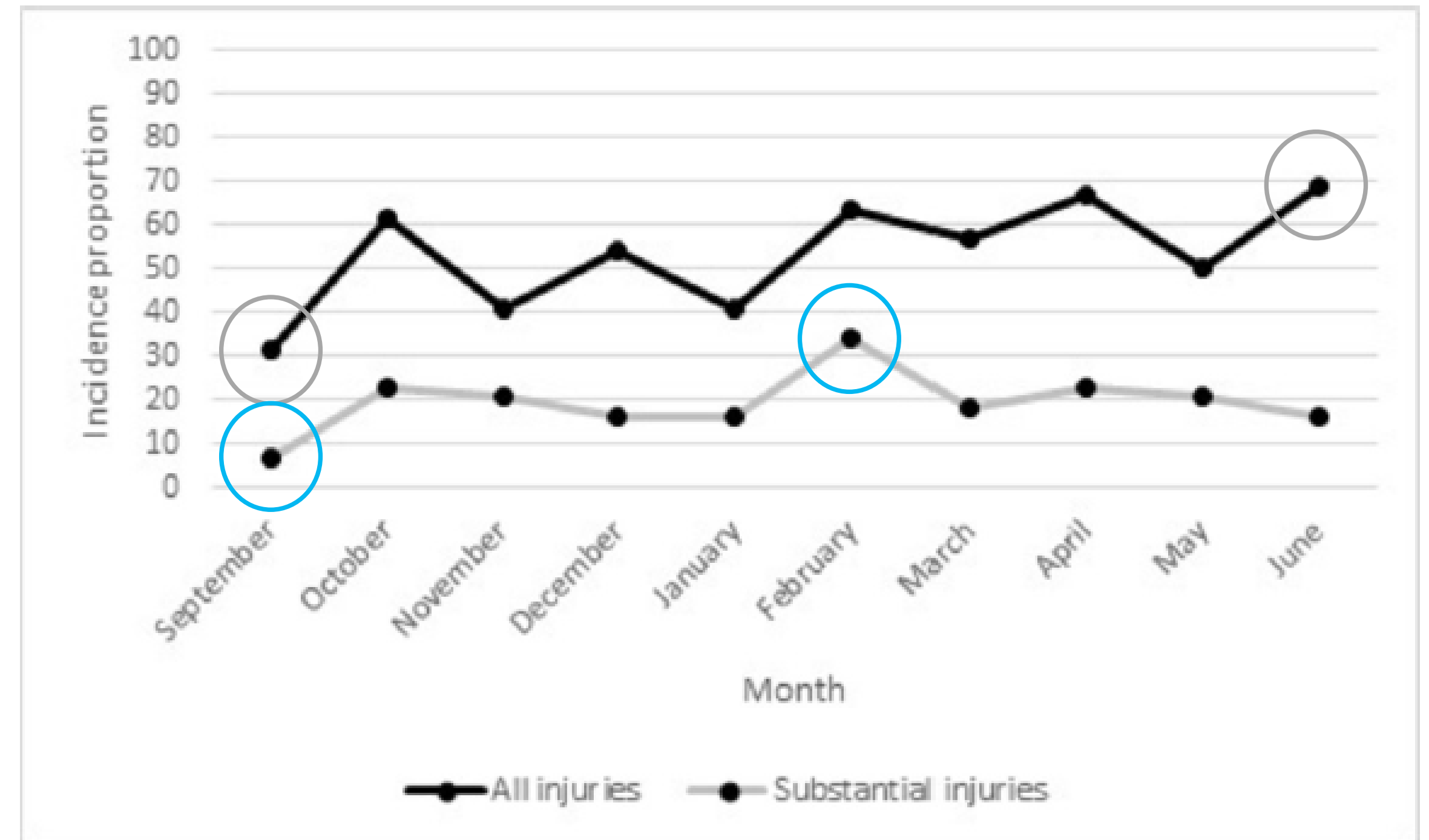
During academic year:

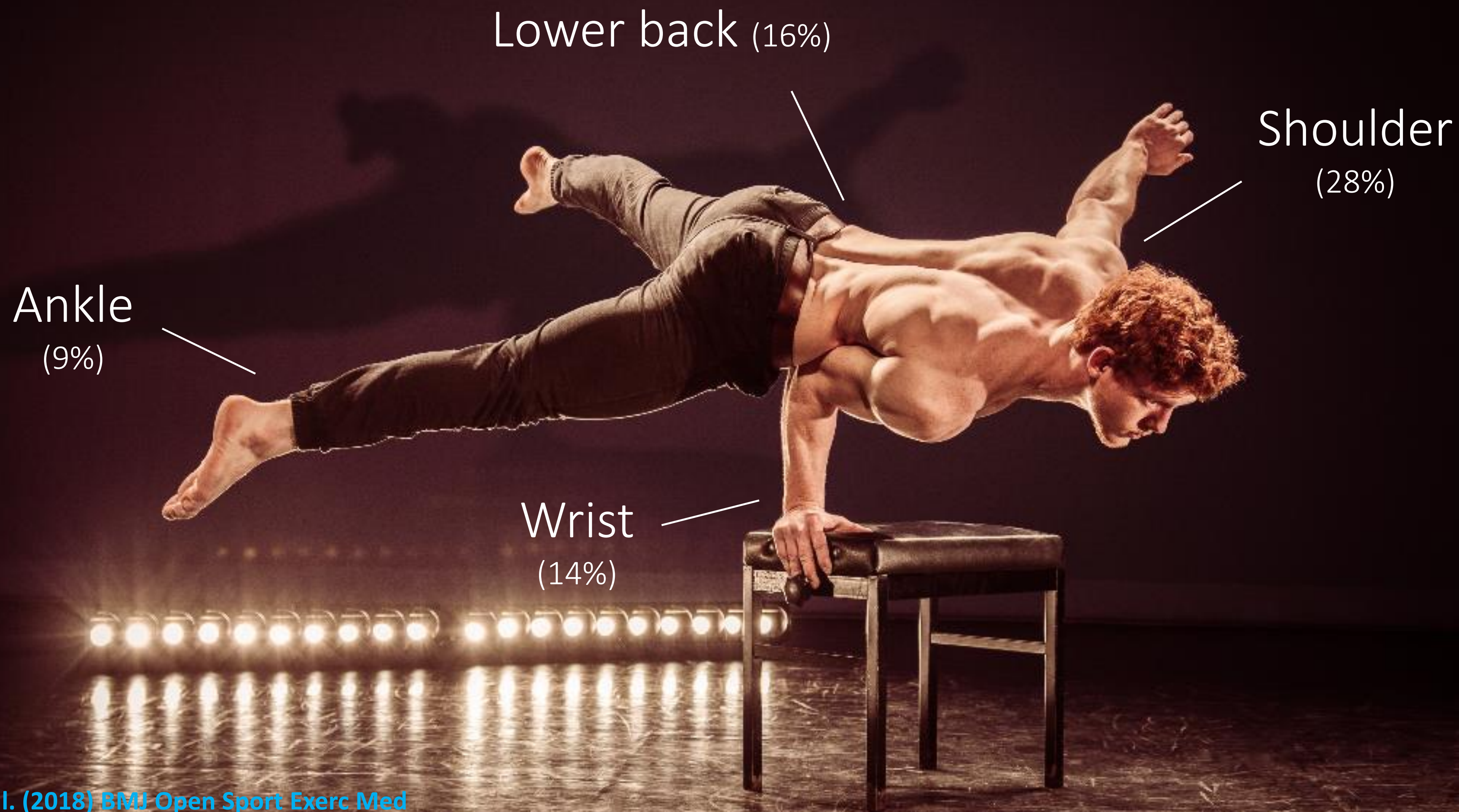
- Injuries → 71% (n=184)
- Illnesses → 20% (n=51)
- Mental → 5% (n=15)
- Other → 3% (n=11)

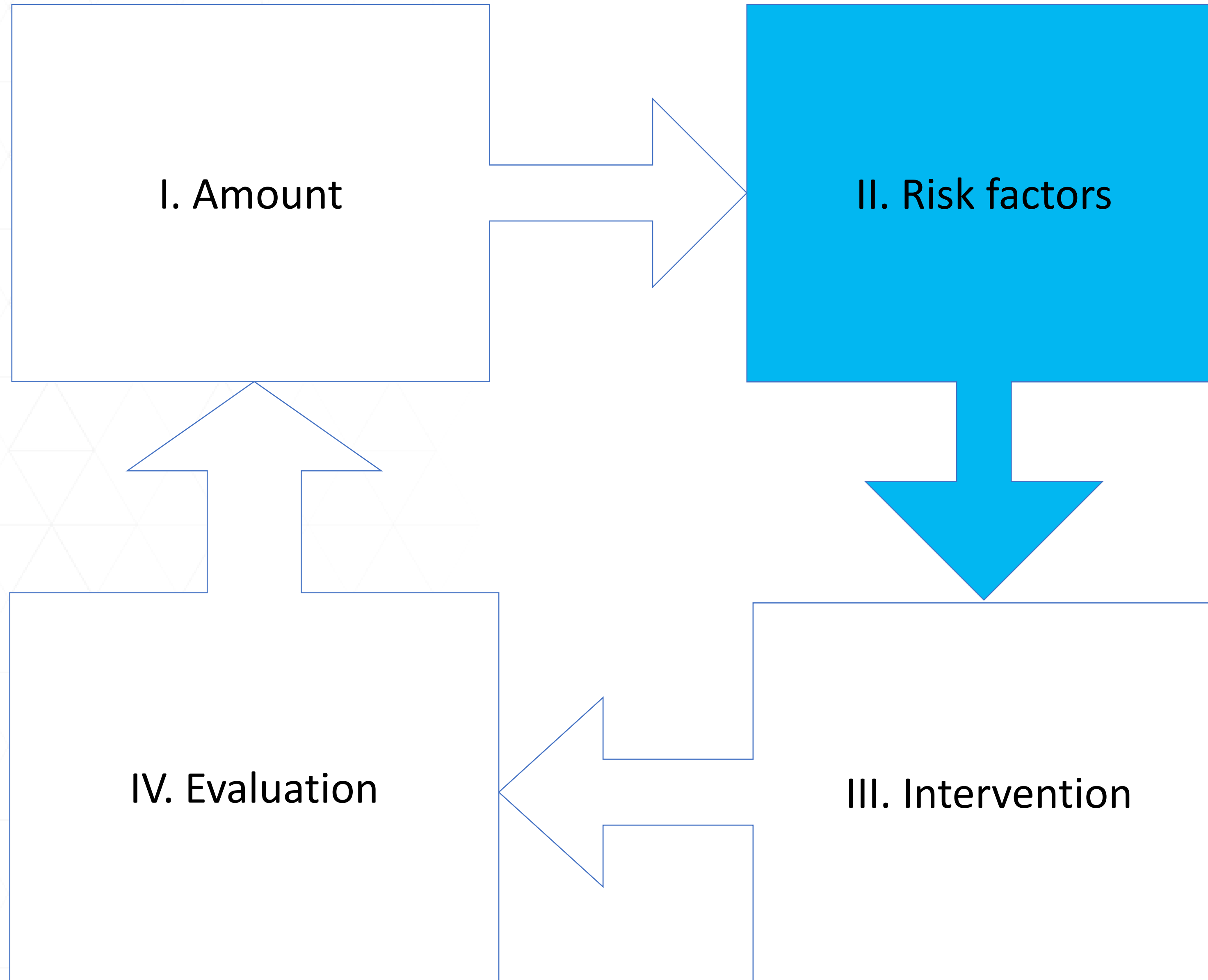


# Injuries

- 42 students (95.5%)
- 130 unique cases
- 3.3 injuries / 1000 hrs (95% CI 2.7-3.9)
- 4.4 injuries during academic year (range 1 -8)





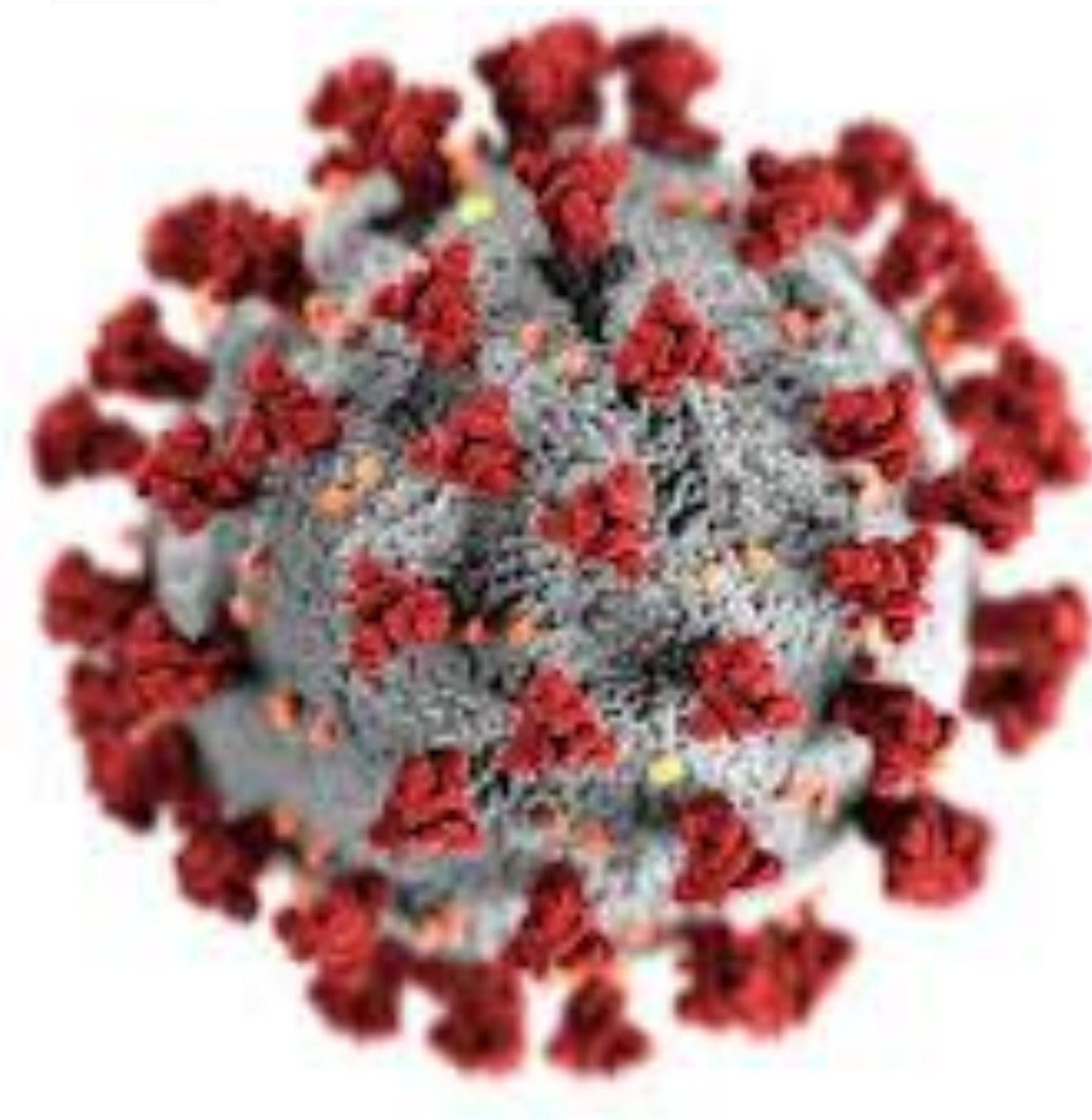








# Example TATA: Covid



I. Health support

II. Education

III. Research



# Prevalence of Mental Health Complaints Among Performing Arts Students Is Associated With COVID-19 Preventive Measures

Janine H. Stubbe<sup>1,2,3,4\*</sup>, Annemiek Tiemens<sup>1,2</sup>, Stephanie C. Keizer-Hulsebosch<sup>1,2</sup>, Suze Steemers<sup>1,2,3</sup>, Diana van Winden<sup>1,2,5</sup>, Maurice Buiten<sup>1,2</sup>, Angelo Richardson<sup>1,2</sup> and Rogier M. van Rijn<sup>1,2</sup>

<sup>1</sup> Codarts Rotterdam, University of the Arts, Rotterdam, Netherlands, <sup>2</sup> PErforming Artist and Athlete Research Lab (PEARL), Rotterdam, Netherlands, <sup>3</sup> Department of General Practice, Erasmus MC University Medical Centre Rotterdam, Rotterdam, Netherlands, <sup>4</sup> Rotterdam Arts and Sciences Lab (RASL), Rotterdam, Netherlands, <sup>5</sup> Department of Human Movement Sciences, Vrije Universiteit Amsterdam, Amsterdam Movement Sciences, Amsterdam, Netherlands

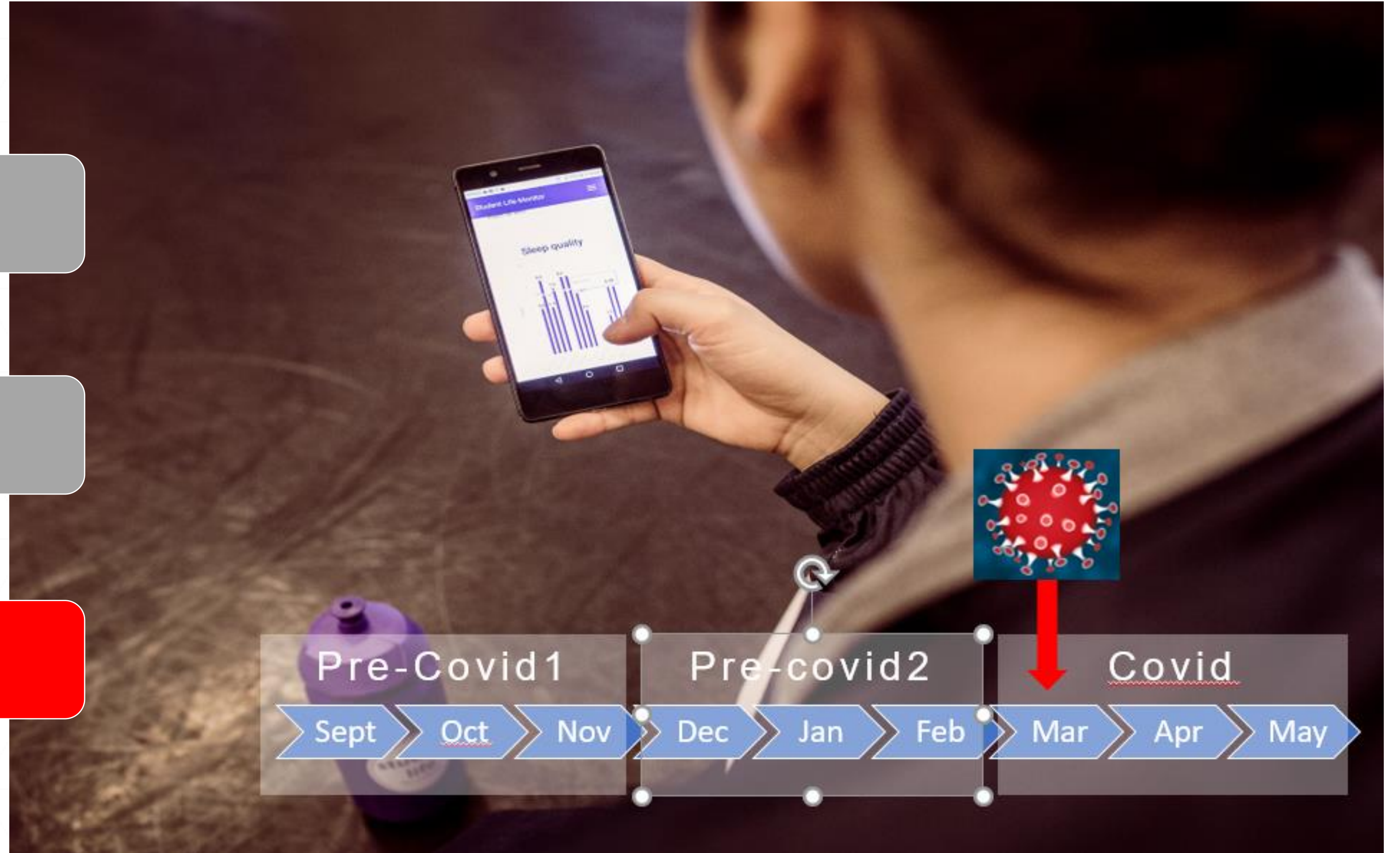
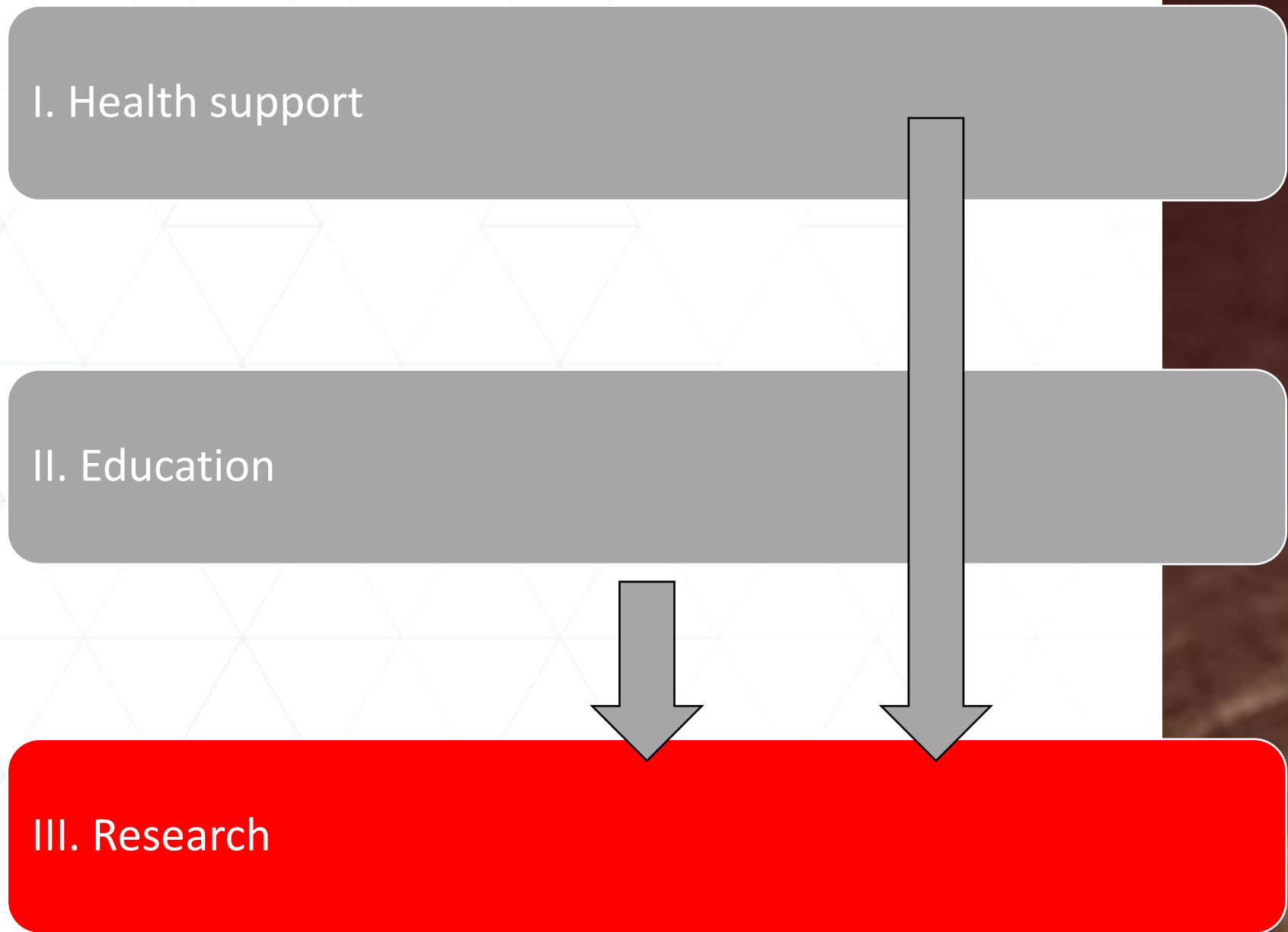
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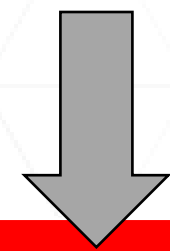
**\*Correspondence:**  
Janine H. Stubbe

The aim of this study was to investigate the effect of COVID-19 preventive measures on the mental health of performing arts students. In a prospective cohort study, performing arts students ( $N = 213$ ) from Codarts Rotterdam, University of the Arts, were invited to monitor their health during one academic year (September 2019–May 2020). Every month, students completed items on mental health complaints, stress, and sleep quality. Chi-square tests and repeated-measures ANOVA with deviation contrasts were performed to investigate whether COVID-19 preventive measures were associated with changes in mental health complaints, stress scores, and sleep quality. During the COVID-19 lockdown, subjective mental health, Mental Health Inventory-5 (MHI-5), and items on loneliness were additionally completed by the respondents. A total of 98 students (46.0%) were included in the analyses. The 3-month prevalence of mental health complaints was significantly higher during the COVID-19 lockdown compared to the two pre-COVID-19 periods ( $p < 0.001$ ). Mean stress scores were significantly lower



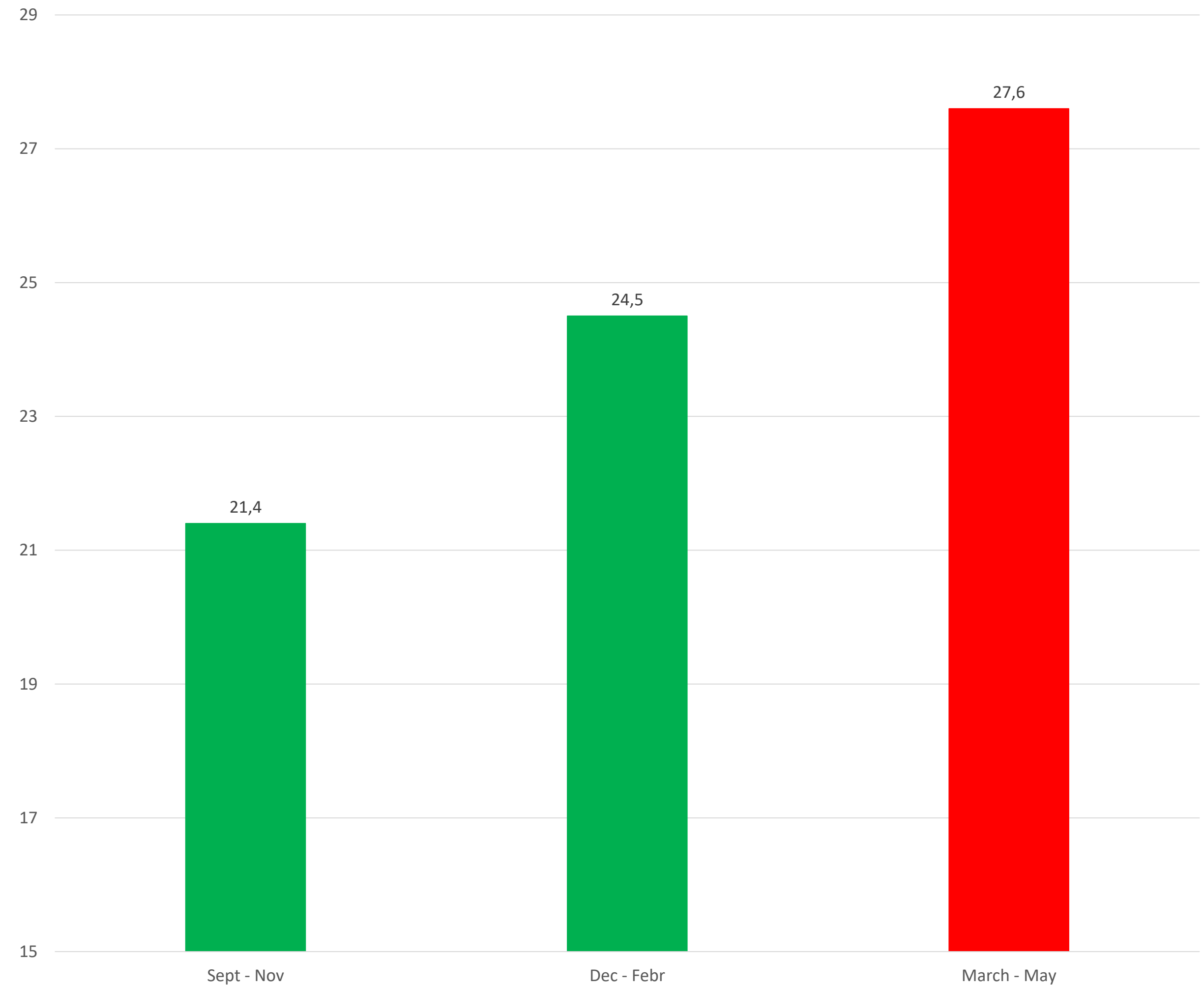
I. Health support

II. Education



III. Research

Prevalence mental health (OSTRC questionnaire)



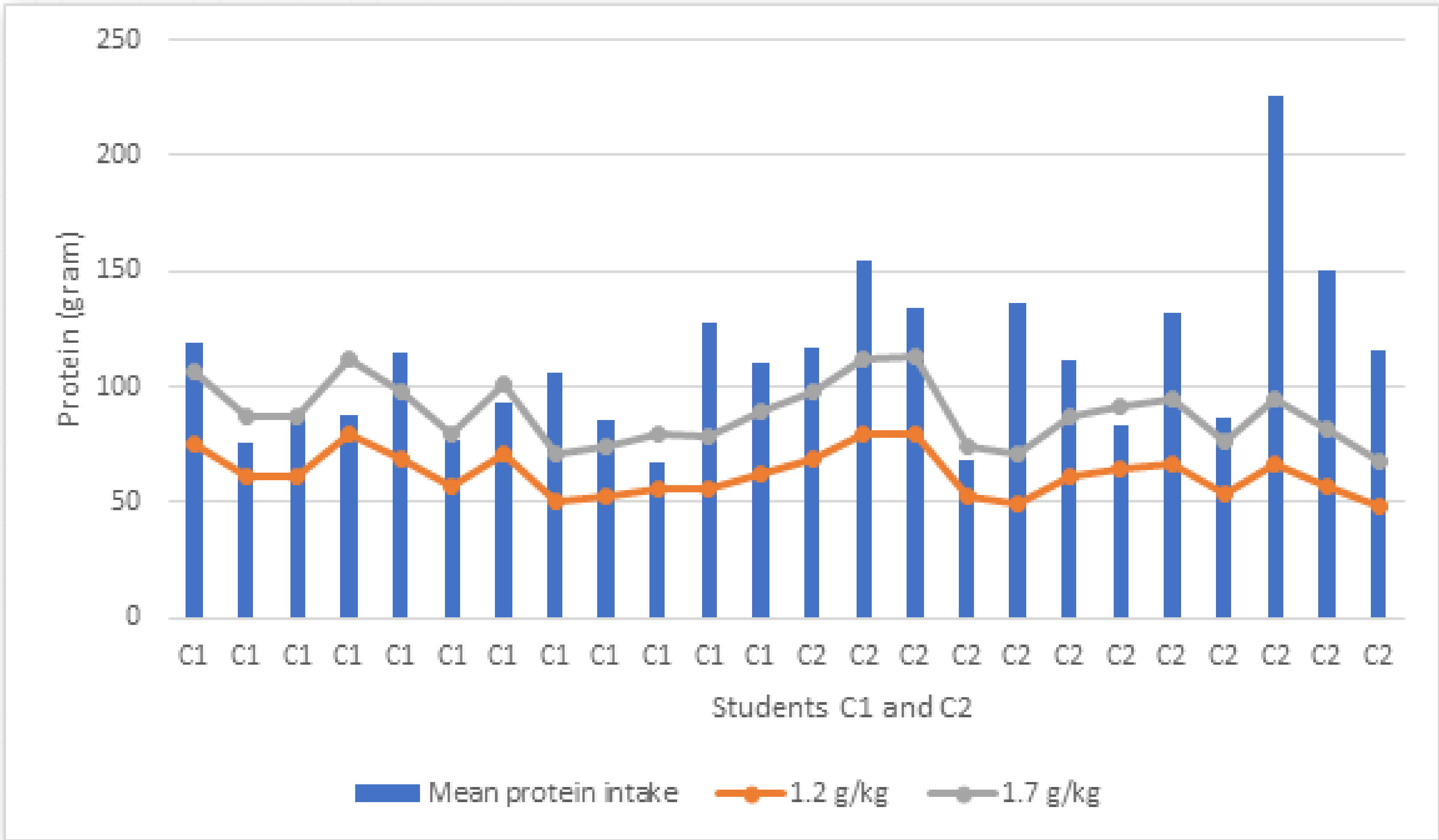
# Example: protein intake

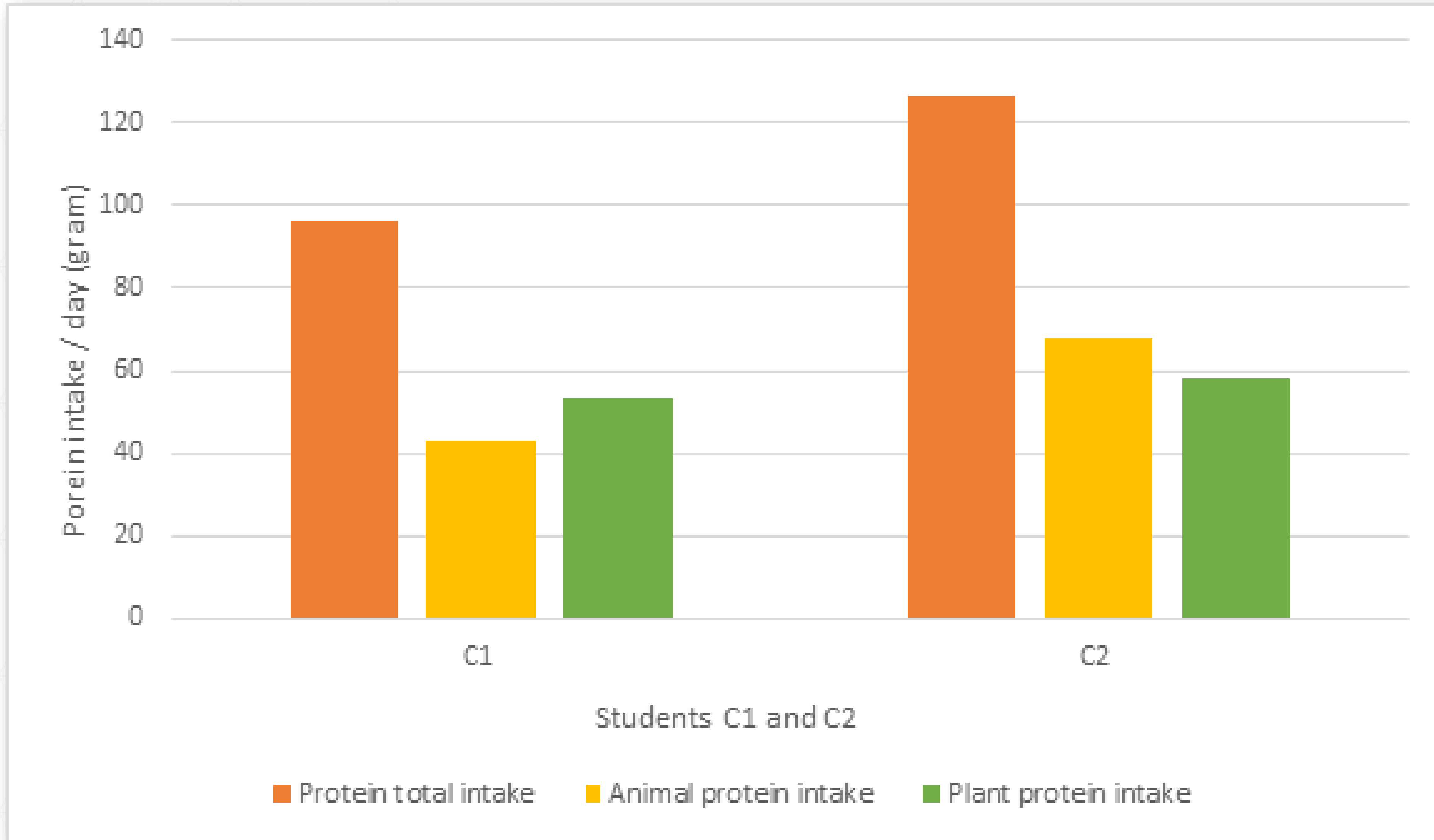
- 1 out of 3 circus students → muscle injury
- Proteins: build, maintain and repair muscles
- Association between protein intake and muscle injuries



- First and second year circus students (54% female; N = 24)
- Three day diary
- Self-reported muscle injury (3 months)

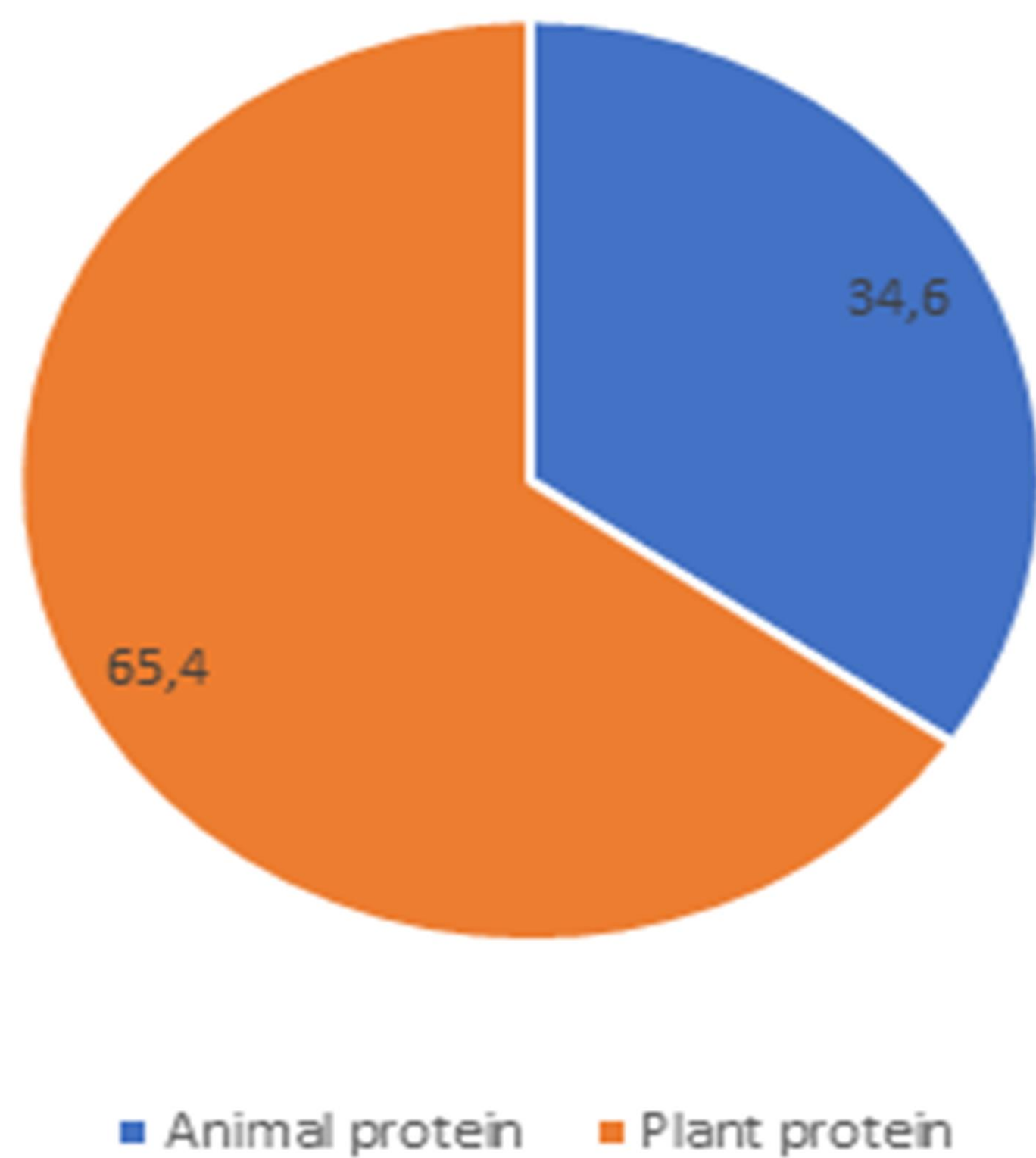




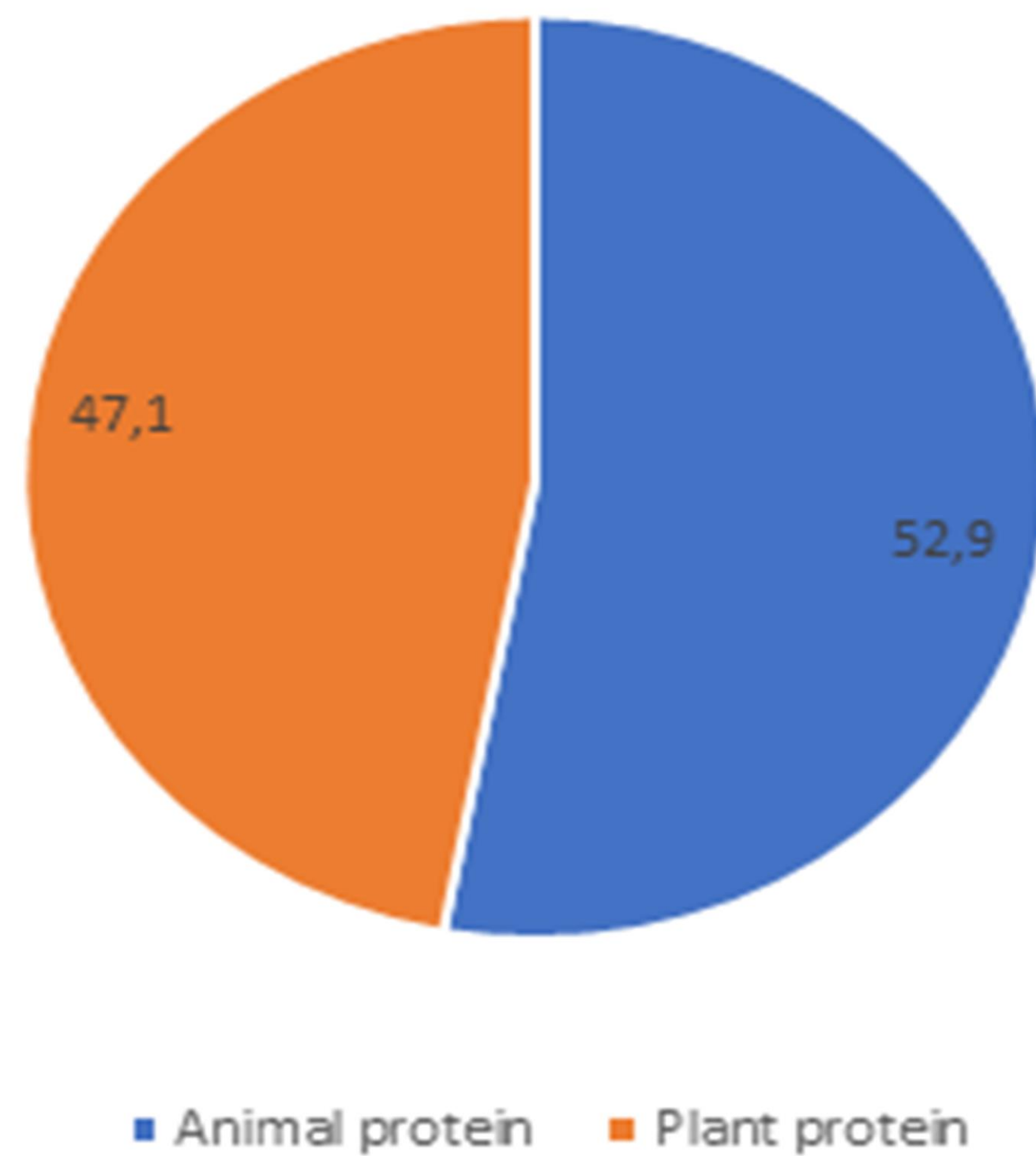




Muscle injury



No muscle injury





Health complaints no longer in top 5 reasons for dropping out of the programme



> 50 national and international partners

Combining dance, music, circus, and sports

World largest database



PEARL  
next stage research lab



Janine Stubbe

[jhstubbe@codarts.nl](mailto:jhstubbe@codarts.nl)

[www.pearlresearchlab.com](http://www.pearlresearchlab.com)

