

# Students' perceived stress trajectory during the physics study entry phase

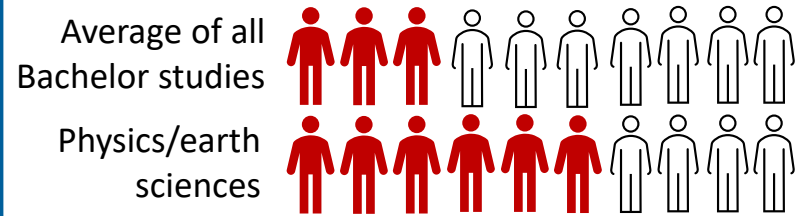
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## Motivation: The study entry phase is challenging for many physics students

- **High study dropout rates**
- **42% of all dropouts occur in the first year, i.e. study entry phase** (Heublein et al., 2017)
- **Primary motives for study dropout** (Heublein et al., 2017; Albrecht, 2011)
  1. Performance problems
  2. Diminished motivation to study

### German Bachelor students, ref. 2016/2017

(Heublein et al., 2022)



→ **Need for a deeper understanding of the underlying processes**

## There is a need to investigate the stress perception of first-year physics students



*“a particular relationship between the person and the environment that is appraised by the person as taxing or exceeding his or her resources and endangering his or her well-being”* (Lazarus & Folkman, 1984, p.19)

**State of research:** Some initial studies about students’ stress perception in general  
(e.g., Hahn et al., 2021; Herbst et al., 2016; Ortenburger, 2017; Schwedler, 2017; Vogelsang, 2021; Zhao et al., 2023)

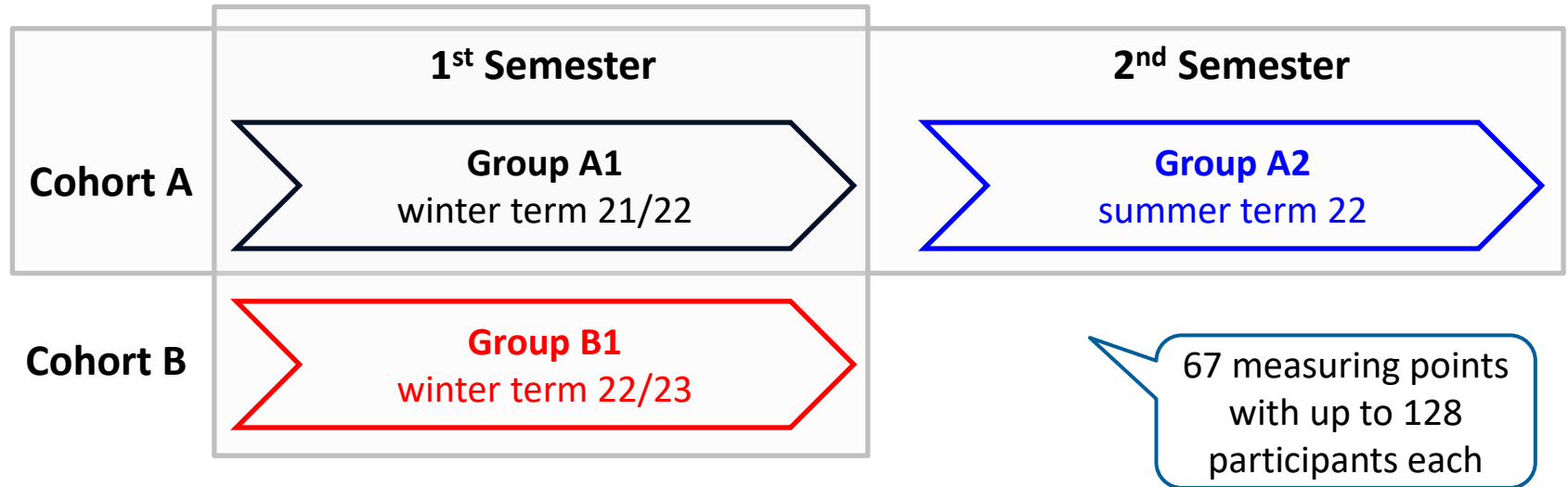
**Desiderata:** Focus on the stress perception of physics students, especially with a high-resolution measurement throughout the first year

## We used a short survey to investigate stress perception, workload & stressors

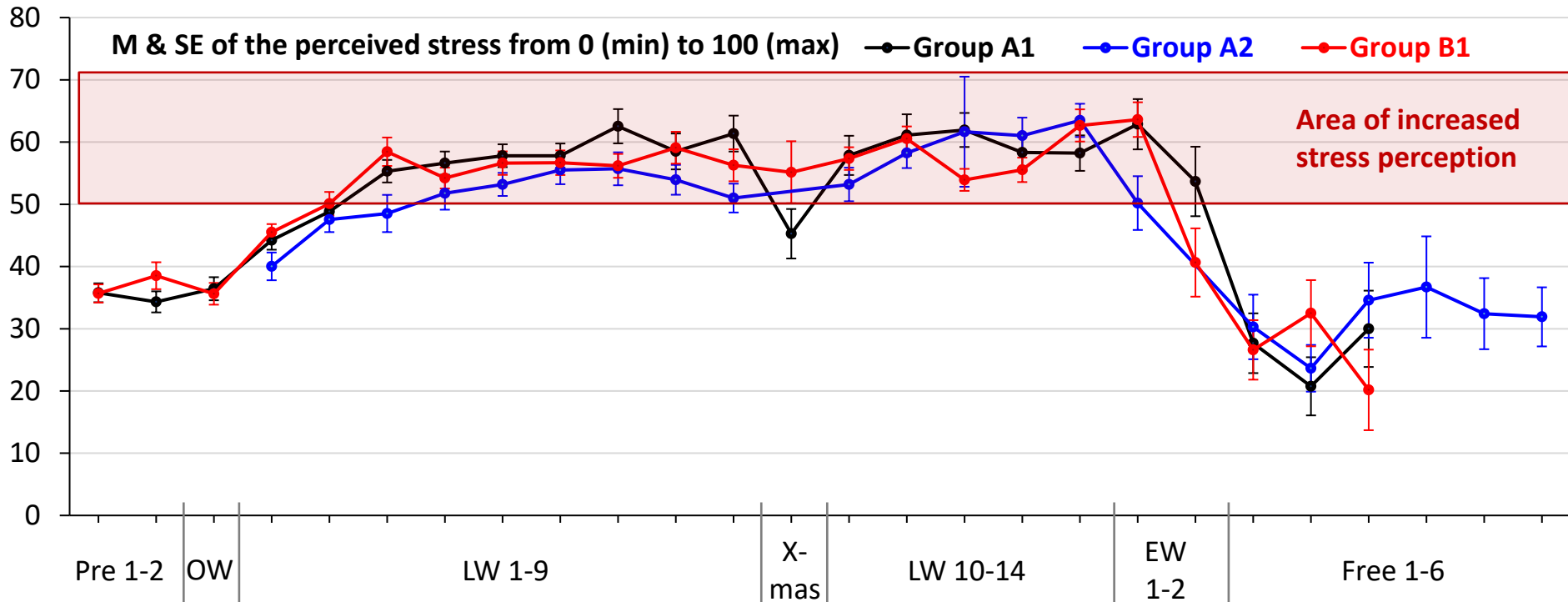
- **Perceived Stress Questionnaire** (Levenstein et al., 1993; Fliege et al., 2001)
  - German version, 20 items
  - 4 subscales: worries, tension, demands, joy
    - You have too many things to do.*
    - You feel you're doing things you really like. (inverted)*
  - Rating on the scale *1 almost never* to *6 most of the time*
  - Overall stress score from 0 (min.) to 100 (max.)
- **Open text fields for self-estimated weekly workload & up to 3 stressors**
- Mostly as an online survey during the lectures

## We surveyed two cohorts of first-year physics students on an almost weekly basis

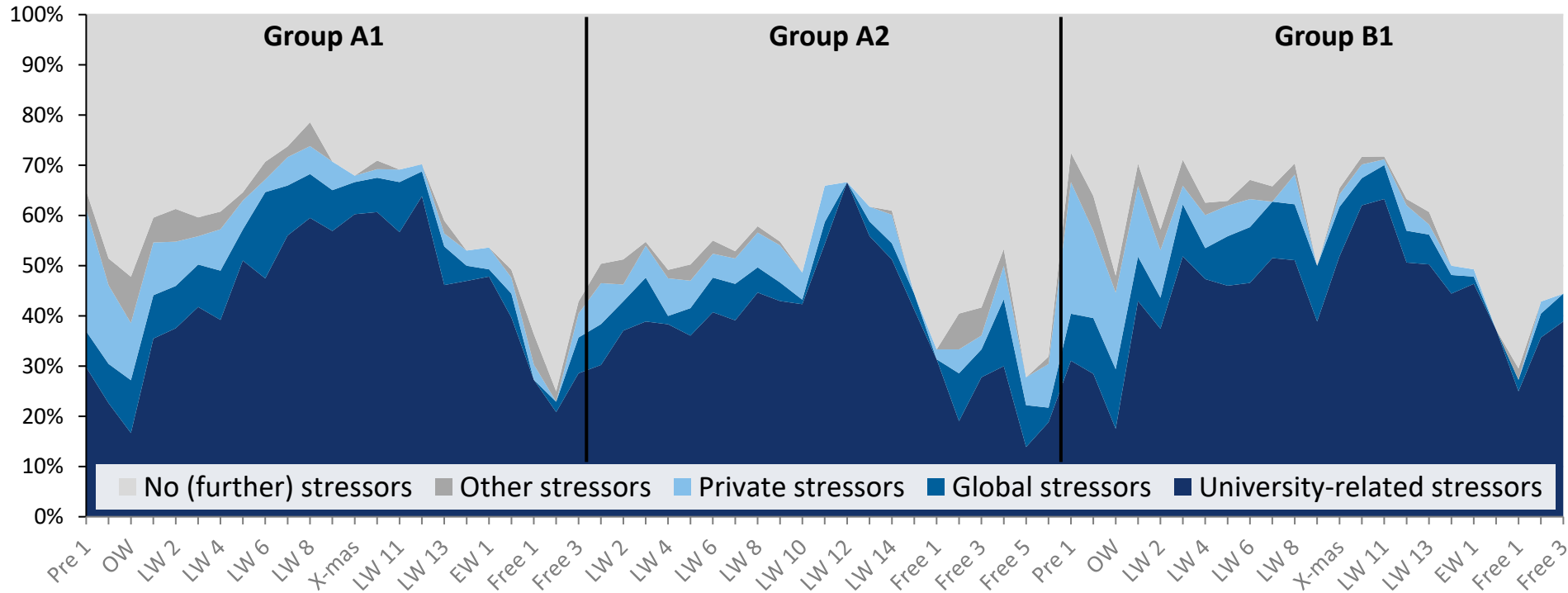
Pre-course (Pre) → orientation week (OW) → lecture week (LW) → Christmas break (X-mas)  
→ exam weeks (EW) → lecture-free time (Free)



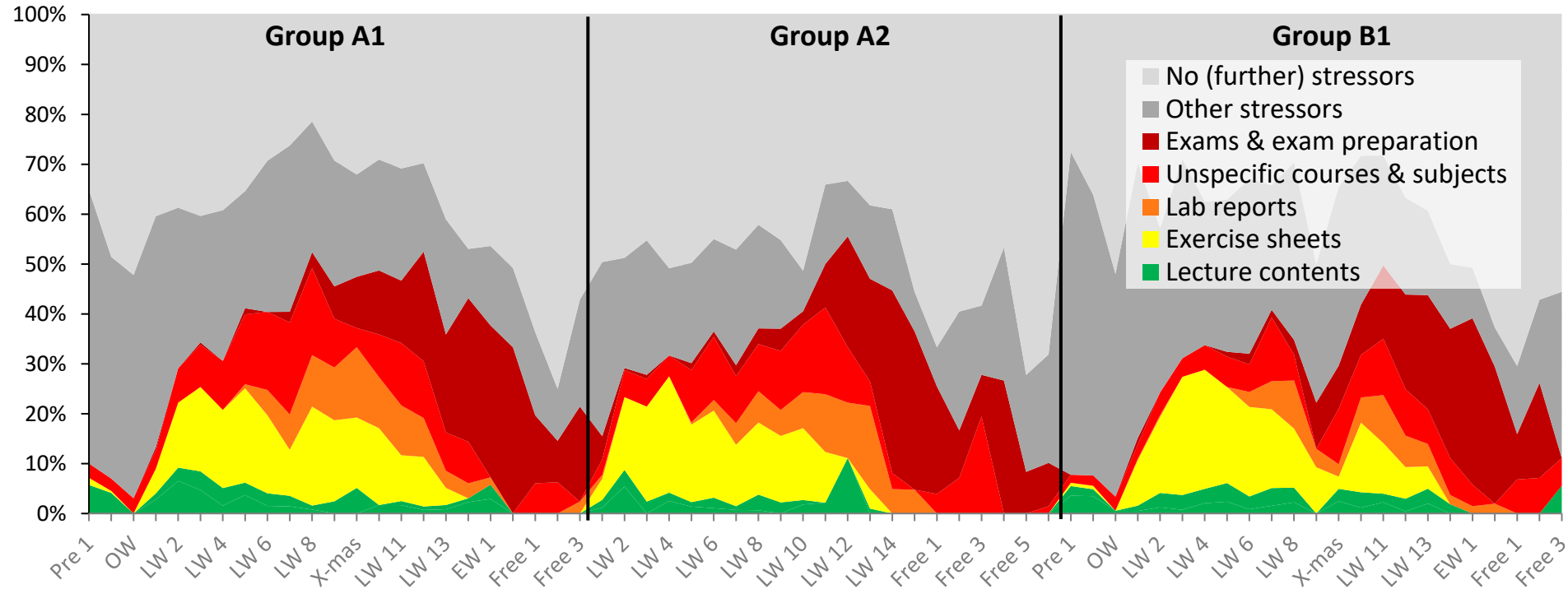
## The perceived stress trajectory is similar for 1<sup>st</sup> & 2<sup>nd</sup> semesters & two cohorts



## Most of the mentioned stressors (N=5823) in all three groups are university-related



## Specific periods in the semester are linked to characteristic stressors

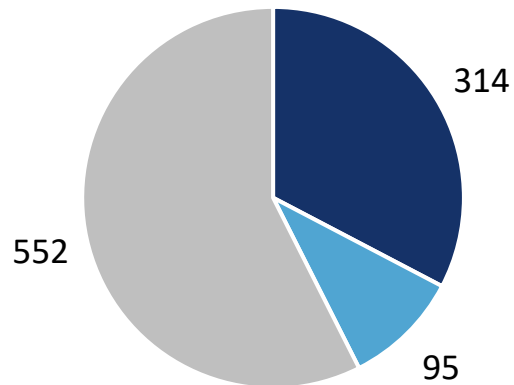




## The math courses and the lab course are perceived as most stress-causing

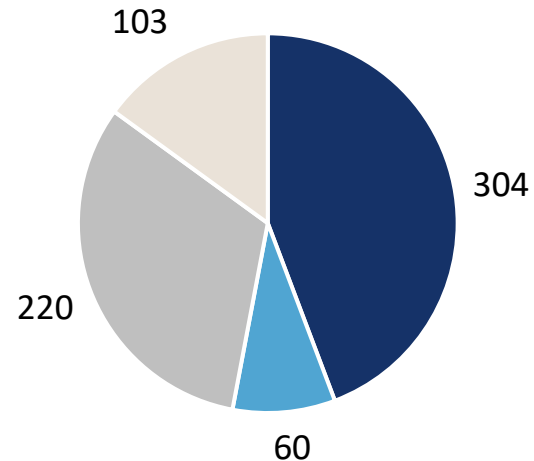
### Exercise sheets

(N=961 codings in all three groups)



### Unspecific mentioning of courses

(N=687 codings in all three groups)



■ Math courses ■ Physics courses ■ Unspecified

■ Math courses ■ Physics courses ■ Lab course ■ Other

## Summary

**We depicted the students' perceived stress in the physics study entry phase, pinpointing to specific high-stress periods and stressors within the university context.**

## Outlook

- **Group interviews:** stressors, coping strategies, possible support measures, ...
  - **Further surveys** in winter term 23/24 at 11 German universities (in Coop. with Uni Potsdam)
  - **Investigation of further characteristics** e.g., sense of belonging, mindset, workload, ...
  - **Trial of first interventions** e.g., regarding mindset (in Coop. with TU Darmstadt)
- **Deeper understanding of stress perception in the physics study entry phase**
- **Approaches to reduce stress & dropout (support measures & structural changes)**

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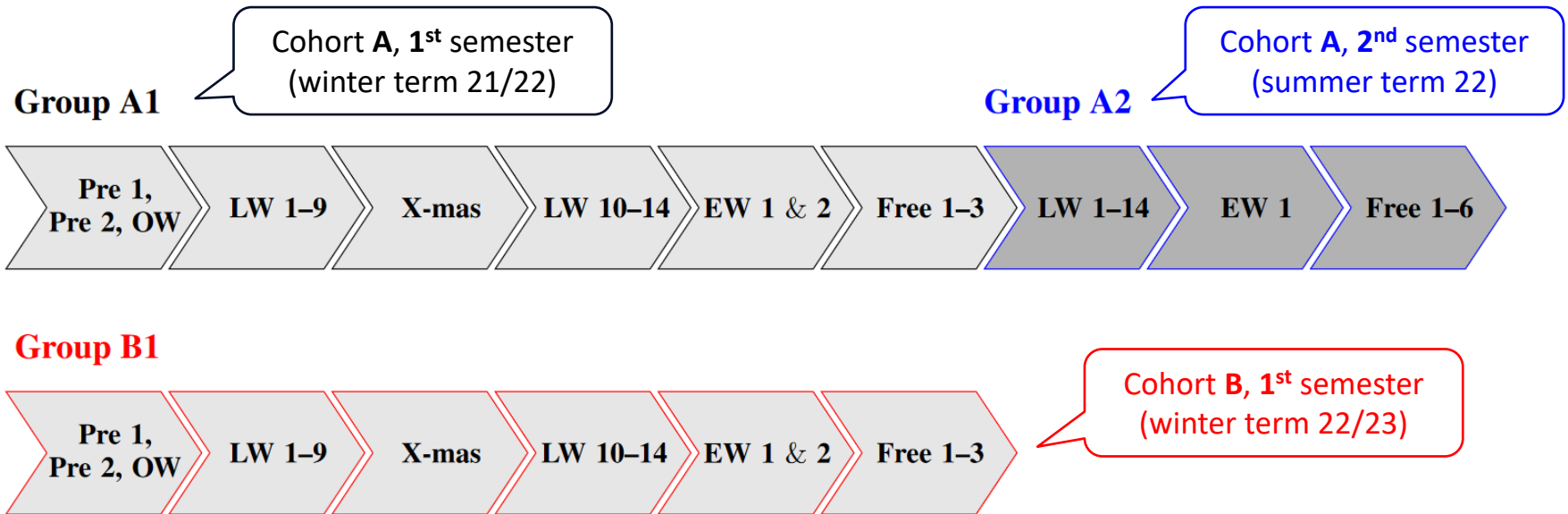
## Related conference proceedings contributions

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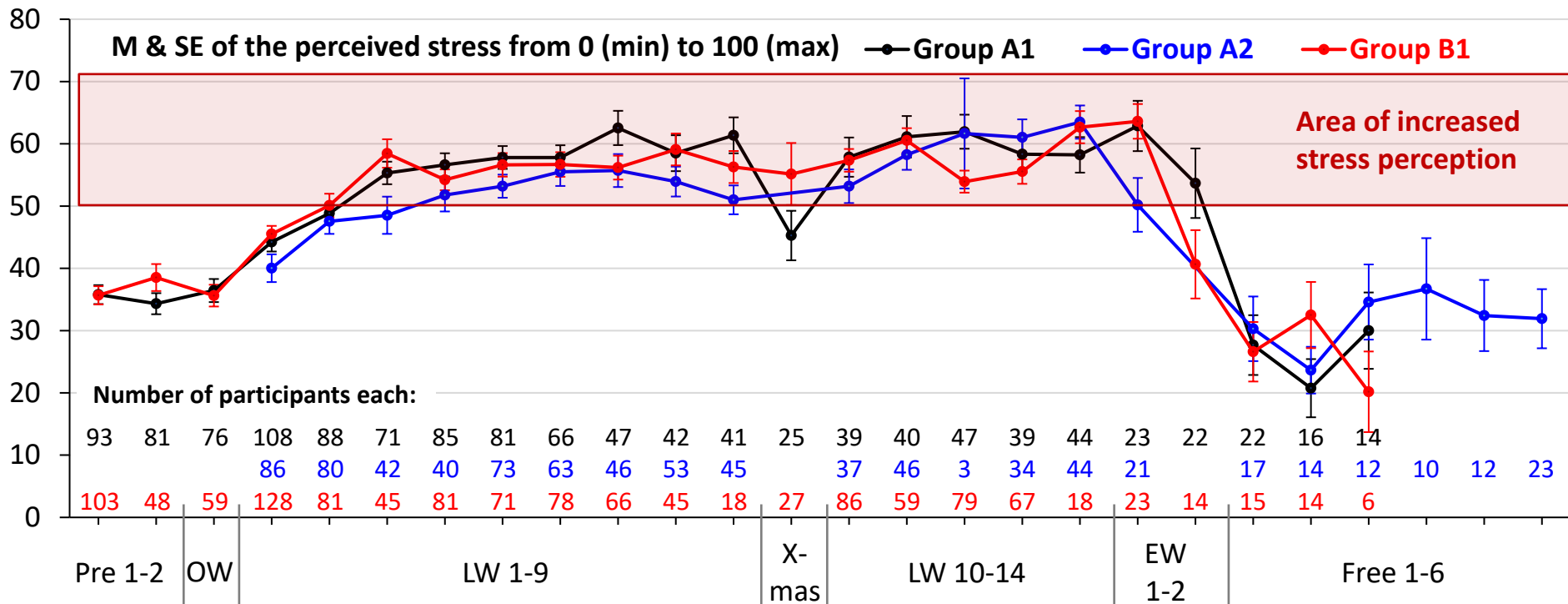
# Appendix

## We surveyed two cohorts of first-year physics students on an almost weekly basis

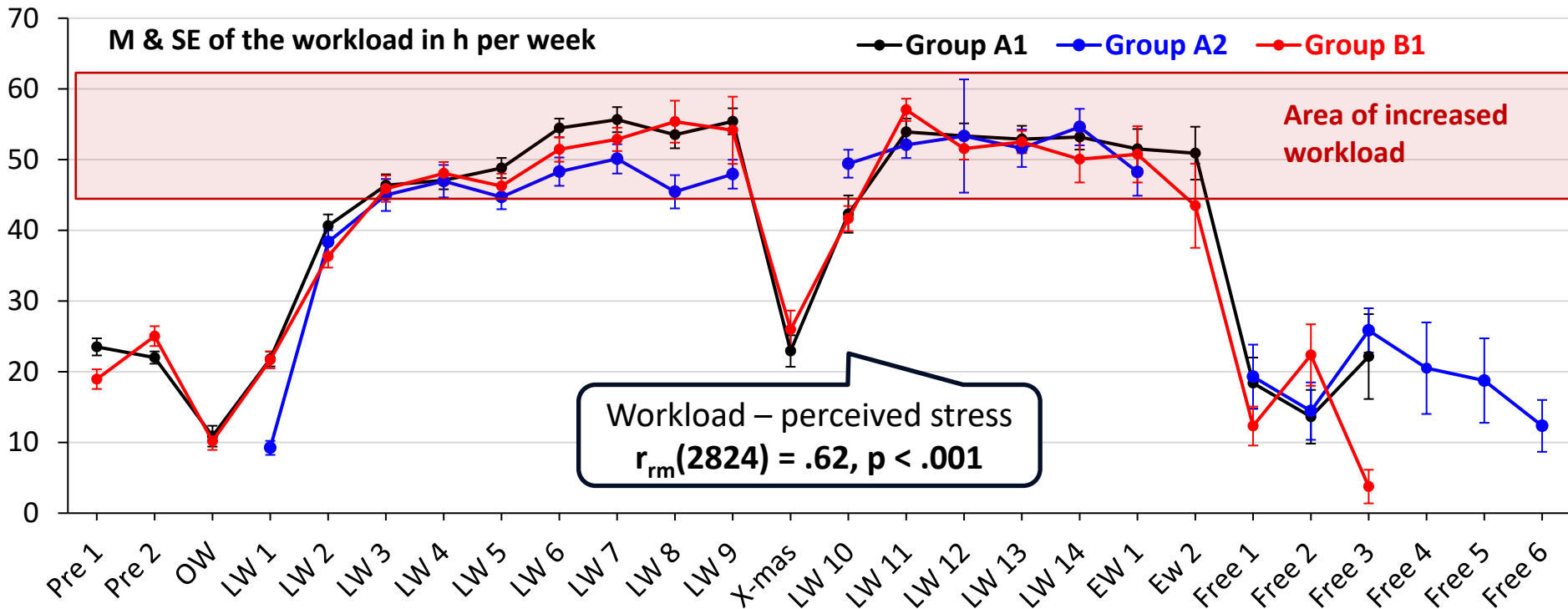
Pre-course → orientation week → lecture week → Christmas break → exam weeks → lecture-free time



## The perceived stress trajectory is similar for 1<sup>st</sup> & 2<sup>nd</sup> semesters & two cohorts



## The self-estimated study-related workload correlates with the perceived stress





## Specific periods in the semester are linked to characteristic stressors

