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## INTRODUCTION

Balance between **recovery** and **stress** in elite athletes → crucial to **effective training**<sup>1</sup>, decrease in **injury risk**<sup>2</sup> and continuous high-level **performance**<sup>3</sup>.

## AIM

This pilot study examines whether the **Recovery-Stress Questionnaire for Athletes** (RESTQ-Sport) is a possible verification tool to make a valid prognosis of **recovery** and **stress** in alpine ski racers.

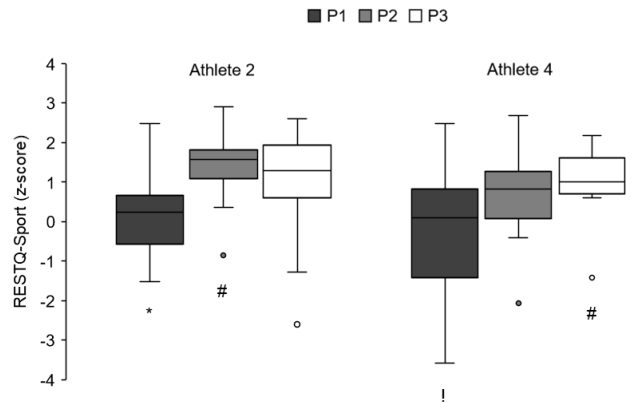
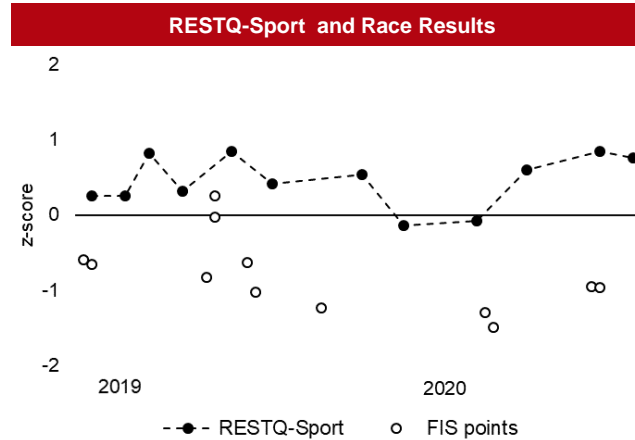
## METHODS

Eleven **female ski alpine racers** of the Swiss Ski Alpine Team C (18.3 ± 1.1 y) completed a shorter version of the **RESTQ-Sport** on a weekly basis in the course of the training year 2019/2020. A total of 473 questionnaires was considered. All data were **z-transformed** and analyzed **individually**.

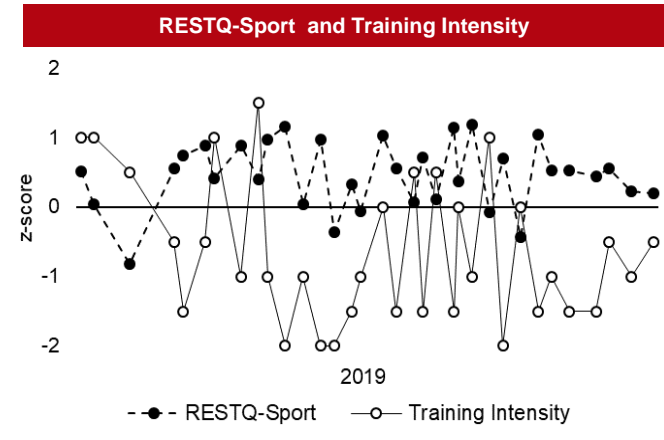
Subscale	Sample Item
General Stress	I felt down.
General Well-Being	I was happy.
Fitness/Injury	My muscles felt stiff or tense during performance.
Fatigue	I was dead tired.
Fitness/Being in Shape	I was in a good condition physically.
Somatic Relaxation	I felt physically fit.
Sleep	I slept restlessly.

## RESULTS

The RESTQ-Sport correlated significantly with **race results** in one athlete ( $R^2 = .366$ ) and with **pain intensity** in one athlete, suffering from an overuse injury ( $R^2 = .364$ ).



In two athletes scores in **general preparation** (P1) period were **lower** than in specific preparation (P2) and competition period (P3), respectively. **Significant differences** → period-specific markers (#P1; \*P2; !P3). Outliers → circle filled with colour of corresponding period.



RESTQ-Sport correlated with **training intensity** in three athletes ( $R^2 = .176$ ;  $R^2 = .252$ ;  $R^2 = .241$ ).

## DISCUSSION AND CONCLUSION

**Major differences** in the recovery-stress states among athletes → importance of an **individual evaluation** of the RESTQ-Sport.

In some athletes **↑ recovery-stress states** were associated with **↑ race results** as well as **↓ training intensity** and **↓ pain intensity** in overuse injuries.

## PRACTICAL APPLICATIONS

The questionnaire provides valuable input to coaches in monitoring training recovery and stress in alpine ski racers when applied in a **multidisciplinary network**.

## References

- <sup>1</sup>Gilgien, M., Reid, R., Raschner, C., Supej, M., & Holmberg, H.-C. (2018). The Training of Olympic Alpine Ski Racers. *Frontiers in Physiology*, 9, 1772. doi:10.3389/fphys.2018.01772
- <sup>2</sup>Halson, S. L. (2014). Monitoring Training Load to Understand Fatigue in Athletes. *Sports Medicine*, 44(5), 139–147. doi:10.1007/s40279-014-0253-z
- <sup>3</sup>Kallus, W. K., & Kellmann, M. (2016). *The Recovery-Stress Questionnaire: User Manual*. Frankfurt am Main: Pearson Assessment & Information GmbH.