

Introduction

Heart rate recovery (HRR) after standardized submaximal exercise has been proposed as a useful variable to monitor change in performances³. However, it is well known that heart rate is influenced by several factors such as training load and psychosocial stress. The aim of this study was to look at individual variability in HRR from one week to another using the heart rate interval monitoring system (HIMS) in elite hockey players.

Methods

Eight elite Dutch female indoor hockey players completed the HIMS two weeks in a row³. Training load was monitored using the Foster-method² and psychosocial stress using the RESTQ-Sport⁴. Heart rate at the end (HR_{end}) of the HIMS and HRR was correlated and compared for week 1 and 2. Also week load and psychosocial stress and recovery was compared for week 1 and 2.

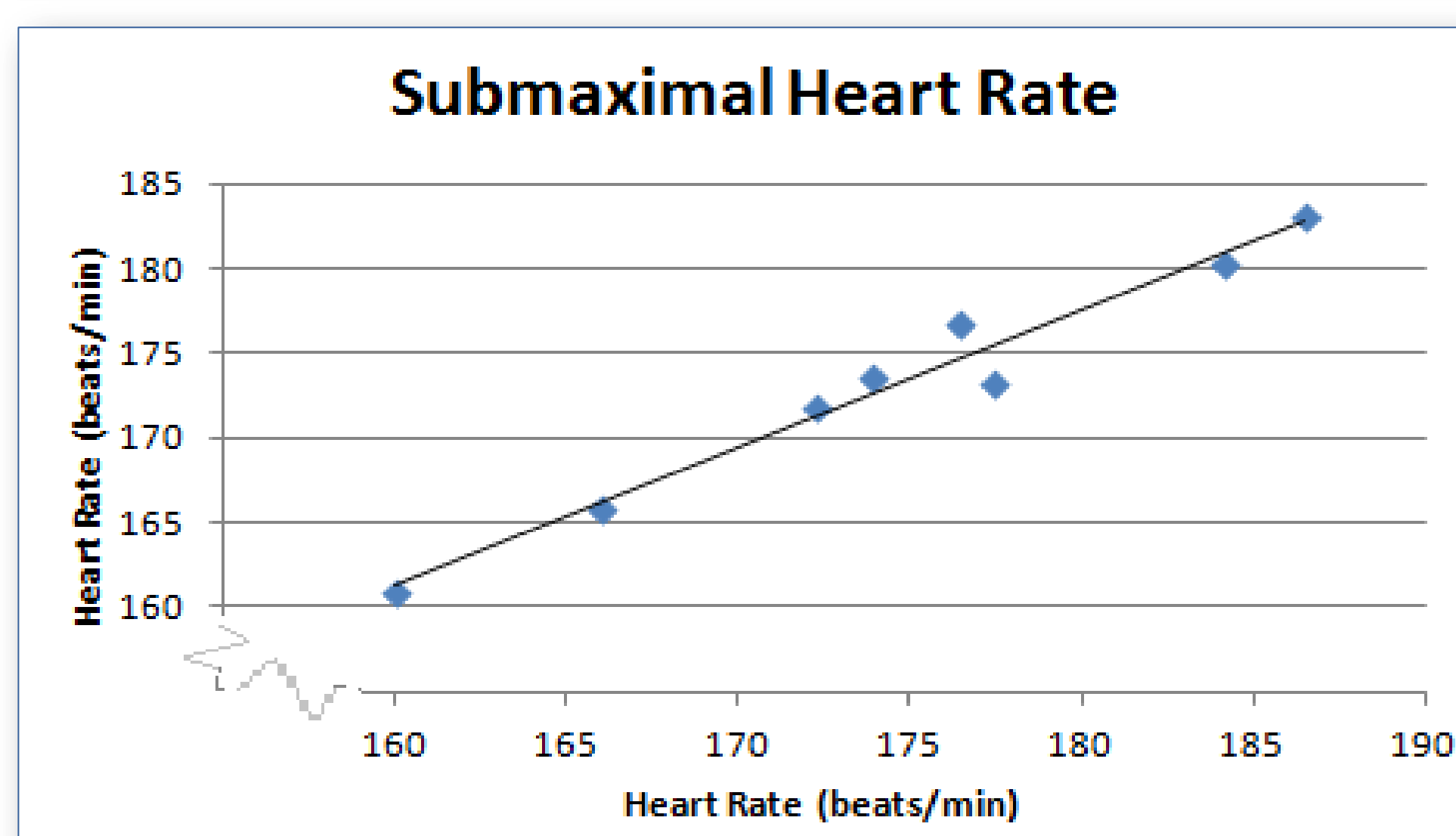


Fig 1. Submaximal heart rate (HR_{end}) week 1 and week 2

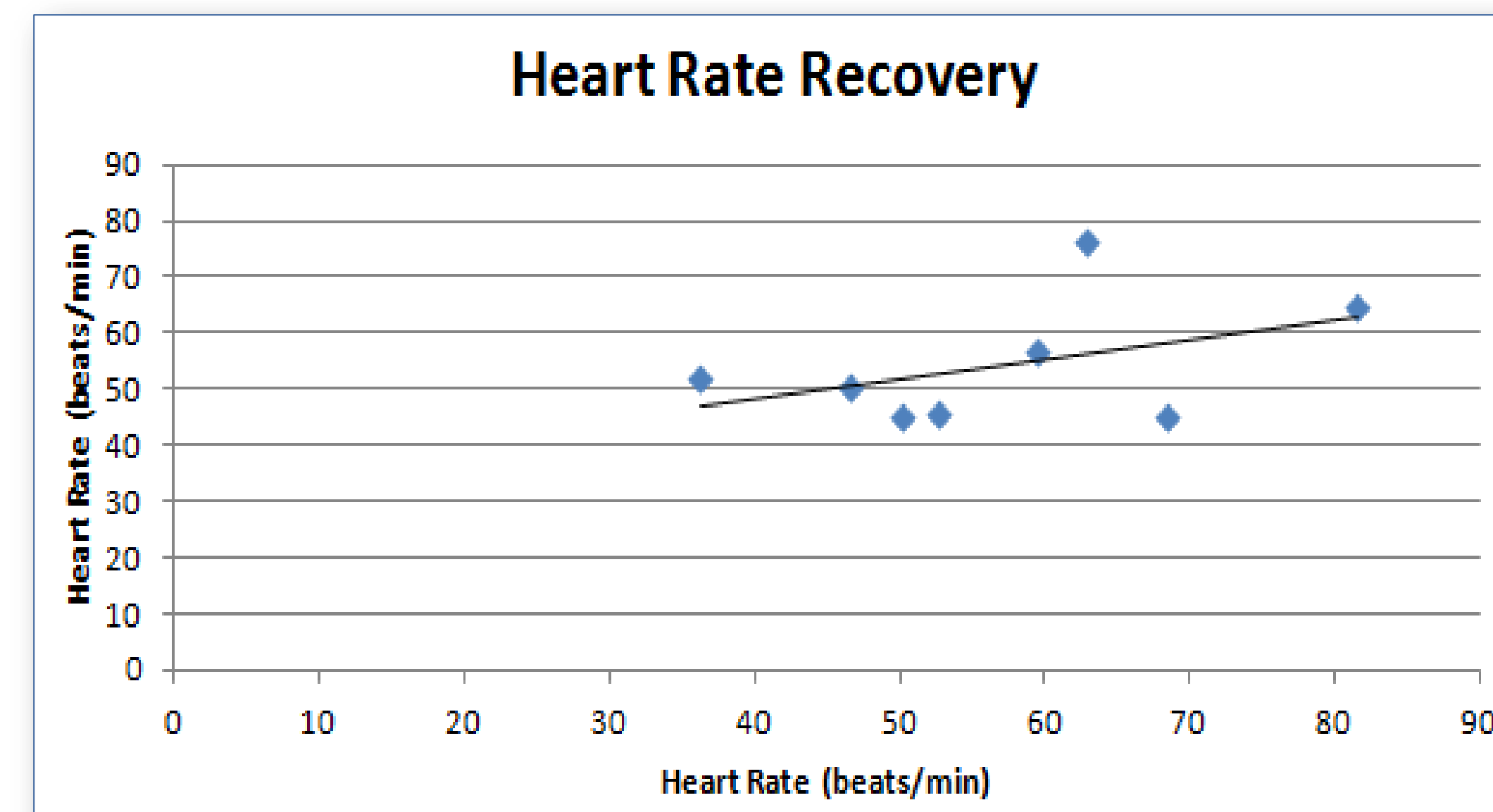


Fig 2. Heart rate recovery after the HIMS week 1 and week 2

Results

The means of HR_{end} and HRR showed no significant difference from one week to another. For HR_{end} a strong correlation ($r=0.984$ $p<0.01$) was found between weeks (fig.1), HRR on the contrary showed no correlation (fig.2). In weekload (fig.3) and psychosocial stress and recovery (fig.4) no significant difference was shown from one week to another.

Discussion & Conclusion

Athletes seem to reach the same HR_{end} each time, corresponding to earlier research¹ and explained by the fact that running speed is controlled by the auditory signal. Although there was no difference in mean HRR between weeks, there was no correlation indicating large individual differences. This variability in HRR could not be explained by weekload or psychosocial stress and recovery. In conclusion HRR seems harder to control compared to submaximal HR, therefore standardization of the HIMS is very important. HRR interpretation should be done with care.

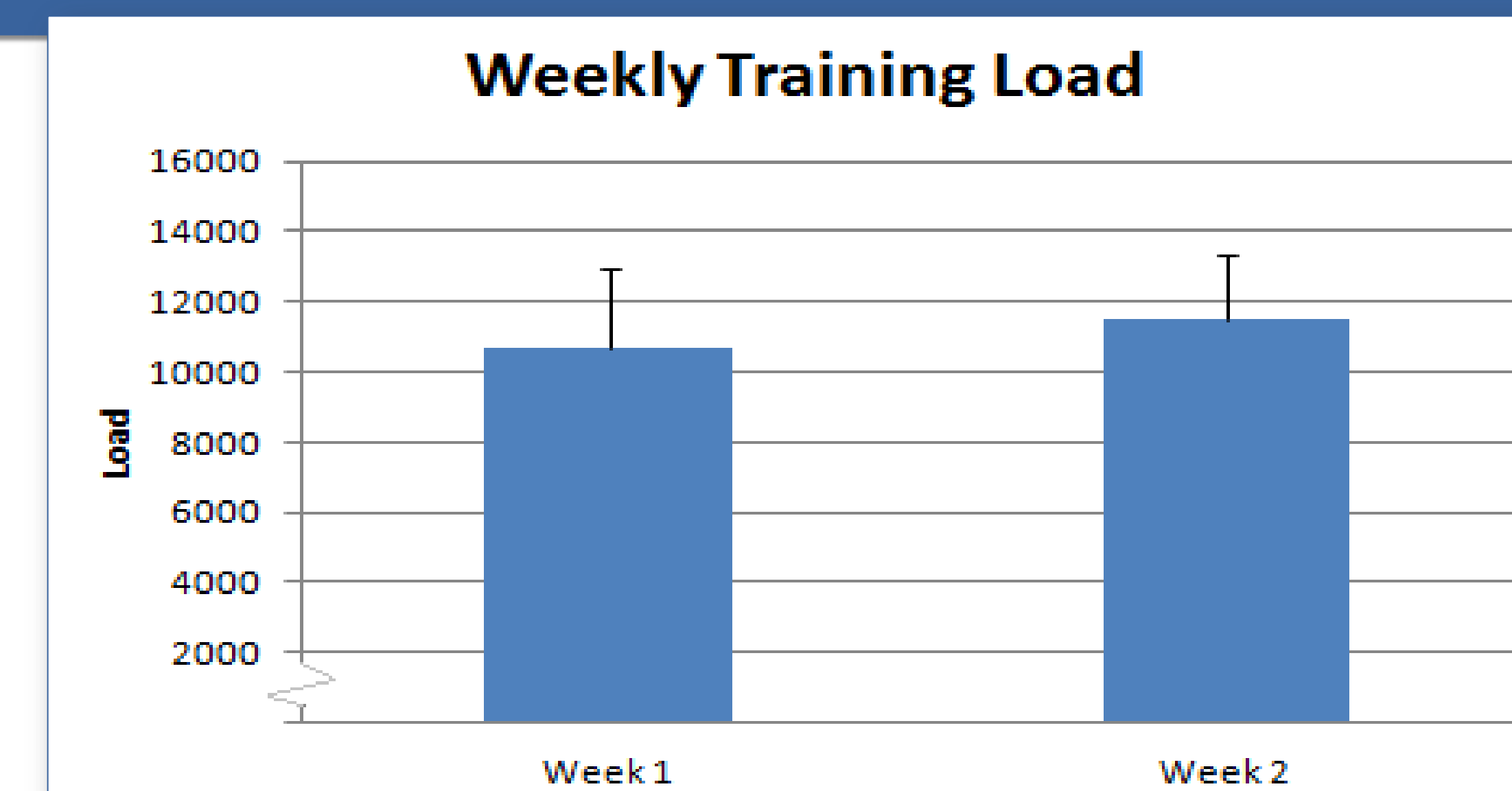


Fig 3. Weekly training load in week 1 before the HIMS and week 2 before the HIMS.

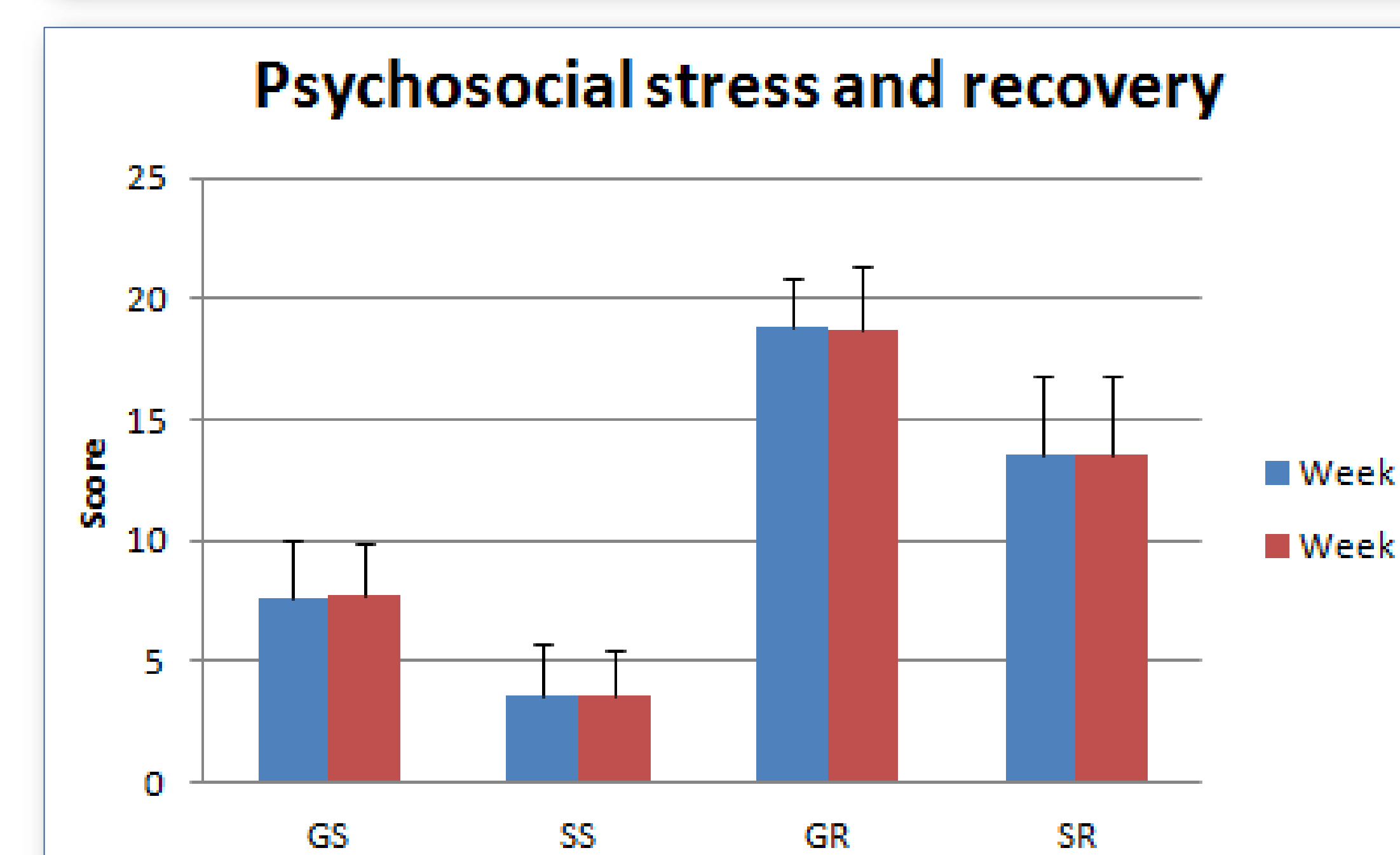


Fig 4. Psychosocial stress and recovery in week 1 before the HIMS and week 2 before the HIMS, divided over the 4 main scales from the RESTQ-Sport. GS= General Stress, SS = Sport Stress, GR =General Recovery, SR = Sport Recovery

References

¹Borresen J, Lambert M (2007). Eur J Appl Physiol,101(4):503-11.²Foster C (1998) Med Sci Sports Exerc,30(7):1164-8.³Lamberts R, Lemmink K, Durandt J, Lambert M.(2004). J Strength Cond Res,18(3):641-5.⁴Nederhof E, Brink M, Lemmink K (2008). Int J Sport Psychol,39(4),301-311