

1

Introduction to the Rate of Perceived Exertion (RPE) and Hooper Index.

2

Load-monitoring.

3

External and internal load.

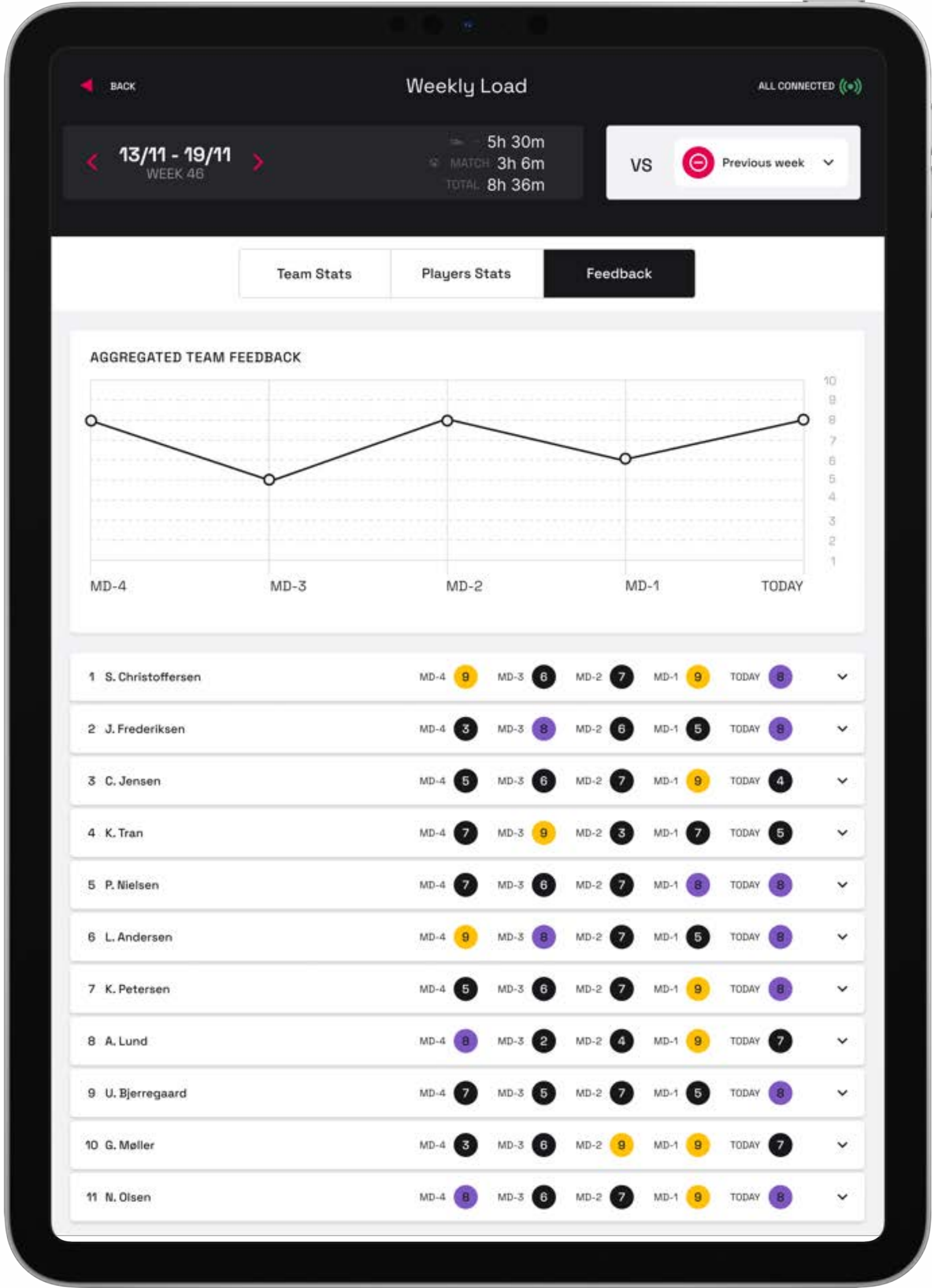
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Description of the RPE and Hooper Index.

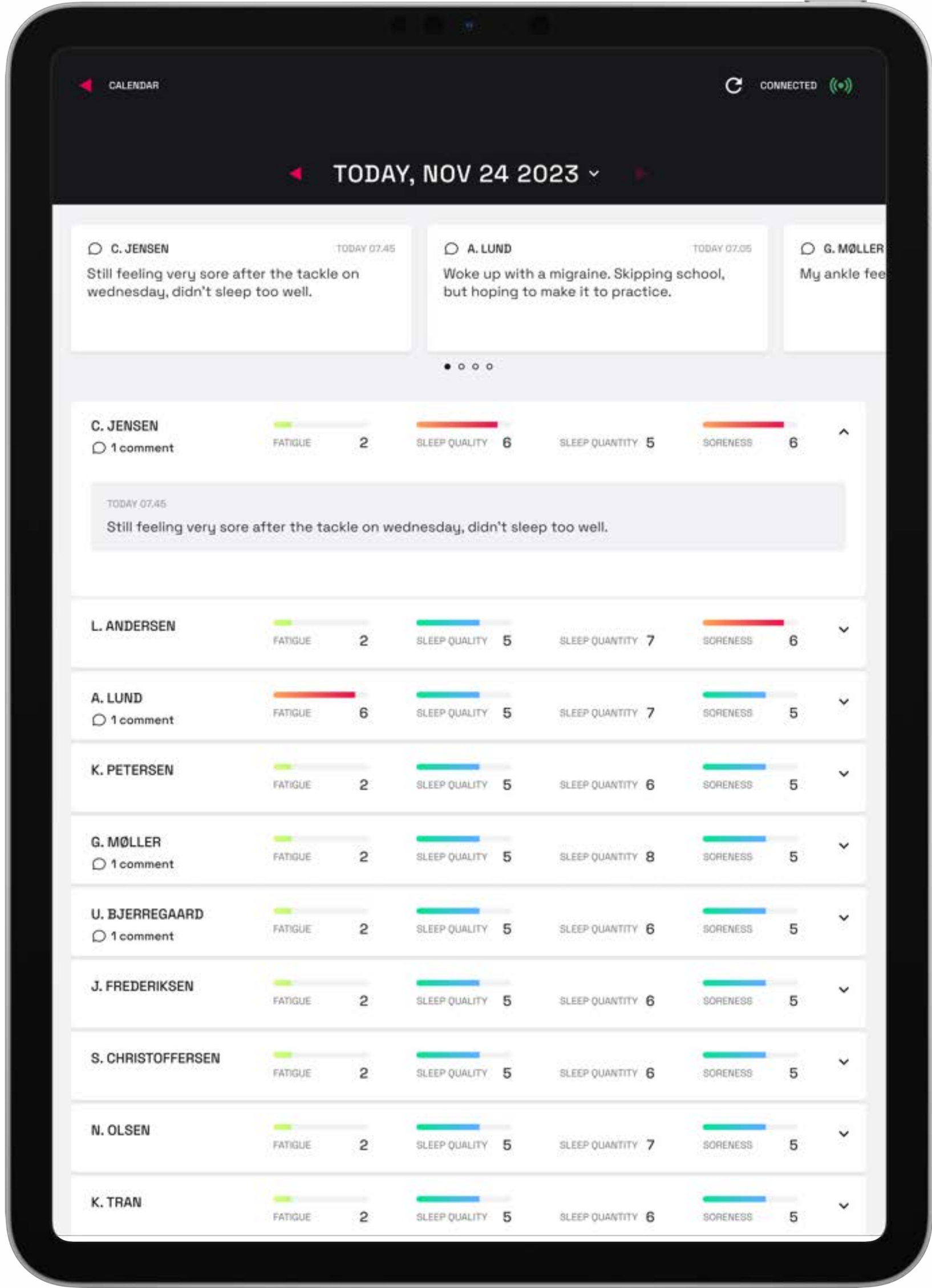
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Post-session analytical features in Next11.

New load monitoring-features



Rate of Perceived Exertion (RPE)



Hooper Index

Load Monitoring

What is load?

- Load can be defined as being the physical and physiological demands (stressors) that is placed on an athlete, and presents a crucial part in ensuring peak performance and injury-prevention.
- Load-monitoring can help practitioners in understanding deviations in performance and assist in appropriate planning of training loads (1).
- Increased workloads are associated with decreased player availability in elite level team sports, whereas teams with higher player availability elicits greater physical outputs and tends to perform better (2).
- A combined approach to load monitoring is recommended, as it allows insights into the actual physical exertion, while the subsequent response reflects the fitness levels of the player (3) and hence the ability to perform.
- Load can be defined as either external or internal (1).



External and Internal Load

External load measures

- Defined as the actual work that is performed by an athlete (e.g. accumulated PlayerLoad or amount of explosive actions), and provides an understanding of the workload capacity of each player (1).
- The prescribed training load defines the intended external workload for a given session, and can be modulated by factors such as sets, repetitions, interval-lengths etc. (3)

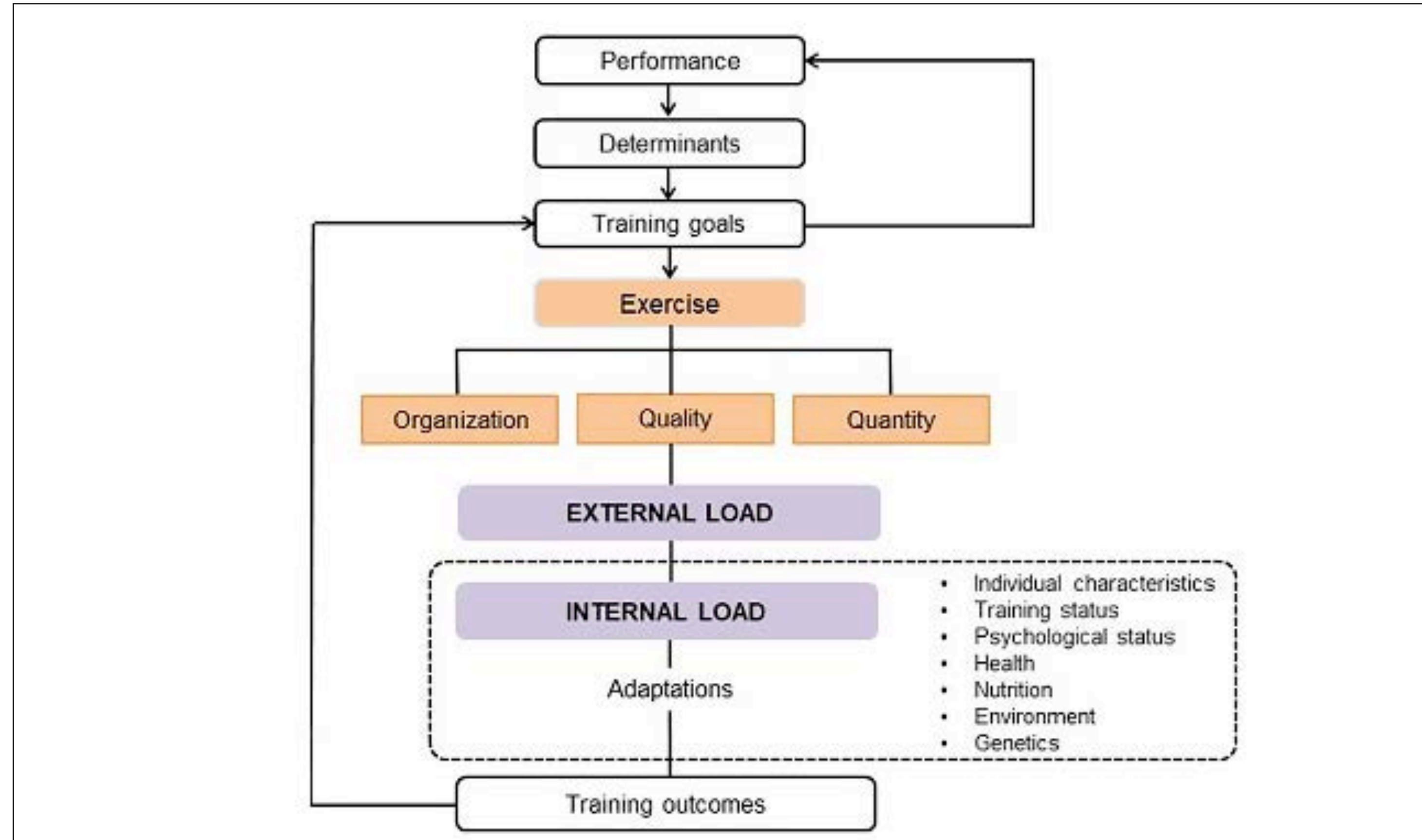
Internal load measures

- Defined as the physiological response to the prescribed external workload, and how well the body copes with the stimulus provided by the external workload (3).
- In team sports, this could be identified as demands placed on the cardiorespiratory system through HR-monitoring, while measures of blood-lactate levels provide insights to the anaerobic component (4).
- Measures of subjective load-measures also provide insights into the internal load-response (4).

External and Internal Load Monitoring

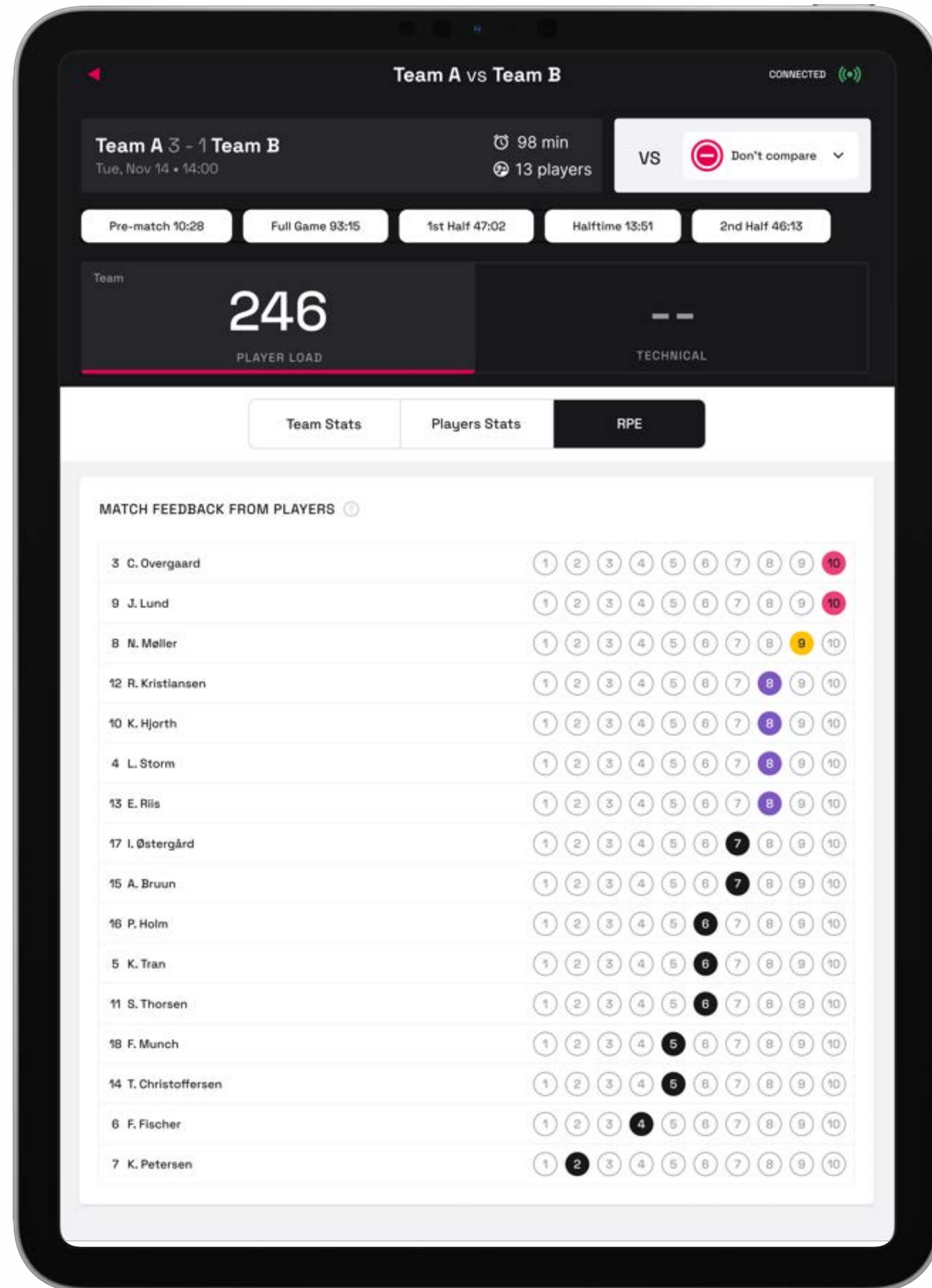


External and Internal Load



Impellizzeri et al. (2019).

Rate of Perceived Exertion (RPE)



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INFO

RPE (Rate of Perceived Exertion)

RPE, or Rate of Perceived Exertion, is a subjective measure used to gauge the intensity of physical activity as perceived by the player. It's a valuable tool for understanding how hard the players feel they are working during a match or training session. After each session players will be able to input their perceived physical intensity of a session in the Player app on a scale from 1 to 10:

1
2
3
4
5
6
7
8
9
10

- **1-2: Very Light** - Almost no effort required.
- **3-4: Light** - Little effort, could maintain for a long time.
- **5-6: Moderate** - Noticeable effort, sustainable.
- **7-8: Hard** - Challenging effort.
- **9-10: Maximum effort** - Extremely hard, unsustainable effort.

When players provide their RPE feedback, they are essentially indicating how strenuous they felt the session was for them. This information can be crucial for tailoring future training plans, ensuring that the intensity aligns with their perceived effort.

We recommend encouraging your players to enter RPE Feedback within one hour after a session to help capture the most accurate perceived exertion.

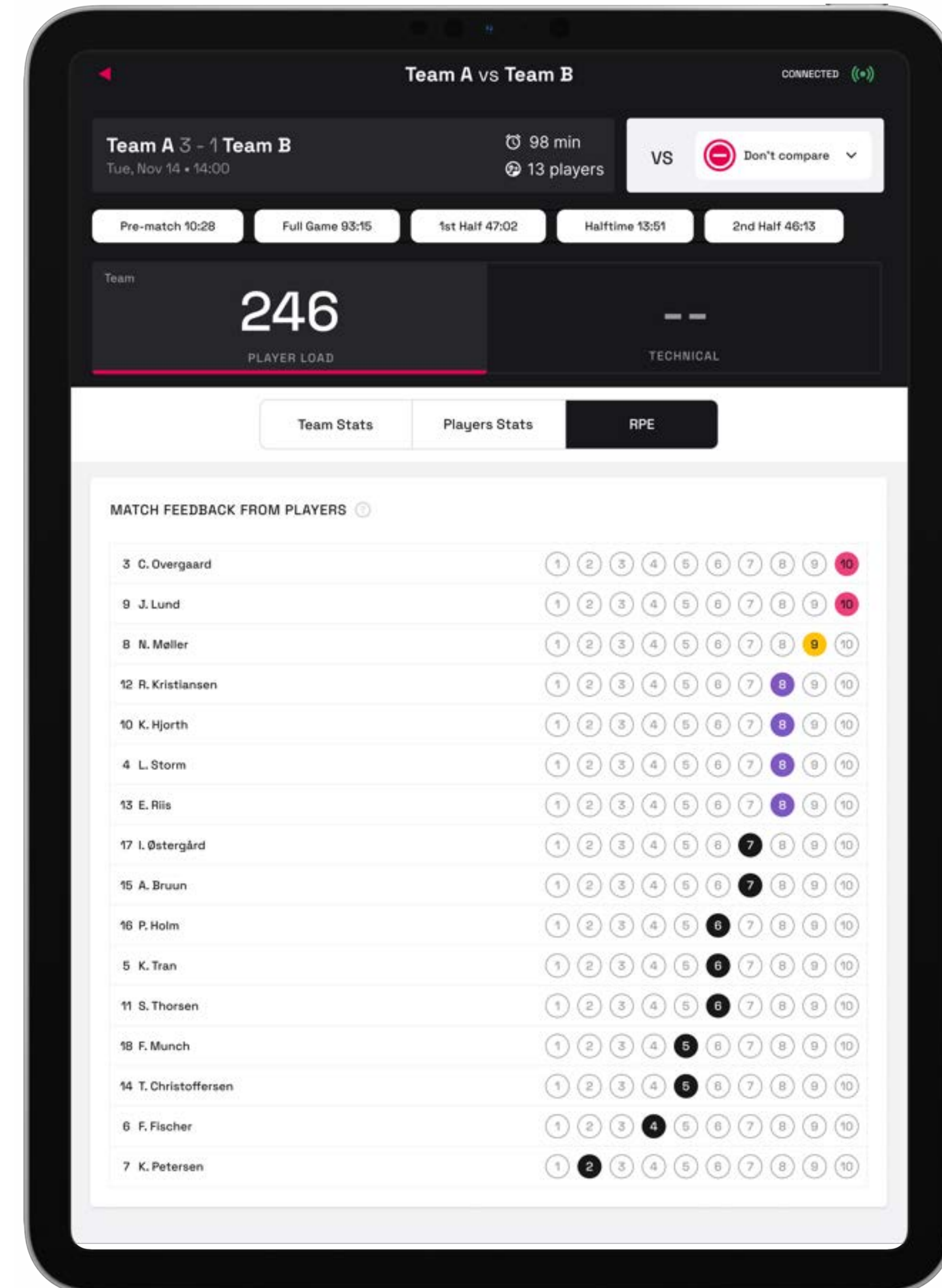
Rate of Perceived Exertion (RPE)

The RPE provides practitioners with an insight into the perceived load and level of exertion of each player following a session or match.

Compared to other ways of quantifying internal session-load, the RPE-method provides a non-invasive and easily interpretable solution.

Validity, reliability and link to other load-indicators

- RPE-derived load measures represents a both valid and reliable tool when interpreting the internal load in athletes (5).
- Research has shown, that the RPE-derived load-measures significantly correlates with HR-measures during training sessions (6).
- Another study highlighted that the RPE-model has shown strong correlations with blood lactate-values and heart-rate values when analyzing the load-measures following participation in small-sided games (7).



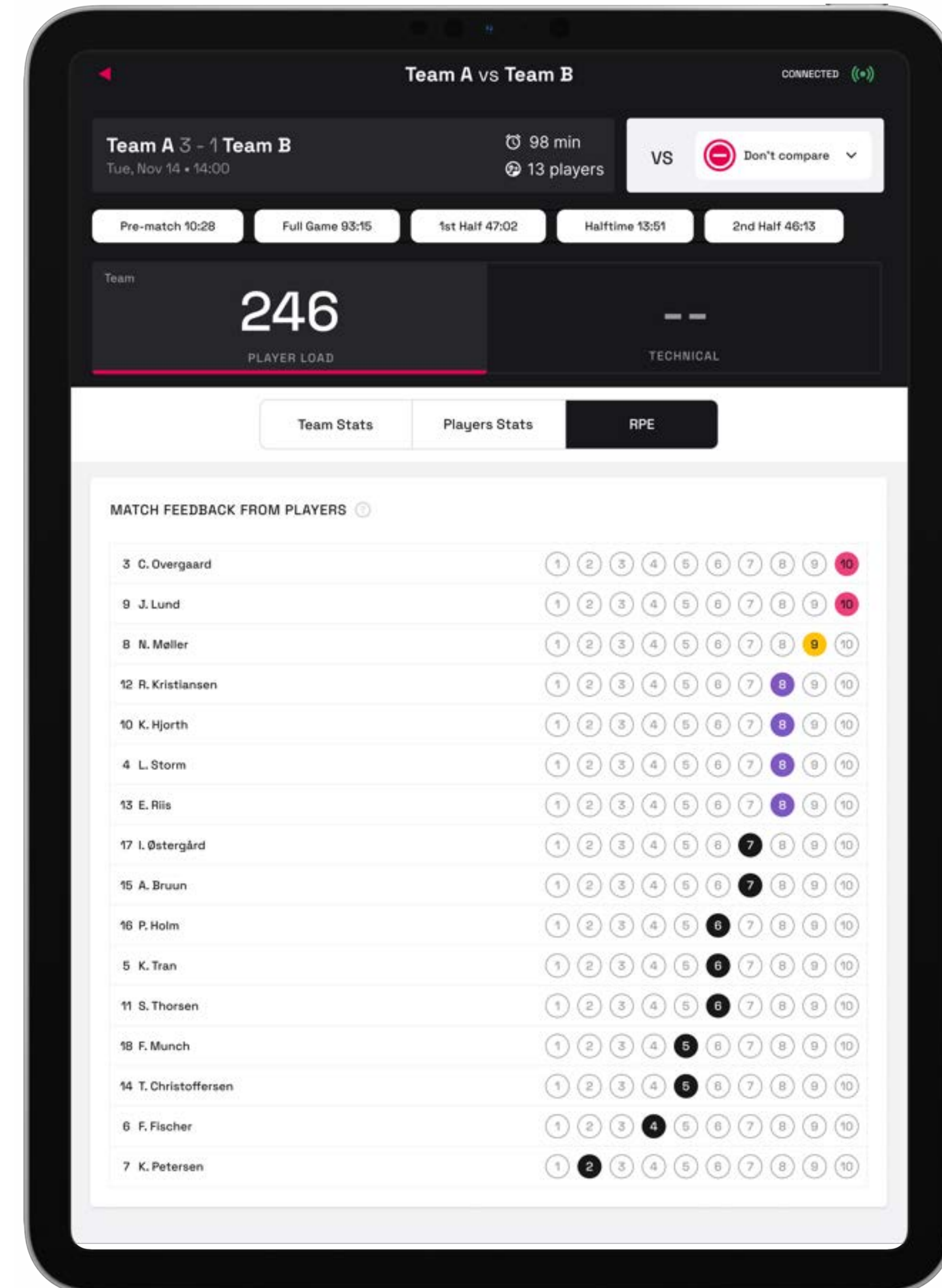
Rate of Perceived Exertion (RPE)

RPE and injury risk

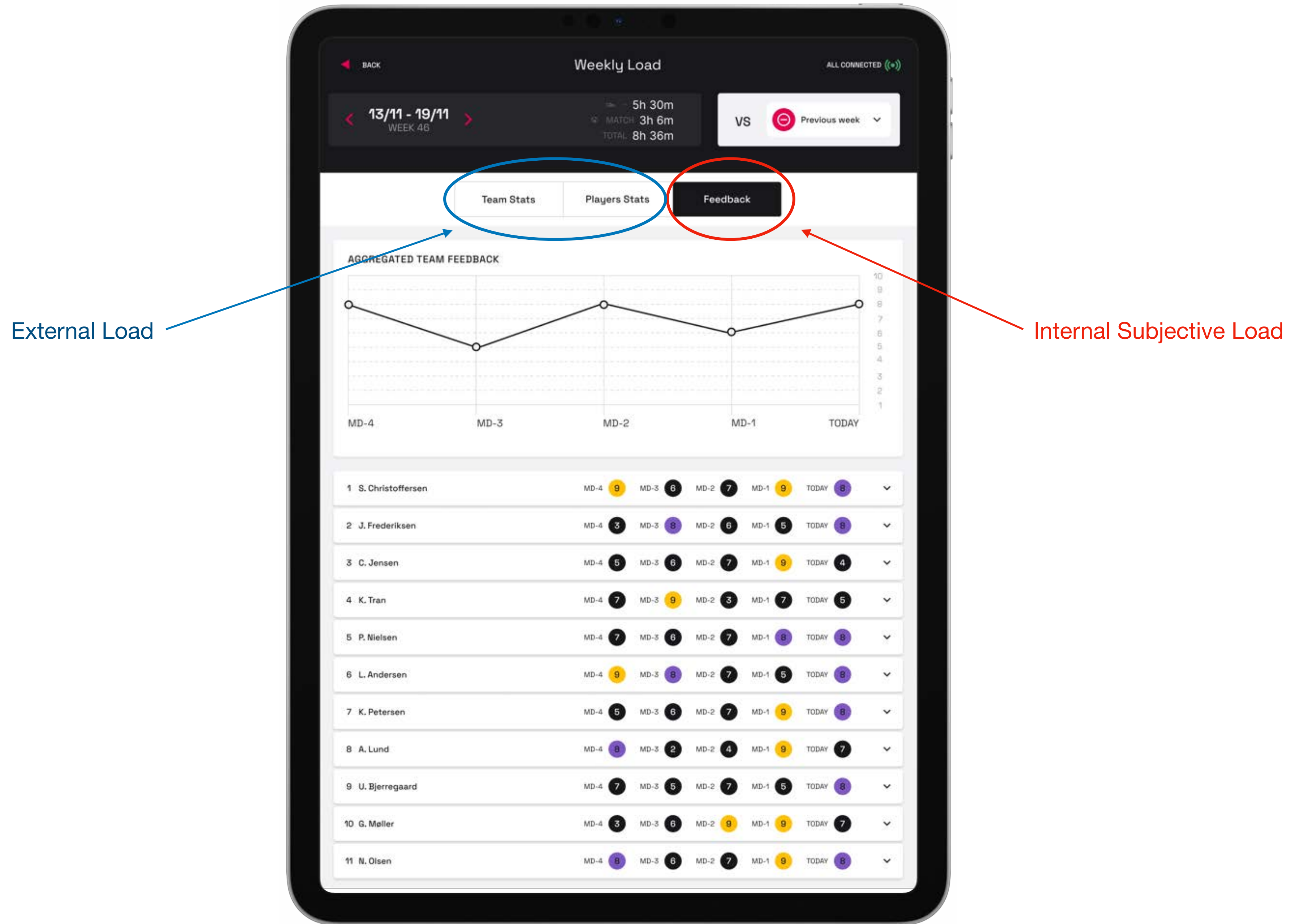
- Previous research have highlighted, that when linking RPE-derived training load-measures and it's relationship to risk of injury, an elevation in workload was evident during 3-weeks prior to injury-occurrence (8).

Familiarity and Standardization

- Players should answer the questionnaire 30 minutes after the session have ended (6).
- Players should be familiarized with the scale prior to collecting RPE-values (5).
- Coaches should emphasize the importance of players not comparing their RPE-registration with others, and the rationale behind collecting the data (i.e. insights in perceived load-response).



Rate of Perceived Exertion (RPE)



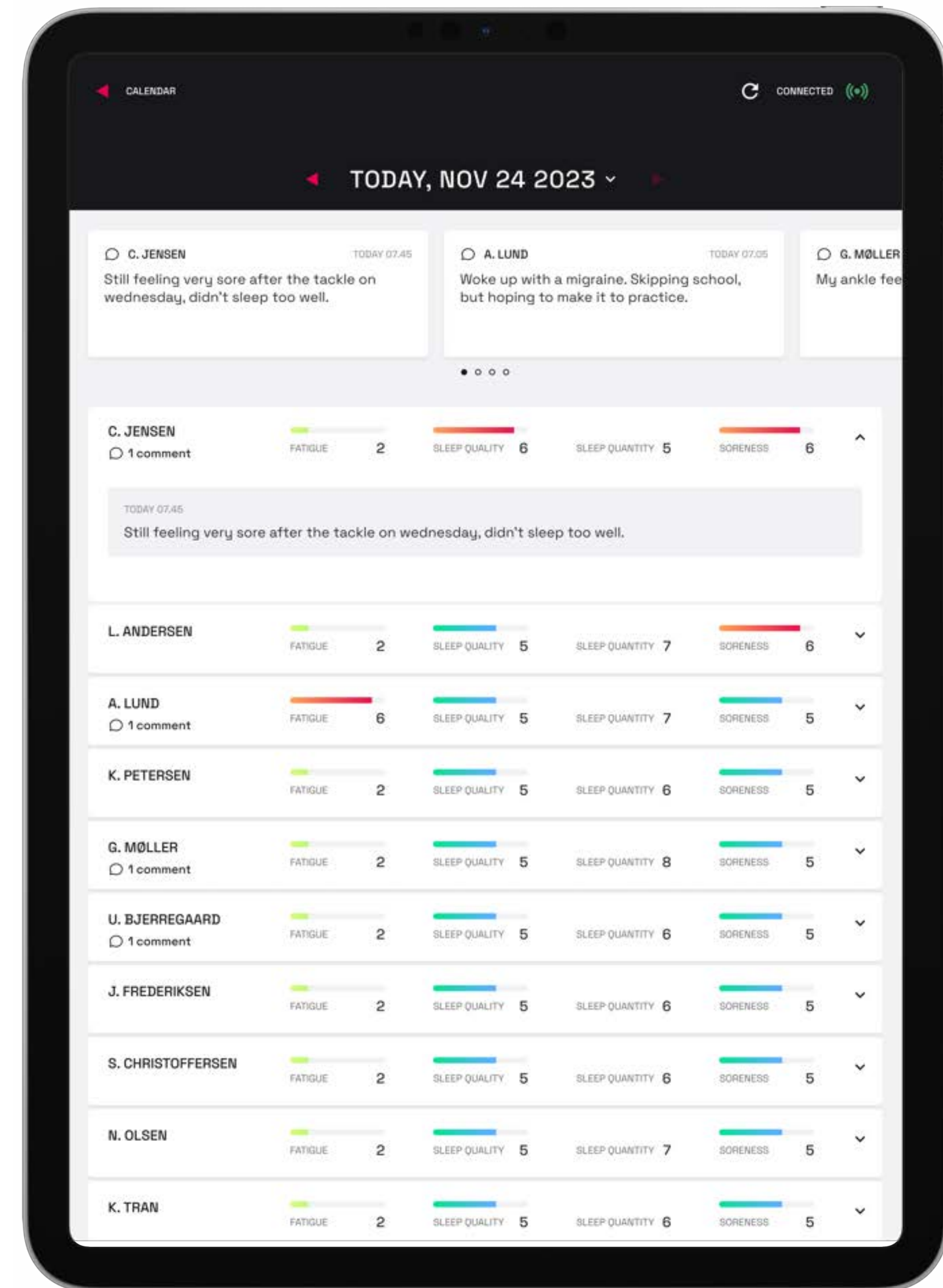
Hooper Index

The Hooper Index highlights the level of subjective readiness for the specific player prior to participating in training sessions or matches.

The application of wellness-questionnaires allows coaches / health-staff with quick insight into the perceived level of load-related factors and thereby provide a less time consuming model when compared to talking to each player.

Validity and Reliability

- Use of wellness questionnaires has proved sensitive and useful in detecting deviations in workloads during a competitive season in elite level team sports (9).
- The Hooper Index as a measure of players wellness in elite level soccer has proven both sensitive in detecting season-dependent load-variations (10) and during periods with congested fixture schedules (11).



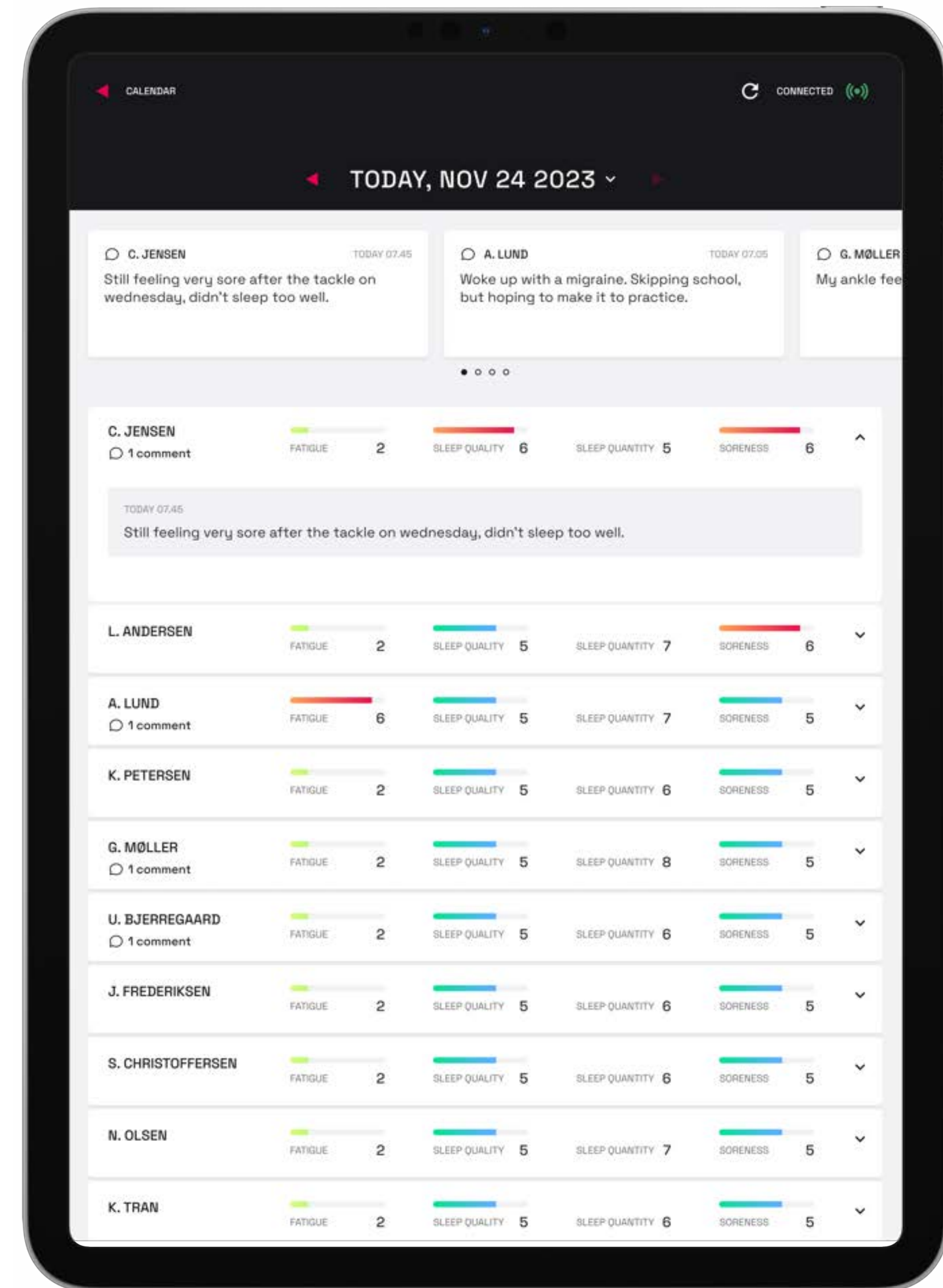
Hooper Index

Link to other load-indicators

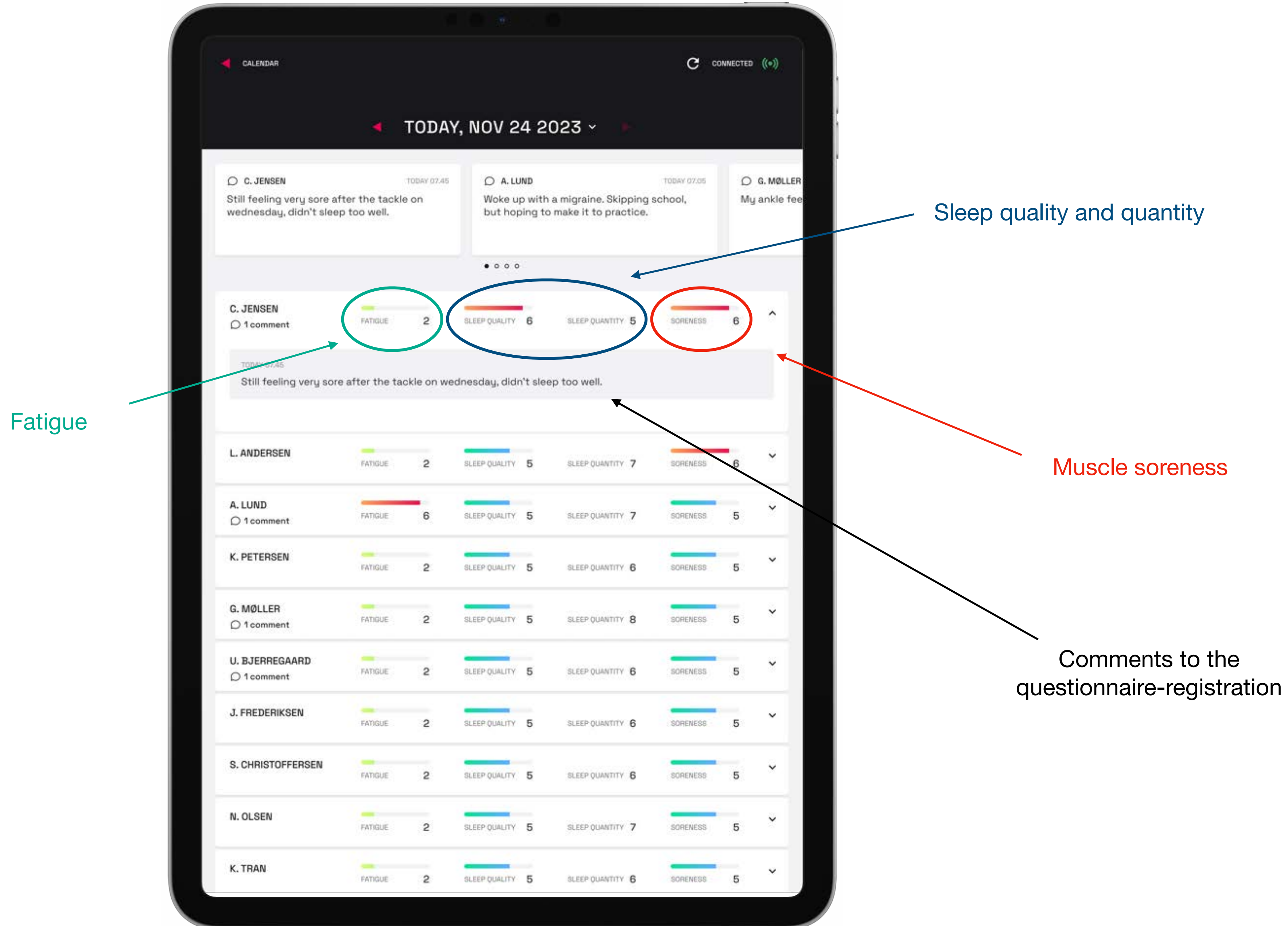
- When assessing match-induced fatigue, a study assessed the usefulness of the Hooper Index in conjunction with resting HRV-measures, the former provided a more stable and sensitive in monitoring daily variations in training loads (12).
- Findings from Thorpe and colleagues (13) supports these results, as they described that no HR-derived measures were sensitive to daily fluctuations in workload following match participation while self-perceived ratings of wellness were found to be sensitive to these alterations.

Familiarity and Standardization

- Players should be familiarized with the scale prior to collecting self-reported wellness-measures.
- Coaches should emphasize the importance of players not comparing their wellness-registration with others.
- Consistency is key. Coaches should emphasize that registrations should be made on specific time-intervals.



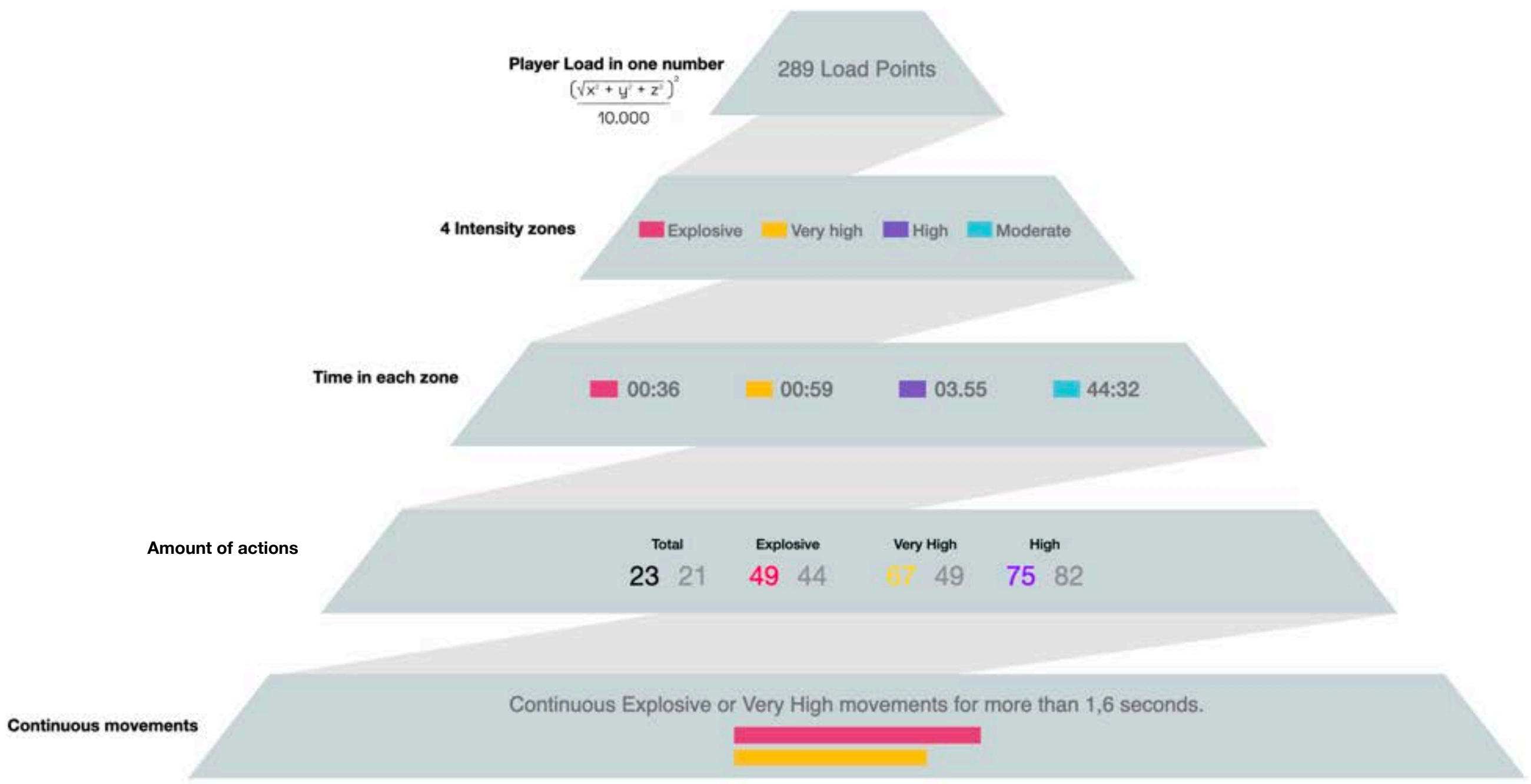
Hooper Index



Post-session Analysis

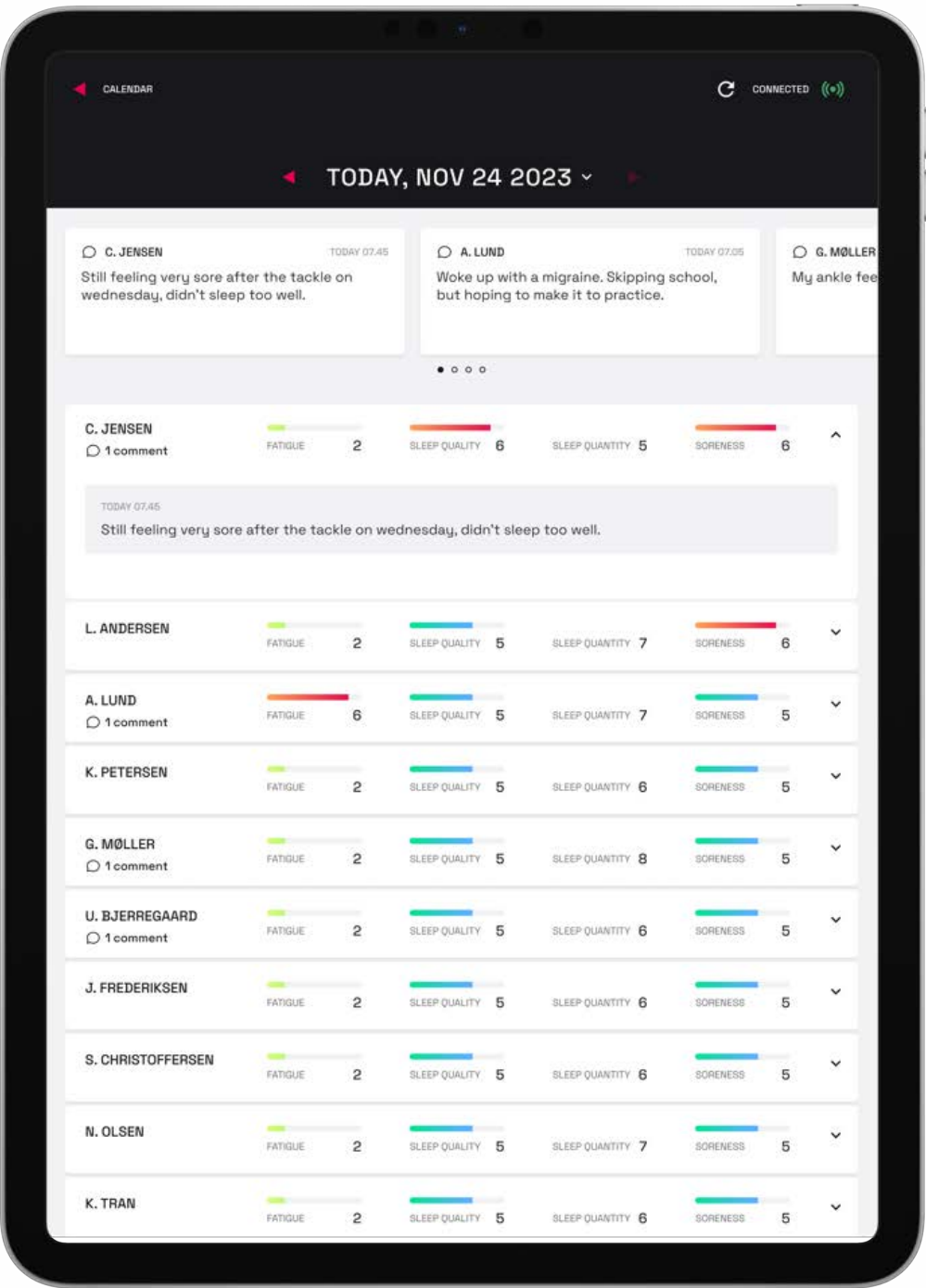
Workload Management

External load

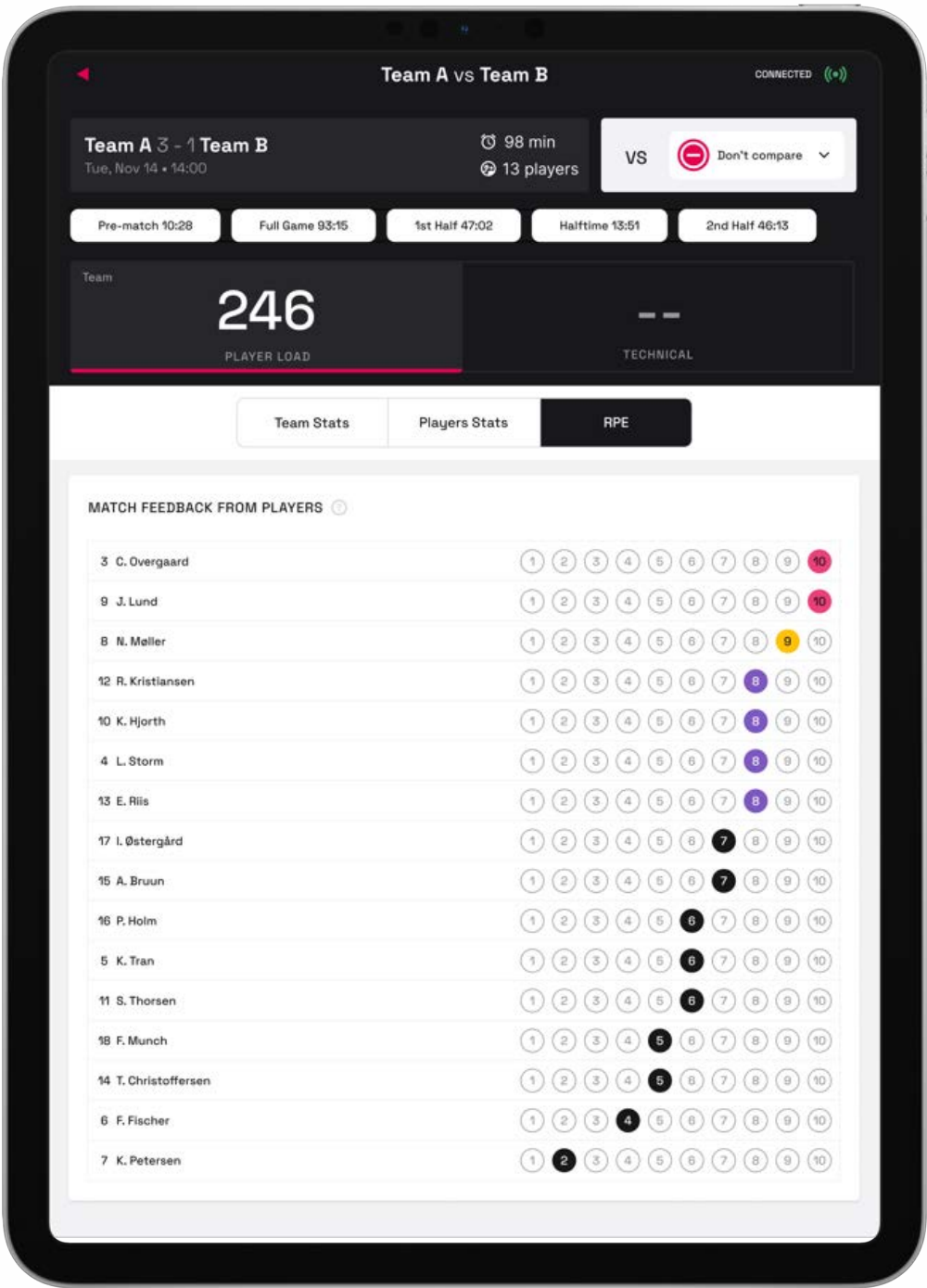


N11 performance metrics

Internal load



Hooper Index



RPE

Workload Management

Complimentary effects of combining internal and external load-indicators

- Identification of overreaching players.
- Indicators of fitness maintenance.

