

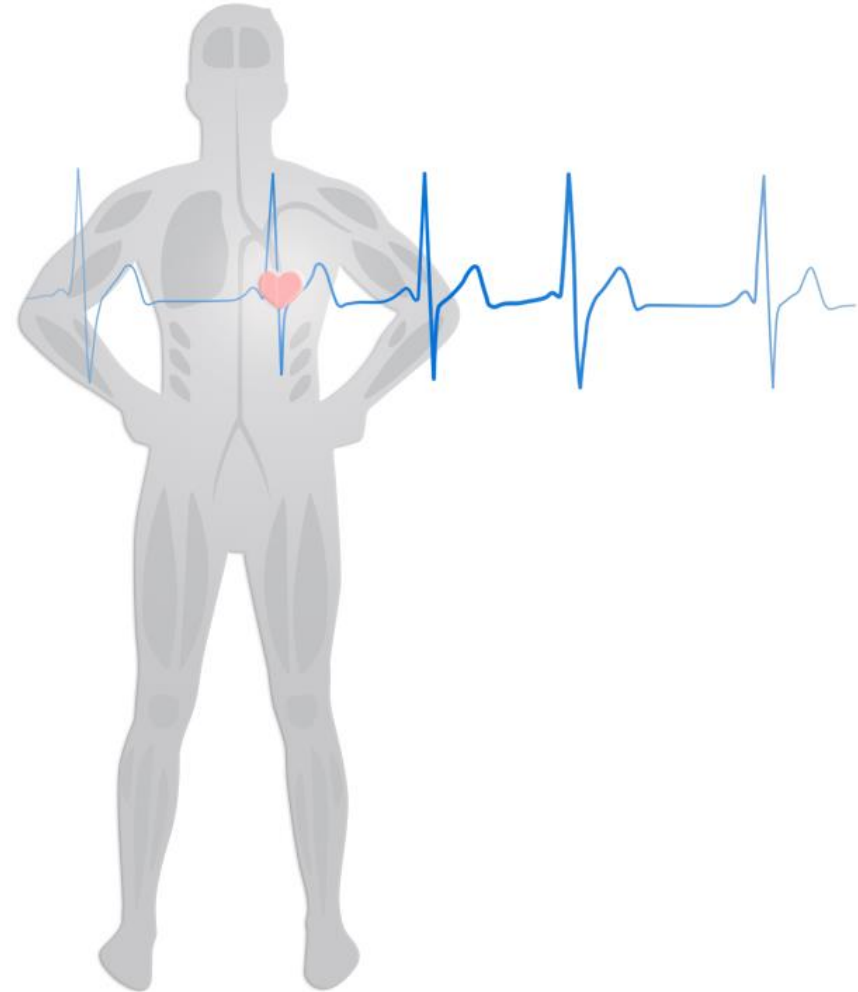
Evaluating the Reliability of Results

Lifestyle Assessment



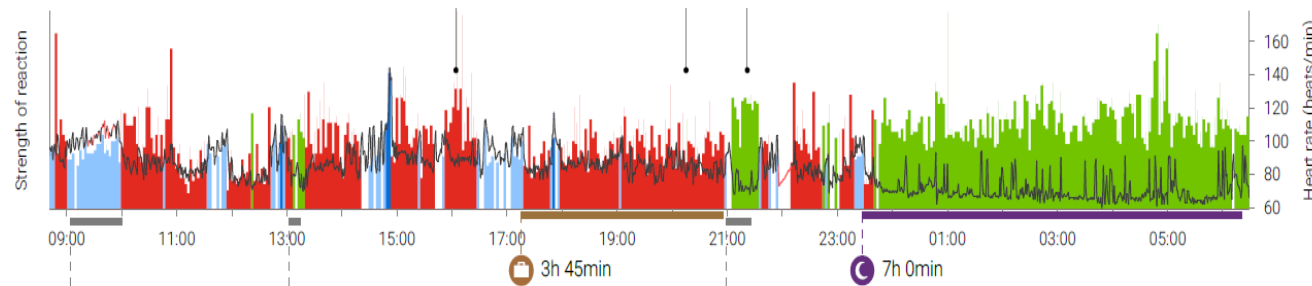
THE RELIABILITY OF RESULTS IS AFFECTED BY

- Resting heart rate
- Maximum heart rate
- Missing heart rate information / erroneous data
- Measurement length
- Illnesses
- Medications



RESTING HEART RATE AFFECTS THE AMOUNT OF RECOVERY

Measurement analyzed with a resting HR of 59

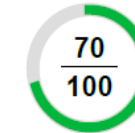


STRESS AND RECOVERY BALANCE

60 - 100p Good

30 - 59p Moderate

0 - 29p Low



Stress and recovery balance was good.

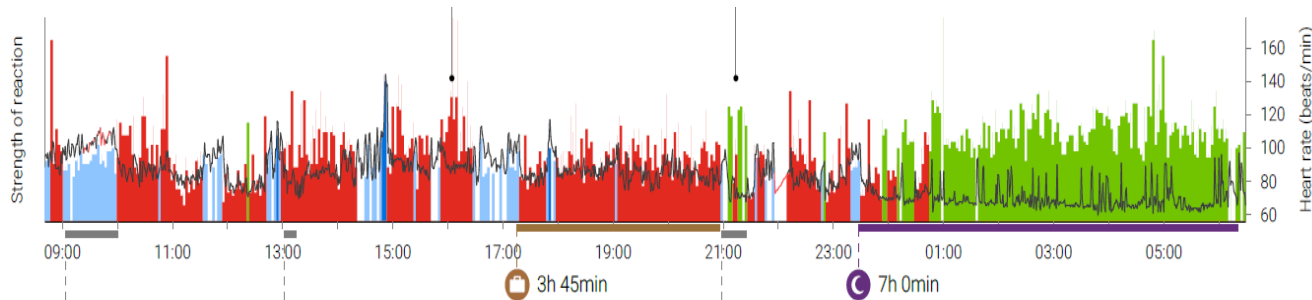
AMOUNT OF RECOVERY (day & night)

6h 39min



+ A moderate amount of recovery during the daytime (34min).

Same measurement analyzed with a resting HR of 56

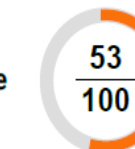


STRESS AND RECOVERY BALANCE

60 - 100p Good

30 - 59p Moderate

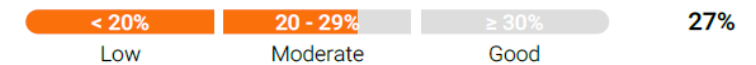
0 - 29p Low



Stress and recovery balance was moderate.

AMOUNT OF RECOVERY (day & night)

5h 47min



+ A small amount of recovery during the daytime (20min).

RESTING HEART RATE AUTOMATICS

- to establish whether the person's general life situation is "normal" or exceptionally stressful.
- To ensure reliability of results, Lifestyle Assessment automatically drops the resting heart rate by 1-5 beats (from the lowest measured value), if certain criteria are filled.
- **Criteria:** at least 2 units of alcohol; the client feels stressed and not well (pre-Q); client has done intensive exercise within 1.5 hours before bedtime.
- **Example:** Person's lowest measured heart rate is 51, but based on the pre-questionnaire (feeling stressed), the analytics dropped the resting heart rate by 1 beat to 50 bpm.

I don't generally feel stressed.

😞 Partially disagree

My days include breaks that allow me to recover.

😞 Partially disagree

I usually feel rested and energetic.

😞 Completely disagree

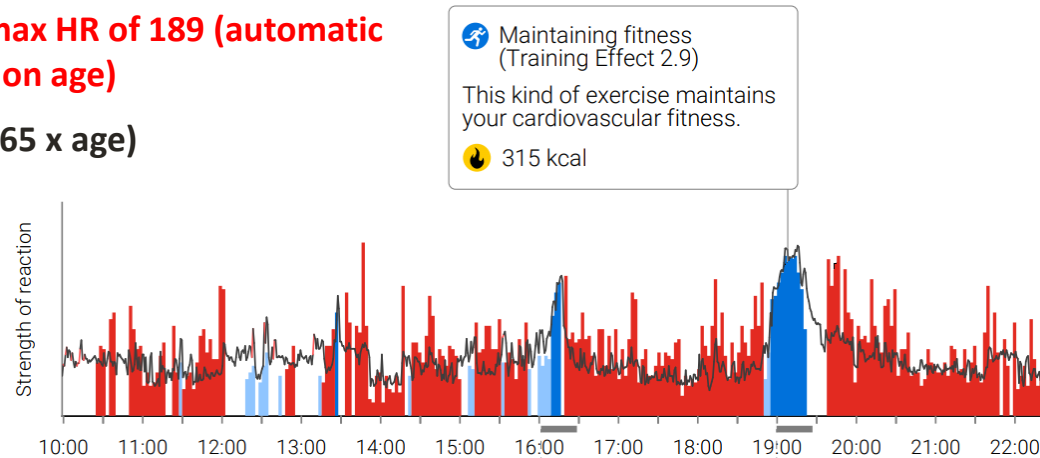
I feel that I sleep enough.

😞 Completely disagree

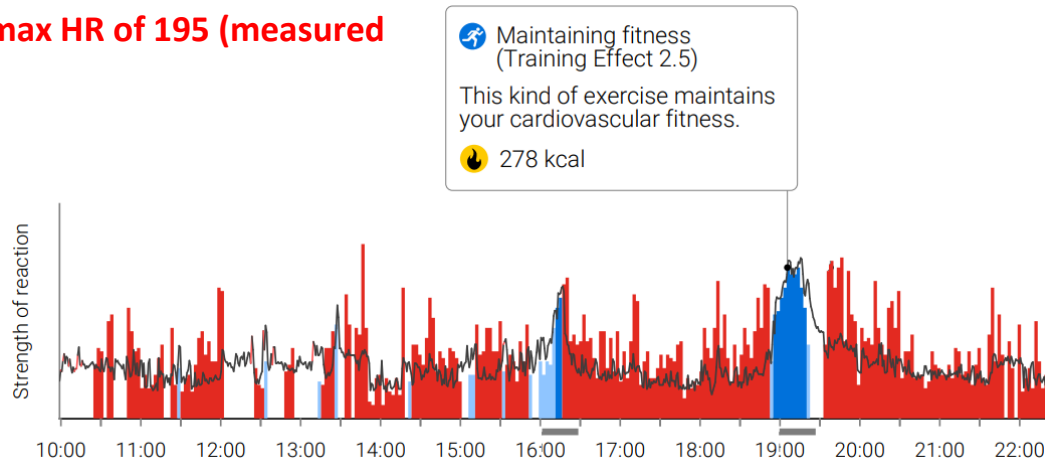
MAX HEART RATE AFFECTS THE CALCULATION OF EXERCISE (AND ENERGY EXPENDITURE)

Analyzed with a max HR of 189 (automatic estimation based on age)

Formula: $210 - (0,65 \times \text{age})$



Analyzed with a max HR of 195 (measured in a fitness test)



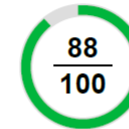
PHYSICAL ACTIVITY

HEALTH EFFECTS OF PHYSICAL ACTIVITY

60 - 100p Good

30 - 59p Moderate

0 - 29p Low



Good health effects

DURATION OF PHYSICAL ACTIVITY

Light
41min

Moderate
17min

Vigorous
15min

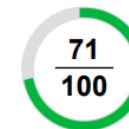
PHYSICAL ACTIVITY

HEALTH EFFECTS OF PHYSICAL ACTIVITY

60 - 100p Good

30 - 59p Moderate

0 - 29p Low



Good health effects

DURATION OF PHYSICAL ACTIVITY

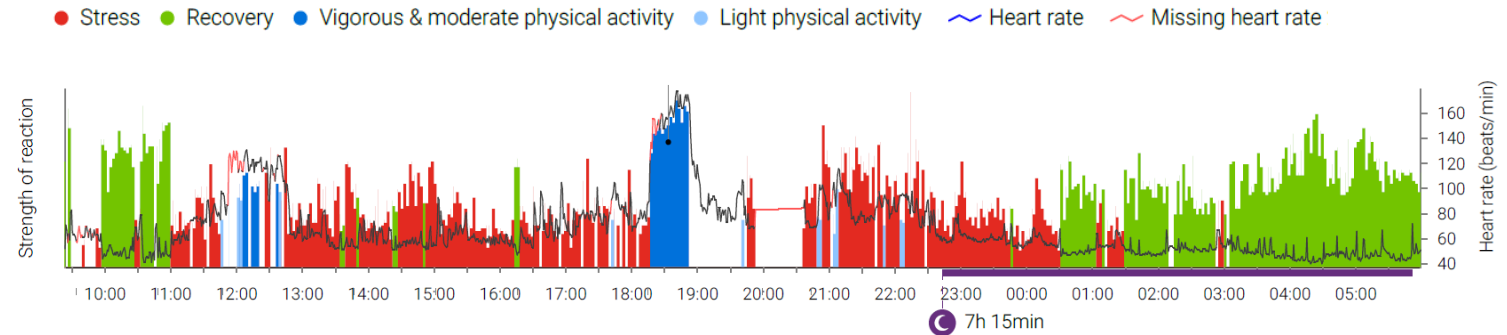
Light
32min

Moderate
16min

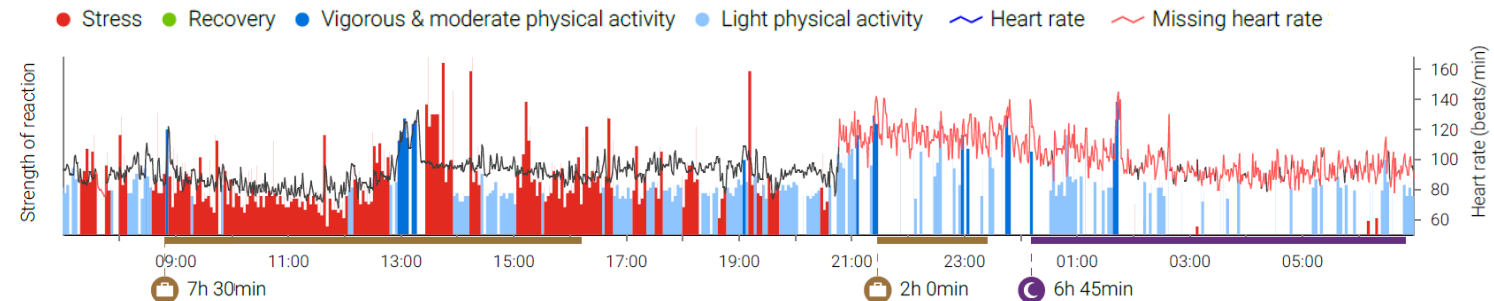
Vigorous
11min

MISSING HEART RATE DATA

- “Missing heart rate” can be caused by a measurement break, problems with the device / electrodes or an abnormal heart rhythm.
- If the amount of missing heart rate data is over 15% on 2/3 days, or over 20% over the whole measurement period, a re-measurement is recommended.



Example 1. Measurement break caused by the device being off during shower from 20 to 21 (10%). Reliability of the result is good.



Example 2. Atrial fibrillation attack that started at 21. Reliability of results in the evening / night is very poor.

Special Conditions - Illnesses and Medications

Lifestyle Assessment

HEADER GOES HERE

Lifestyle Assessment results can be unreliable, and we do not recommend the measurement if the client has:

- A pacemaker
- Heart transplant or a difficult heart condition
- Chronic atrial fibrillation / atrial flutter
- Uncontrolled thyroid dysfunction
- High fever (it's better to postpone the measurement if you have fever)

If you have one of the following conditions, you can make the measurement, but please note that the results **can** be difficult to interpret or unreliable:

- Bundle branch block
- Coronary heart disease with angioplasty or bypass surgery
- Chronic neurologic diseases (e.g. MS)
- Diagnosed severe depression or exhaustion (+medicine)
- Pregnancy

NOTE! Firstbeat Lifestyle Assessment is used to promote personal well-being, and is not designed for diagnosing illnesses.

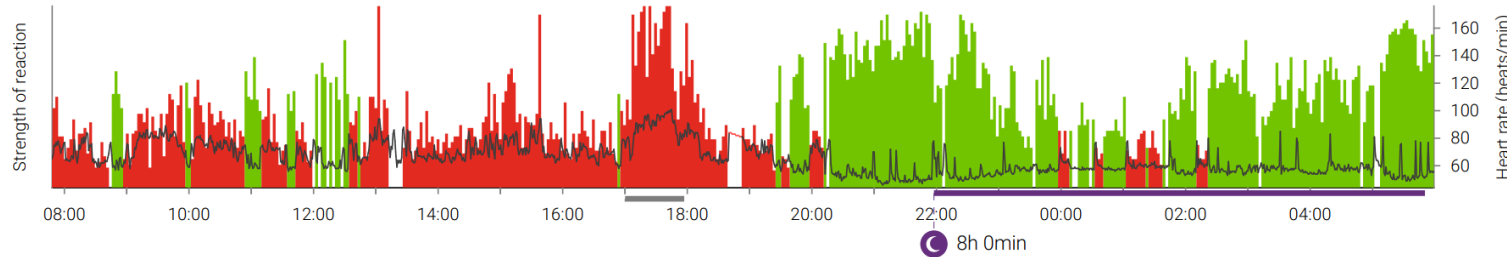
CHALLENGES CAUSED BY MEDICATIONS (HR & HRV)

- **Beta blockers** affect the max heart rate -> typically the person's age-estimated max heart rate should be lowered by 15-20 beats (**HRV ↓**)
- Large doses of diuretics and ACE inhibitors can **↓ HRV**
- Antiarrhythmics (tachycardia vs. bradycardia)
- **Asthma** and **allergy medicines** (large doses of corticosteroids, long-effecting sympathomimetics) **HR ↑ and HRV ↓**
- **Thyroid medicines**: thyroxin **HR ↑ and HRV ↓**
- Tricyclic and other activating **antidepressants** **HR ↑ and HRV ↓**
- Long-effecting **sleep medications** (esp. Benzodiazepan) **HR and HRV ↓**
- Strong **pain medications (opiates)** **HR and HRV ↓**
- Alzheimer and Parkinson medicines **↓ HRV** (also the effect of the illness itself)

BETA BLOCKERS LOWER THE HEART RATE ESP. DURING EXERTION

- Usually the max HR should be reduced by 15-20 beats / min (*check how HR reacts during exercise*)

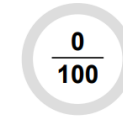
Analysis result with a max HR of 176



PHYSICAL ACTIVITY

HEALTH EFFECTS OF PHYSICAL ACTIVITY

60 - 100p Good
30 - 59p Moderate
0 - 29p Low

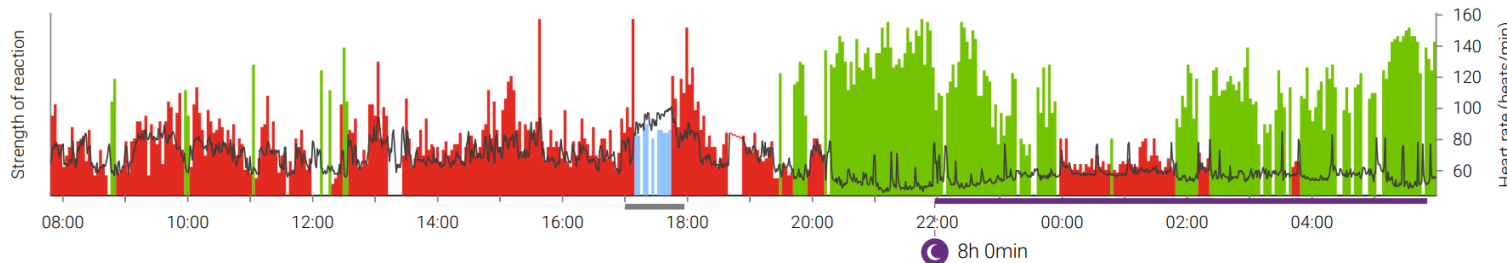


Minor health effects

DURATION OF PHYSICAL ACTIVITY

Light	Moderate	Vigorous
2min	0min	0min

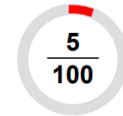
Re-analyzed result with a max HR of 161



PHYSICAL ACTIVITY

HEALTH EFFECTS OF PHYSICAL ACTIVITY

60 - 100p Good
30 - 59p Moderate
0 - 29p Low



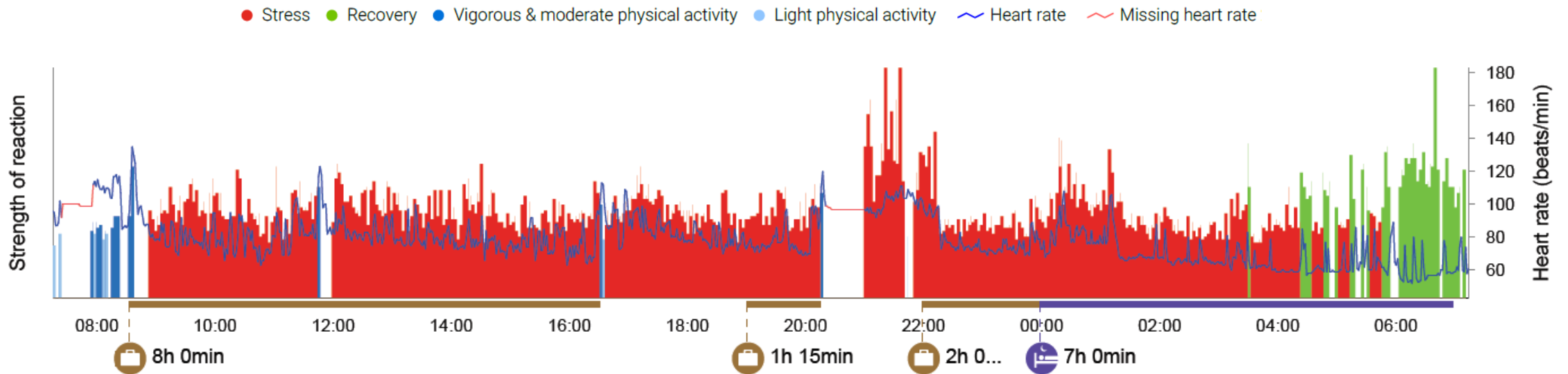
Minor health effects

DURATION OF PHYSICAL ACTIVITY

Light	Moderate	Vigorous
20min	0min	0min

CASE: STRONG BACK PAIN & HEAVY MEDICATION

- Background: 1.5 months of **serious back pain (lumbago)** that required hospitalization in the most acute stage
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- Very strong pain medications (e.g. codeine based) and muscle relaxants, including injections

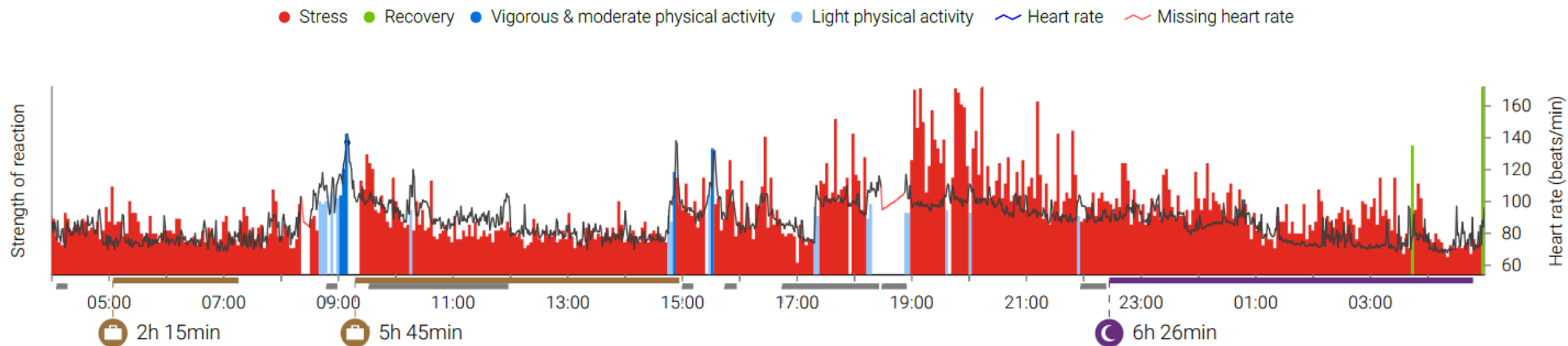


SUMMARY

- Recording medications & illnesses in the journal is very important (*emphasize in client instructions*).
- There are individual differences in resting and max heart rate; it's possible to manually adjust these afterwards, based on the result or the feedback discussion.
- Some medicines might have a negative effect on recovery, but their use can be necessary or justified to treat an illness or other condition.
- If medications have changed during the follow-up period, comparing the results can be challenging.
- The daily dosage, the medicine's half-life and the time of day when it was taken can influence the physiological reaction, in addition to individual reactivity.

NOTE

- Lifestyle assessment is not a diagnostic tool!
- There are many possible explanations behind a "red" result!
- If an obvious reason for a poor result cannot be found, it can be a good idea to recommend some further tests, e.g. a basic health check.



Thank you!