# HRV Parameters and levels of risk

Diagnosis of :-

- Stress
- State of adaptation
- Short term risks
- Long term risks
- One or multiple problems

# Results for good, healthy v bad unhealthy

## RESULTS of HEART RATE VARIABILITY ANALYSIS

| Number 1 Kubín,Jan | | | | | |
|---|---|---|---|---|---|
| Date | Time | Sex | Age | HR | Rec. time |
| 2012/05/14 | 17:32 | male | 48 | 67 | 00:05:03 |

**Basic heart rhythm variability parameters**

| Parameter | |
|---|---|
| **Statistical and autocorrelation analysis** | |
| 1. Beats per minute (60/Mean value) | 67 |
| 2. Mean value of intervals, ms | 890 |
| 3. Maximum value (Mx), ms | 991 |
| 4. Minimum value (Mn), ms | 789 |
| 5. Difference Max-Min (MxDMn), ms | 202 |
| 6. Quotient Max/Min (MxRMn) | 1.26 |
| 7. RMSSD, ms | 29 |
| 8. pNN50, % | 8.0 |
| 9. Standard deviation (SDNN), ms | 37.35 |
| 10. Coefficient of variation (CV), % | 4.2 |
| 11. Dispersion (D), ms² | 1395.25 |
| 12. Mode (Mo), ms | 876 |
| 13. Amplitude of Mode (AMoSDNN), % | 35.7 |
| 14. Amplitude of Mode (AMo50), % | 42.2 |
| 15. Amplitude of Mode (AMo7.8), % | 11.2 |
| 16. Autocorrelation funtion index (CC1) | 0.639 |
| 17. Autocorrelation funtion index (CC0) | 2.029 |
| 18. Nr. of arryhthmias (NArr), % | 0.3 |
| 19. Stress index (SI) | 119 |
| **Spectral analysis** | |
| 20. Total power (TP), ms² | 1245.78 |
| 21. Total power HF, ms² | 521.38 |
| 22. Total power LF, ms² | 395.08 |
| 23. Total power VLF, ms² | 95.16 |
| 24. Total power ULF, ms² | 234.16 |
| 25. Max HF (HFmx), ms²/Hz | 25.13 |
| 26. Max LF (LFmx), ms²/Hz | 17.72 |
| 27. Max VLF (VLFmx), ms²/Hz | 11.72 |
| 28. Max ULF (UFmx), ms²/Hz | 55.20 |
| 29. Max.period HF, sec | 5.54 |
| 30. Max.period LF, sec | 16.79 |
| 31. Max.period VLF, sec | 46.55 |
| 32. Max.period ULF, sec | 102.40 |
| 33. Power HF, % | 51.5 |
| 34. Power LF, % | 39.1 |
| 35. Power VLF, % | 9.4 |
| 36. LF/HF | 0.76 |
| 37. Index of centralization (VLF+LF)/HF (IC) | 0.94 |

## RESULTS of HEART RATE VARIABILITY ANALYSIS

| Number 135 Kopřiva Zbyněk | | | | | |
|---|---|---|---|---|---|
| Date | Time | Sex | Age | HR | Rec. time |
| 2011/12/22 | 13:45 | male | 55 | 109 | 00:05:02 |

**Basic heart rhythm variability parameters**

| Parameter | |
|---|---|
| **Statistical and autocorrelation analysis** | |
| 1. Beats per minute (60/Mean value) | 109 |
| 2. Mean value of intervals, ms | 552 |
| 3. Maximum value (Mx), ms | 568 |
| 4. Minimum value (Mn), ms | 539 |
| 5. Difference Max-Min (MxDMn), ms | 29 |
| 6. Quotient Max/Min (MxRMn) | 1.05 |
| 7. RMSSD, ms | 3 |
| 8. pNN50, % | 0.0 |
| 9. Standard deviation (SDNN), ms | 5.12 |
| 10. Coefficient of variation (CV), % | 0.9 |
| 11. Dispersion (D), ms² | 26.19 |
| 12. Mode (Mo), ms | 555 |
| 13. Amplitude of Mode (AMoSDNN), % | 34.7 |
| 14. Amplitude of Mode (AMo50), % | 69.5 |
| 15. Amplitude of Mode (AMo7.8), % | 53.9 |
| 16. Autocorrelation funtion index (CC1) | 0.809 |
| 17. Autocorrelation funtion index (CC0) | 18.057 |
| 18. Nr. of arryhthmias (NArr), % | 0.2 |
| 19. Stress index (SI) | 2161 |
| **Spectral analysis** | |
| 20. Total power (TP), ms² | 18.01 |
| 21. Total power HF, ms² | 2.09 |
| 22. Total power LF, ms² | 3.88 |
| 23. Total power VLF, ms² | 8.71 |
| 24. Total power ULF, ms² | 3.33 |
| 25. Max HF (HFmx), ms²/Hz | 0.13 |
| 26. Max LF (LFmx), ms²/Hz | 0.22 |
| 27. Max VLF (VLFmx), ms²/Hz | 0.93 |
| 28. Max ULF (UFmx), ms²/Hz | 0.46 |
| 29. Max.period HF, sec | 2.92 |
| 30. Max.period LF, sec | 17.36 |
| 31. Max.period VLF, sec | 51.20 |
| 32. Max.period ULF, sec | 73.14 |
| 33. Power HF, % | 14.2 |
| 34. Power LF, % | 26.5 |
| 35. Power VLF, % | 59.3 |
| 36. LF/HF | 1.86 |
| 37. Index of centralization (VLF+LF)/HF (IC) | 6.03 |

# Why do we need HRV?

- We need variability in our heart rate to stay healthy.
- If someone has low variability then the communication in their regulatory systems is insufficient.
- Low variability or rigidity would be seen from the previous slide where SDNN was under 10.
- Other parameters which may suggest the risk of sudden cardiac death (caused by the poor functioning of the regulatory systems and not by the heart) are: the pulse above 100, SI under 50 or at 1000+ and TP under 50).

# Heart rate or pulse

- Low pulse indicates PS dominance and a high heart rate or shows sympathetic dominance. The pulse is influenced by many factors and if it is 60 this may be a well-trained sports person or someone who is very Parasympathic dominant.
- It may also be due to prescription drugs such as such as beta blockers, hypertension medication or tranquilisers.
- It needs to be established if the client has been drinking coffee for example or smoking as this can affect the pulse.

# Pulse or Heart Rate influences

- When a client comes for the first time they may be nervous and because of this have an increased consumption of oxygen. This thereby increases the blood pressure which may slightly increase the LF%. The stress index up to 200
- But if they are on medication or prescription this may not be the case.
- These factors may require us to adjust the measurements.