

登録  
No.686

# 音楽で健康を考える会

登録テーマ

## 5.スポーツ・健康

### 音楽と健康

#### 活動プロフィール

作成 菱田 博俊氏





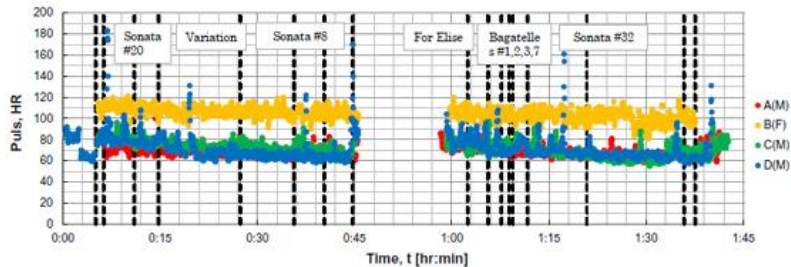
# 講師による講座風景



oximeter. A stylus wired to a smartphone-sized body is attached to the index finger, and the amount of infrared rays and red light transmitted through the finger along with the pulse wave, systolic blood pressure, and diastolic blood pressure were measured. This device measures the degree of redness of arterial blood and calculates SpO<sub>2</sub>. The time, when the stylus was put on the finger, was set as the start time. The pulse rate and SpO<sub>2</sub> were recorded in the storage element in the main body every 2 seconds.

the recital, 66 just after the end of the first half, 78 just before the start of the second half, and 62 just after the end. It slightly decreased during the first half and clearly decreased during the second half. His daily value was between 50 and 60. He noticed that he was quite nervous during the experiment.

**Subject B:** HR was 114 just before the start of the recital, 107 just after the end of the first half, 107 just before the start of the second half, and 95 just after the end. It slightly declined during each half. Her daily value



(a) Time histories of pulse HR of four subjects.

database in the future can be expected.

In the present database, the sound information of music is saved in WAVE format. WAVE data, which is officially called RIFF waveform Audio Format, is one of the data formats for digitally recording audio waveforms. It is a free format. The sound information sampled by the linear pulse code modulation (PCM) is usually uncompressed as WAVE data. The WAVE format is created for WINDOWS computers by Microsoft and IBM, while Apple created another Audio Interchange File Format

WAVE data can be easily converted into sound information by using a smartphone application, PC software, or a CD player. Research ethics was instructed to all concerned so that this data would not be copied or diverted for purposes other than research.

### FT Analysis Results

All his 32 piano sonatas and 16 string quartets have been added to the database for each movement. The format are WAVE data and the spectrum obtained based on WAVE data using the general-purpose FT analysis program O-

SCOPE. Overall, it was confirmed that the string quartets have a lower power in the middle frequency range and a higher power in the high frequency range than the piano sonatas.

**Piano Sonatas:** Fig. 2(a) shows the FT results of the first movement of Sonata No. 8 "Grande Sonate Pathétique", Op. 13, Komponiert 1798-1799 (red colored), the third movement of Sonata No. 14 "Sonata Quasi una Fantasia", Op. 27 Nr. 2, Komponiert 1801 (yellow colored), the third movement of Sonata No. 23, Op. 57, Komponiert 1804-1805 (green colored), and the first movement of Sonata No. 32, Op.111, Komponiert 1821-1822 (blue colored). The vertical axis indicates the spectral power in dB, and the horizontal axis shows the logarithmic scale display of the frequency. Every result showed basically the same spectrum, which was represented by a convex curve with a lower at the high

comparison between pieces and for overall discussion. With MIDI data, the program uploaded on the Internet can automatically count notes for each pitch [13].

