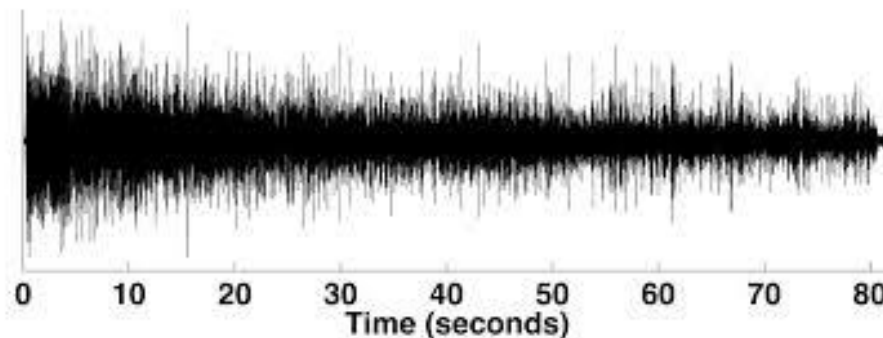




3.2 Fatigue characteristics



EMG Fatigue Characteristics:

1. **Increased Amplitude:**

- ❖ As muscle fatigue sets in, motor units are recruited to maintain force production. This increased recruitment leads to an increase in the amplitude of the EMG signal.

2. **Decreased Frequency:**

- ❖ Fatigue can cause a decrease in the frequency content of the EMG signal. This is often attributed to a reduction in the firing rate of motor units and changes in the conduction velocity of action potentials.

3. **Power Spectrum Density (PSD) Changes:**

- ❖ The PSD of the EMG signal provides information about the distribution of energy across different frequency bands. Fatigue can lead to a shift of the PSD towards lower frequencies.

4. **Root Mean Square (RMS) Amplitude:**

- ❖ The RMS amplitude of the EMG signal is a measure of the overall signal power. It typically increases with fatigue due to increased muscle activity.

5. **Median Frequency (MF):**

- ❖ The MF is a statistical measure of the frequency distribution of the EMG signal. It tends to decrease with fatigue, reflecting a shift towards lower frequencies.

Factors Affecting EMG Fatigue Characteristics:

- ☐ **Muscle Fiber Type:** Different muscle fiber types (slow-twitch and fast-twitch) exhibit different fatigue characteristics.
- ☐ **Intensity and Duration of Exercise:** The intensity and duration of exercise influence the rate and extent of fatigue development.
- ☐ **Individual Differences:** Factors such as age, fitness level, and training status can affect individual responses to fatigue.
- ☐ **Environmental Conditions:** Temperature, humidity, and other environmental factors can impact muscle fatigue and EMG characteristics.

