

Appendix (A)

Approximate Entropy:

Approximate Entropy (ApEn) was calculated for 500 consecutive intervals of ECG [14]. Given an input of N data points $u(1), u(2), \dots, u(N)$, two input parameters, m and r , must be fixed to compute ApEn [denoted precisely by $ApEn(m, r, N)$]. To define ApEn, first-form vector sequences $x(1)$ through $x[N-(m+1)]$ from the $u[u(I)]$, defined by $x(i) = \{u(i), \dots, u[i+(m-1)]\}$. These vectors represent m consecutive u values, commencing with i th point. Briefly ApEn measures the logarithmic likelihood that runs of patterns that are close (within r) form contiguous observations remain close (within the same tolerance width r) on next incremental comparisons. Lower ApEn indicates greater regularity and higher ApEn indicates greater complexity. For the purpose of the current study, $m=2$, $N=500$ and $r=10$ for our calculation. For many models, ApEn and standard deviation can be correlated. In order to determine the independent influence of complex and variability, normalized ApEn was calculated using $r=20\%$ of the standard deviation of the same heart rate series.