

## Example Spirals

Many types of movement disorders can be detected and quantified using Spiral Analysis.

The spiral figures below are from four individuals, one person with no neurological problems (Normal), one with Parkinson's Disease (PD), Essential tremor (ET), and Dystonia.

The indices shown here highlight spatial, timing and pressure features of spiral drawing.

Certain spiral findings can be characteristic of specific disorders. PD patients tend to have compressed spirals with side-to-side pressure asymmetry, multiple tremor axes, and decrement in speed of execution over time. ET patients tend to have a single dominant frequency peak accompanied by a dominant direction of tremor. Pressure peaks in ET are also sharply peaked. Speeds can approach normal, but are consistently variable through time. Dystonia is characterized by multiple patterns of superimposed fluctuations in both spatial and pressure frequency, tremor direction, and speed. There are usually multiple frequencies and directions of tremor of comparable strength. The pressure spectrum is broad and asymmetric, and the speeds, in addition to their variability, may increase slightly or stay constant.

