METHODS
OBJECTIVE
STUDY SUBJECTS
STATISTICAL ANALYSIS

BACKGROUND
Psychogenic tremor (PT), which accounts for up to 25% of all psychogenic movement disorders (PMD), is a challenging disorder to diagnose and treat. Arguably, a definitive diagnosis can only be made in retrospect, after symptomatic relief by psychotherapy. Still, improvements in our ability to diagnose PT are critical, as early diagnosis and treatment have been correlated with reduced disability and better outcomes. To this end, much research has been geared towards furthering diagnostic criteria. Diagnosis is currently made through a combination of patient history, clinical exam, and electrophysiology, recognizing features that are inconsistent with organic movement disorders. Thus, typical indicators include a sudden onset of tremors, periods of remission, variability in amplitude and frequency, distractibility with mental concentration, suggestibility, entainment, and amplitude increasing with fear.

Because none of the classical features, such as tremor variability, can become less robust with disease duration, and methods of quantifying variability are generally limited to electrophysiology, which is not easily accessible to many clinicians, we were interested in whether spiral analysis could reveal additional, quantifiable measures of variability in PT. Spiral drawing is a standard component of the neurological exam in which patients freely draw Archimedes spirals in a box. Spiral analysis, which utilizes a digitizing tablet and computer, was developed to allow for quantification of such drawings and has been found in the past decade to be a reliable measure that correlates well with other measures of upper limb motor control. Spiral width consistency has never been studied previously, although it has been observed that patients typically trace spirals that are consistent in shape and size from trial-to-trial, even despite the overlap of tremors. Further, variability in a major theme in PT. Thus, we were interested in whether PT patients exhibited a higher degree of variability in their drawings compared to healthy controls (HC), essential tremor (ET) and dynamic tremor (DT), two organic tremor disorders that can manifest during action.

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A chart review of all patients and study subjects seen in our Clinical Motor Physiology Laboratory from 2005-2006 revealed 31 controls, and 22 PT, 20 ET, and 21 DT patients who met the following inclusion criteria: all subjects underwent spiral acquisition as part of their visit and had symptoms in at least one upper limb; controls had no known history of neurological disorders and were not on any medications; ET/DT patients had no other movement disorders, and PT patients had tremors that were inconsistent with classical movement disorders, and were found to be distractible (during a mental task) and variable (in frequency) by electrophysiology.

STUDY DESIGN