

## Risk of Drowning in People With Parkinson's Disease

**Key Words:** Parkinson's disease; swimming; aquatic therapy; drowning

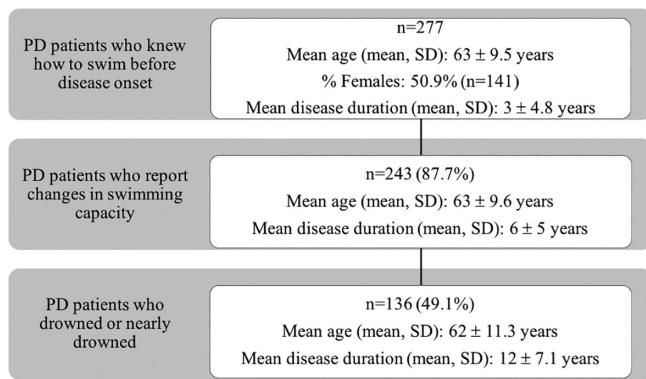
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**FIG. 1.** Frequency and demographic data of PD patients with changes in swimming capacity and drowning events.

Swimming is a common activity, practiced by both healthy and nonhealthy people of all ages. It is a complex activity that requires coordination of breathing with continued and harmonic upper and lower limb movements.<sup>1</sup> Because of the unique properties of water, aquatic activities are usually associated with facilitated movements and therapeutic properties.<sup>2</sup>

Parkinson's disease (PD) presents with asymmetric motor features that usually interfere with complex activities.<sup>3</sup> Aquatic therapy is usually considered enjoyable and associated with health benefits in PD patients.<sup>2</sup> However, although scarce, there is a growing amount of data suggesting swimming difficulties after disease onset. Several reports of patients in Internet forums mention swimming problems, attributing them to mobility problems, lack of coordination, and strength.<sup>4</sup>

This letter refers to an important finding of an online and paper-based self-administered questionnaire, conducted in Portugal and the United Kingdom, to evaluate the frequency of changes in swimming capacity after PD onset. The study was approved by the Centro Académico Medicina de Lisboa (415/16) and the Campus Neurológico Sénior (Ref: 4-2017) Ethics Committee.

An estimated number of 4300 patients was informed about the study. Of these, 381 patients responded to the questionnaire, of whom 72 were excluded because of incomplete data. Participant mean age was 64 years old, with a mean disease duration of 4 years. Tremor was reported as first complaint by 44% of the patients (n = 137).

Of 309 collected answers, 90% of the patients (n = 277) were able to swim before PD symptom onset. Of those who were able to swim, 87.7% (n = 243) noticed a change in swimming performance after disease onset, and 49.1% (n = 136) reported having had a drowning or near-drowning episode (Fig. 1). Breathing difficulties during swimming were

described by 36.5% of patients (n = 101), and 39.4% (n = 109) reported the lower limbs as their main cause of difficulty. According to participants' answers, the most frequent reasons for stopping swimming were difficulties in movements coordination (n = 71) and floating (n = 57).

Our results show that PD can seriously interfere with swimming capacity, potentially causing major safety risks. A recent case report describes 4 PD patients with swimming difficulties or drowning after deep brain stimulation surgery.<sup>5</sup> We hypothesize that PD patients' swimming difficulties are related to the asymmetric features, lack of coordination, and difficulty performing complex activities. Mean disease duration of patients who reported changes in swimming capacity was 6 ± 5.0 years, suggesting an early onset of this difficulty. However, selection bias for patients more capable of accessing the Internet or more motivated to take part in a swimming questionnaire because of previous near-drowning episodes might have occurred. Also, patients' selection has been done based on their assumption of the diagnosis; thereby, it cannot be excluded that patients with atypical parkinsonism were included.

We do not advocate that patients stop swimming or doing aquatic therapy. Instead, we would like to alert to the potential risks associated with swimming and to draw attention to the need to understand the disease-related features that contribute to the changes in swimming performance. ■

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