Human Movement Science 32 (2013) 1270–1287

Contents lists available at ScienceDirect

Human Movement Science

journal homepage: www.elsevier.com/locate/humov

# How to detect the yips in golf

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ARTICLE INFO

*Article history:*
Available online 7 September 2013

*PsycINFO classification:*
2223
2225
2320
2330
3100
3200
3700

*Keywords:*
Focal dystonia
Choking under pressure
Kinematics
Electromyography
Putting

ABSTRACT

The yips is a multi-aetiological phenomenon that is characterized by an involuntary movement that can affect a golfer's putting performance. Diagnostics are crucial for a better understanding of what causes the yips but are still lacking. The purpose of the present study was therefore to identify sensitive methods for detecting the yips and evaluating its aetiology. Forty participants, 20 yips-affected golfers and 20 nonaffected golfers, completed a psychometric testing battery and performed a putting session in the laboratory. They answered questions about their golfing and yips experience and filled in standardized questionnaires measuring trait anxiety, perfectionism, stress-coping strategies, somatic complaints, and movement and decision reinvestment. In the laboratory, they had to putt in five different conditions that might elicit the yips: as usual with both arms, under pressure, with one (the dominant) arm, with a unihockey racket, and with latex gloves. Measures included putting performance, situational anxiety, kinematic parameters of the putter, electromyography of the arm muscles, and electrocardiography. The groups were separated only by putting performance and kinematic parameters when putting with the dominant arm. Future research should use kinematics to investigate the aetiology of the yips and possible interventions.


## 1. Introduction

Tony Jackling, Sam Snead, Arnold Palmer, Tom Watson, and Bernhard Langer are very successful golfers, and they all suffered from the infamous yips. The yips occurs mostly in putting and consists

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http://dx.doi.org/10.1016/j.humov.2013.04.004

of involuntary movements appearing shortly before hitting the ball that result in loss of control and usually missing the putt (McDaniel, Cummings, & Shain, 1989; Smith et al., 2000; Stinear et al., 2006). Such loss of control has a large impact on golf performance and has consequences for the athlete's career, as the putt represents the most important stroke in high-level golf. The yips is a common phenomenon in golf, affecting 28 to 48% of golfers (McDaniel et al., 1989; Smith et al., 2000). However, the use of samples covering different performance levels as well as reliance on subjective reports may explain the high discrepancy in reported prevalence rates. A standardized method for diagnosing the yips is needed to form the basis of a scientific approach dealing with this controversial phenomenon. We therefore propose psychometric measurements and a putting experiment as a sensitive method for detecting yips-affected golfers.

### 1.1. Aetiology of the yips—Neurological origin

The literature examining the aetiology of yips is equivocal. Contemporary research places the yips on a continuum between a neurological origin connected to focal dystonia and a psychological origin linked to choking under pressure (Smith et al., 2003; Stinear et al., 2006). The yips was first categorised as a task-specific focal dystonia (Adler, Crews, Hentz, Smith, & Caviness, 2005; McDaniel et al., 1989; Sachdev, 1992; Smith et al., 2000). Focal dystonia describes a neuromuscular movement disorder whose symptoms include involuntary muscular contractions resulting in twisting and repetitive movements or abnormal postures occurring exclusively in one body part and during the performance of a task (Pont-Sunyer, Martí, & Tolosa, 2010). Commonly affected tasks are writing, playing a musical instrument, and others requiring highly repetitive fine motor skills (Torres-Russotto & Perlmutter, 2008). Reported dystonia-affected sports other than golf include table tennis (Le Floch et al., 2010), pistol shooting (Sitburana & Ondo, 2008), petanque (Lagueny et al., 2002), and tennis (Mayer, Topka, Boose, Horstmann, & Dickhuth, 1999).

The mechanisms of dystonia are still unclear but are assumed to involve abnormalities within the basal ganglia, inhibitory and processing dysfunction of the sensorimotor system, and abnormal plasticity (Rosenkranz et al., 2008). Clinical signs of task-specific focal dystonia include the presence of a phasic dystonic movement and the following accompanying signs (Albanese & Lalli, 2009): First, an overflow that describes a coactivation of neighbouring muscles not normally involved. The occurrence of such cocontractions has been shown in some yips-affected golfers (Adler et al., 2005, 2011). Second, mirror dystonia defined as the appearance of the dystonic muscle activation in the affected limb even if the movement is performed with the opposite side. Third, effective sensory tricks that cause a temporal absence of symptoms due to a change in the sensory pathways through additional tactile input (Abbruzzese & Berardelli, 2003; Tinazzi, Rosso, & Fiaschi, 2003). For instance, symptoms are reduced when affected pianists play with gloves (Altenmüller & Jabusch, 2009). Besides clinical signs, specific rating scales are used to diagnose dystonia, such as Fahn's Arm Dystonia Disability Scale (ADDS; Burke et al., 1985). The genetic disposition of an affected patient can be assessed by the occurrence of dystonia-like symptoms in the family (Schmidt et al., 2009).

Reported yips prevalence rates are about 30 times higher than the 1% prevalence of musician's dystonia (Altenmüller, 2003) and up to 5,000 times higher than those of other forms of focal dystonias such as writer's cramp and facial dystonia (Fukuda, Kusumi, & Nakashima, 2006; Nutt, Muenter, Aronson, Kurland, & Melton, 1988), indicating that dystonia might only partially explain the yips.

### 1.2. Aetiology of the yips—Psychological origin

Yips-affected golfers reported that the symptoms often occur in pressure situations (McDaniel et al., 1989; Philippen & Lobinger, 2012; Smith et al., 2003). At the same time, performance anxiety is thought to play a major role in both triggering the yips and exacerbating its symptoms (McDaniel et al., 1989; Smith et al., 2000). The yips is therefore also associated with choking under pressure, which is defined as the "process, whereby the individual perceives their resources are insufficient to meet the demands of the situation, and concludes with a significant drop in performance—a choke" (Hill, Hanton, Fleming, & Matthews, 2009, p. 209). The yips can be seen as a severe form of choking (Masters, 1992) or at least exhibits "many characteristics similar to a severe form of choking" (Bawden