

Background

Golf is a precision game that requires a perfect balance between mobility and stability. Other than coordinated and complex body movements to generate power for the golf swing one also needs to have excellent control of fine movements of the hands, especially during chipping and putting.^{1,2} In addition to golfer's cramps or the 'yips', other movement disorders, such as tremors and dystonia, can also interfere with the game. The aim of this report is to systematically review the literature and our own experience with movement disorders in golfers. We describe four patients, all avid golfers, in whom the yips and various other movement disorders interfered with their ability to play golf, but the hyperkinesias did not significantly affect other motor activities. The yips and other forms of task-specific dystonia and tremor may be an important cause of disability among athletes, including golfers.

Discussion

The common theme to all these cases is that if they were not golfers they would not be troubled by their movement disorders. The notion of the yips representing a focal dystonia is also supported by our cases #1 and #3. The second case represents another task-specific disorder, namely cervical dystonia, which occurs only while playing golf. Finally, the fourth case is an example of a patient with very mild essential tremor that is markedly exacerbated during putting. In all these patients the movement disorder jeopardized their golf career, despite rehabilitation with physical therapy and various muscle relaxants and other medications, until their movement disorder was satisfactorily treated with botulinum toxin injections targeting the abnormally contracting muscles.

The overall frequency and burden of movement disorders in golfers is not known, although the yips are thought to be relatively common but often under-recognized condition among amateur and professional golfers.³ Based on questionnaire surveys of professional and amateur golfers, prevalence of the yips has been estimated to be 28% in one study⁴ and 52% in another.⁵ Several studies, including ours, suggest that yips may be a form of task-specific dystonia in at least a subset of golfers³. Diagnosis of these task-specific movement disorders is mostly based on symptoms described by affected individuals. A review by a movement disorder expert of a proper video recording of the abnormality will facilitate the diagnosis.

Although muscle relaxant (e.g., benzodiazepines, baclofen) and anticholinergic drugs have been used in the treatment of dystonia, focal hand dystonia, including task-specific dystonia, is best treated with botulinum toxin injection.^{6,7} We suggest that botulinum toxin injection be considered in the yips-affected individuals with dystonic type of symptoms that is significant enough to affect their game. The selection of the appropriate dosage and site of injection is obviously critical for a successful outcome. Only the overacting muscles must be targeted, minimizing spread of the biologic activity into those muscles required for playing whose strength must be preserved. Unfortunately, there is no published data yet to guide such therapy and it is not yet known whether such therapy is sufficiently successful to allow golfers to continue maintaining the standards of their game.

Conclusion

Any form of movement disorder can be devastating to the professional career of a golfer. Golfer's cramp or the yips may represent a form of task specific focal dystonia, at least in some players. Botulinum toxin should be considered in the yips-affected golfers with predominantly dystonic type of symptoms.

References

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Table 1. Summary of the clinical features and treatment outcome of the four cases of movement disorders in golfers seen in our movement disorder clinic

Case	Age	Sex	Clinical Manifestation	Duration of Symptoms	Exam Findings	Diagnosis	Treatment and Outcome
Case 1 	62	M	Left hand would "turn inward" while holding a golf club and putting. Also, occasionally jerked his head to the left	5 years	Pronation of the left hand when holding a golf club along with tightness of biceps and forearm flexors. Mild left torticollis with head tilt to the right	Task specific focal hand dystonia	Treated with botulinum toxin injections to pronator teres and pronator quadratus muscles with excellent response that allowed him to return to playing golf
Case 2 	80	M	Involuntary pulling of the head backwards, more pronounced when looking down, for example when putting	12 years	Retrocollis and laterocollis to the left along with torticollis to the right when holding a golf club	Cervical dystonia	Excellent response to botulinum toxin injections to both splenius, left scalenus and sternocleidomastoid
Case 3 	52	M	Right arm spasm and jerking while putting which evolved over 25 years to also cause involuntary head turning to the right when putting or making a swing	30 years	Moderate right torticollis with mild right laterocollis	Task specific focal hand dystonia and cervical dystonia	Treated with botulinum toxin injections to left sternocleidomastoid, right splenius and right scalenus with near complete control of his cervical dystonia except for jerky movement of the head to the right when trying to putt or make a swing
Case 4 	72	M	Mild hand tremors that was markedly exacerbated when holding a golf club and putting	9 months	Mild postural hand tremor that markedly worsened when he picked up a putter	Essential tremor	Marked improvement of the tremor with botulinum toxin injections into the biceps, flexor carpi radialis and ulnaris muscles

Poster available for download.

