

# The Choking Game and YouTube: A Dangerous Combination

Martha Linkletter, MD, Kevin Gordon, MD, MS, and Joe Dooley, MB

*Purpose.* To study postings of partial asphyxiation by adolescents on YouTube and to increase awareness of this dangerous activity as well as the value of YouTube as a research tool. *Methods.* Videos were searched on YouTube using many terms for recreational partial asphyxiation. Data were gathered on the participants and on the occurrence of hypoxic seizure. *Results.* Sixty-five videos of the asphyxiation game were identified. Most (90%) participants were male. A variety of techniques were used. Hypoxic seizures were witnessed in 55% of videos, but occurred in 88% of videos that

employed the “sleeper hold” technique. The videos were collectively viewed 173 550 times on YouTube. *Conclusions.* YouTube has enabled millions of young people to watch videos of the “choking game” and other dangerous activities. Seeing videos may normalize the behavior among adolescents. Increased awareness of this activity may prevent some youths from participating and potentially harming themselves or others.

**Keywords:** choking game; adolescent risk-taking; hypoxic seizure; self-strangulation; partial asphyxiation

Adolescence is often characterized by decisions and actions that may give rise to an increased incidence of negative health outcomes.<sup>1</sup> Unfortunately, parents and physicians are usually unaware of these decisions and resultant risky behaviors until an accident occurs, often with calamitous results. The “choking game” is an activity, mainly of adolescents, that has been the subject of interest in the popular media and recently increasing attention in the medical literature. This “game” involves obstructing the normal blood flow to the brain of a participant to achieve a brief euphoric state caused by cerebral hypoxia. This often results in loss of consciousness and sometimes an hypoxic seizure.<sup>2</sup> Death occasionally ensues.<sup>3</sup>

YouTube is a video-sharing Web site where users can upload, view, and share video clips online. It has 55 million unique users each month and more than 10 million monthly users younger than 18 years of age.<sup>4</sup> Although the “choking game” has been practiced

for decades,<sup>5</sup> the creation of YouTube in 2005 enabled millions of young people to watch videos of this activity, therefore both potentially propagating and normalizing the behavior. The use of YouTube as a method of identifying and tracking behavior has been largely untapped for medical research. A Medline search reveals only 9 articles involving YouTube and 3 that are relevant to public health.<sup>6-8</sup>

This article is focused on partial asphyxiation posted on YouTube. This activity has been reported to be the probable cause of at least 82 deaths of adolescents<sup>3</sup> and it is therefore important for pediatricians, other health professionals, and parents to be aware of this behavior. The frequency, pattern, risks, and warning signs of this choking game are described. YouTube also has significant potential relevance in determining, categorizing, describing, and tracking important health-affecting behaviors.

## Methods

This is a retrospective content analysis study. The data source was YouTube and data were collected by searching for videos on YouTube using the following terms: Choking game, Space Monkey, Flatliner, Breath Play, Space Cowboy, Funky Chicken, Suffocation

From the Department of Pediatrics, Faculty of Medicine, Dalhousie University, Halifax, Nova Scotia, Canada.

Address correspondence to: Martha Linkletter, Department of Pediatrics, Dalhousie University, 5850/5980 University Avenue, PO Box 9700, Halifax, Nova Scotia, Canada B3K 6R8; e-mail: marthalinkletter@yahoo.ca.

Roulette, Passout, Tingling, California High, Rising Sun, Sleeperhold, American Dream, and Airplaning. *Intento Desmayo*, the Spanish term for this activity, was also searched. Videos were identified and viewed between October 22 and November 2, 2007.

A data abstraction form was used to collect raw data from the videos. This data abstraction form was designed to comprehensively describe the activity and to detect patterns in demographics, techniques used, and visible evidence of cerebral anoxia. Data were collected from the videos on the poster's name, posting date, the reported age of the poster, and the poster's "favorite" videos. The number and gender of people present were documented as were the estimated ages of the participants and their ethnicity and clothing. Details were also gathered on the location of the activity, the technique used and the timing of each stage of the activity. Locations were considered public if the video was not filmed in a private residential environment. Public locations included schools, schoolyards, parks, and bus stations.

We noted the occurrence of a visible hypoxic seizure, defined for the purposes of this study as loss of consciousness associated with bilateral clonic or myoclonic activity and excluded more subtle physical manifestations of cerebral hypoxia such as unilateral clonic movements, automatisms, and abnormal eye movements. We recorded what happened on recovery of consciousness and the "game" technique, duration and age of participants associated with seizures. The quality of the video, the number of times it had been viewed, and the number of times it had been labeled as a "favorite" were recorded.

## Results

Sixty-five videos were identified between October 22 and November 2, 2007 from postings to YouTube. One video documented a group event with several participants concurrently choking themselves but the other 64 videos documented a single asphyxia event. In 10 instances (15%), only the participants, consisting of a subject and a choker, were present. In the remaining 55 videos (85%), observers also attended the event. In total, 110 participants/observers were identified in the 65 videos; most were male ( $n = 99$ ; 90%). The estimated age of participants was 12 to 18 years in 35 of the 65 videos (54%) and >18 years of age for the remaining 30 (46%). The activity usually took place in a private setting (53 videos,



Figure 1. The sleeper hold.

82%) with the remaining 12 undertaken in a public location. The majority of people included in the videos (participants and observers) were Caucasian ( $n = 79$ , 72%), 13 were of Asian descent (12%), 10 were of African descent (9%), 5 were of Latino ancestry (5%), 2 were of First Nations ancestry (2%), and 1 was East Indian (<1%).

The technique used varied considerably. The most common practice involved the subject squatting or bending, followed by standing rapidly. Then the choker applied pressure to the chest or neck until consciousness was lost. Some variant of this technique was employed in 27 videos (42%). Applying a "sleeper hold" was the second most common approach and was used in 24 cases (37%). Using this technique, the choker applied pressure to the neck of the subject by standing behind and wrapping the forearm around and compressing the neck (Figure 1). The next most common practice, which involved pressing on the chest or neck of a standing subject, was employed in 8 videos (12%). A further 2 videos (3%) used a variant of this technique but added hyperventilation by the subject. The final method ( $n = 4$ ; 6%) involved only the subject who squatted and hyperventilated then stood quickly and either performed a Valsalva maneuver or breath-holding. All the subjects in the videos had a resultant change in level of consciousness, either complete loss of consciousness or decrease in level of consciousness.

There was little difference in the techniques used by the 2 different age groups, although the

**Table 1.** Outcome With Various Techniques

Technique Used	Frequency (%)	Age (Years)		Percentage With Seizure	Percentage Without Seizure	Percentage Unclear if Seizure
		12-18	>18			
Squat/bend at waist, hyperventilate, stand quickly; choker applies pressure on neck/chest	42	13	14	41	48	11
Sleeper hold	37	11	13	88	8	4
Stand, $\pm$ hyperventilate; choker applies pressure on neck/chest	15	8	2	10	90	0
Squat, hyperventilate, stand quickly, Valsalva maneuver/hold breath	6	3	1	75	25	0

younger adolescents were more likely to use the simplest method of applying chest or neck pressure to a standing subject (7 cases vs 1 case in the older group).

Hypoxic seizures were witnessed in 36 videos (55%), there was no obvious seizure in 25 (38%), and in the remaining 4 videos it was impossible to ascertain if a seizure occurred as the video either ended prematurely or an observer blocked the camera's view. Seizures were most likely to occur in videos that employed the "sleeper hold" technique compared with all other methods ( $P < .001$ ). In these instances, a seizure was seen in 21 of 24 videos (88%), with only 2 videos not associated with seizure and 1 case where it was unknown. Among those who squatted, hyperventilated, and then stood quickly to perform a Valsalva maneuver or hold their breath, a seizure occurred in 3 of 4 videos. Seizures were less likely to follow the most common technique of squatting or bending followed by pressure to the chest or neck. Among this group, seizures occurred in 11 of 27 (41%) and in 3 it was impossible to tell. When pressure was applied to the chest or neck of a standing individual with no previous squatting, only 1 of 8 had a seizure and neither of the subjects who added hyperventilation to this method had a seizure. Both older and younger participants appeared equally proficient at provoking seizures (Table 1).

These are popular videos and collectively the 65 videos were viewed 173 550 times on YouTube. The average number of views per video was 2670. Three weeks after the collection of the data, the videos were reviewed and there had been a 61% increase in the total number of times the videos had been viewed. At this 3-week point, the videos had been viewed collectively 279 240 times with an average of 4296 views per video. It is clear that some

videos are more popular than others with one particular video being viewed 14 213 times initially and 27 507 times when reviewed 3 weeks later. This video involved several youth in a college residence common room participating in the choking game simultaneously. Two of the participants had hypoxic seizures. In total, the 65 videos were marked as a "favorite" a total of 721 times with an average of 11 times per video.

Although this appears to be primarily an activity of males, there were 11 female participants. Of these 11 girls, 8 were the subject, with 6 choked by a male and 2 by a female. The other 3 girls consisted of 1 girl who self-asphyxiated and the 2 who choked other girls. Among the 99 male participants, 42 were choked by other males, 7 self-asphyxiated, 44 choked another male, and 6 choked a female.

The participants who had lost consciousness during the activity regained consciousness and either laughed or expressed confusion about what had happened. On regaining consciousness, the young people who were not confused verbalized euphoric sensations including "that was the coolest thing I've ever done," "I felt wicked," "that was amazing," and "what a rush."

## Discussion

This study describes the demographics and techniques involved in the "choking game," a high-risk adolescent activity that is easily and often viewed on the video-sharing Web site YouTube. The choking game is not a new activity.<sup>5</sup> There are many different aliases and techniques used. All are potentially dangerous with reports of brain damage, serious physical injury from falls, sexual assault, and death resulting from

the activity. The heightened interest amongst young people has resulted in many adverse health outcomes, including death.<sup>3</sup> The more recent increase in lethality is due to the increasing use of ligatures and “playing” the game alone.<sup>9</sup> The February 15, 2008 *Morbidity and Mortality Weekly Report* of the Centers for Disease Control and Prevention (CDC) reported 82 probable choking-game deaths among youth aged 6 to 19 years between 1995 and 2007 in the United States.<sup>3</sup> The 2007 Ontario Student Drug Use and Health Survey (OSDUHS) found that 7% of grades 7 to 12 students in Ontario, Canada had participated in the choking game.<sup>10</sup> This is consistent with research conducted by Deevska et al,<sup>11</sup> who surveyed 2762 high school students in 2 schools in Ontario, Canada and 6 schools in Texas, United States. Sixty-eight percent of respondents had heard about the game, 45% knew somebody who had played it, and 6.6% had played the game personally.<sup>11</sup> The Dylan Blake Foundation, founded by a parent whose 11-year-old son died as a result of the choking game in 2005, reported at least 45 deaths and 5 serious injuries from the game in 2007 alone.<sup>12</sup> The Web site, Games Adolescents Shouldn’t Play (GASP), reported 86 deaths in 2007 and 444 deaths in total from the choking game.<sup>13</sup> YouTube contains memorial videos for 46 adolescents who have died while engaging in this activity between 2005 and 2007. The CDC report highlights the difficulty in ascertaining the true number of deaths due to this activity because of the lack of a traditional public health data set to collect mortality data on this practice.<sup>3</sup> In 2004, according to the most recent figures from the CDC, 879 young people between ages of 10 and 19 years committed suicide by suffocation, in comparison with 400 to 450 per year from the early 1980s through the mid-1990s.<sup>14</sup> This represents a staggering 235 673 years of potential life lost.<sup>15</sup> It is possible that some of these deaths may have been the result of deliberate suicide attempts, whereas others may have been the unwitting consequences of playing the choking game.

We found that this was mostly an activity of males. The CDC report also found that 86.6% of decedents were male. In contrast, the OSDUHS found no statistical difference between genders. We found that on YouTube, the choking game was usually observed by at least one nonparticipant and happened in a private setting. None of the videos viewed on YouTube showed a death, which is consistent

with the CDC report that 95.7% of deaths occurred while the participant was alone.<sup>3</sup>

There are many different techniques for this activity and the “sleeper hold” is most likely to elicit a hypoxic seizure. The association of some type of seizure activity is the rule rather than the exception in most syncope episodes.<sup>16</sup> Lempert et al,<sup>17</sup> using a combination of hyperventilation, orthostasis, and the Valsalva maneuver, induced syncope in 42 of 59 healthy control subjects and found that myoclonic activity was seen in 90% of cases, with multifocal jerking of the limbs being the predominant movement. Stephenson<sup>16</sup> suggested that some “out-of-body” experiences and hallucinations are also common in syncope, although they are usually reported only in response to direct questioning. The hallucinations frequently involve a sensation of passing into a dark tunnel or being hurtled through space to a bright light. Participants in the choking game describe a sense of euphoria associated with regaining consciousness. These sensations are perceived as pleasurable and promote the behavior. The motivation for subjecting oneself to this type of asphyxia likely involves a desire to experience these psychic sensations or “highs” and, indeed, this activity as been called the “good kid’s drug” as adolescents who may not use illicit substances play this game to achieve a “safe” high.<sup>18</sup> The activity seems consistent with other adolescent risk-taking behavior and it may, therefore, be a method to challenge authority, differentiate oneself from one’s parents, stretch personal limits, or fit in with a peer group.

Despite recent media attention, there remains a paucity of data in the medical literature about this activity. A PubMed search using the terms “self asphyxiation,” “choking game,” and also “suffocation roulette” yielded limited results. Six related articles were found through PubMed that involved self-asphyxiation. These articles report either single cases<sup>2,19,20</sup> or very small patient groups,<sup>21,22</sup> for example, 5 boys in 1 article.<sup>23</sup> There were a few articles about autoerotic asphyxiation, which is considered a “lethal paraphilia”<sup>24</sup> and is different from the choking game as the choking game is not associated with sexual overtones.

Our study introduces YouTube as a relevant research medium and adds to the medical literature on a topic where there is limited information. Despite having more than 10 million monthly users younger than 18 years of age, YouTube has been virtually



unused to investigate medically significant adolescent behaviors. It is a resource that can provide relevant information on adolescent behavior and trends. It is easy to access and use and provides ongoing tracking of number of times the videos are viewed as well as viewers' comments. The videos of the choking game are popular on YouTube and the number of times the videos were viewed increased over a 3-week period by 61%. There is, however, limited information about the person posting the video and the viewers of the videos, and it is very difficult to verify the authenticity of the videos.

Other dangerous activities have been identified using video-sharing Web sites. In 2006, one of the authors reported a high-risk adolescent behavior involving violence in amateur hockey teams' dressing rooms that was confirmed on video-sharing Web sites, including YouTube.<sup>25</sup> The subsequent media attention resulted in modifications to dressing room behavior and has hopefully discouraged some of this activity.

## Limitations

There is no causal link between YouTube allowing increased access to videos and any increase in participation and increase in morbidity and mortality. It is possible that YouTube has merely allowed access to a previously unobserved activity.

The definition of hypoxic seizure for this study may have been too narrow and may underrepresent the true effectiveness of the choking game of producing cerebral anoxia. It is sometimes difficult to determine the gender, ethnicity, and/or age of the participants while watching the videos on YouTube. The person who posts the video includes his or her age; however, it is impossible to verify this. Thus, the demographic data represent an assessment by the authors and is vulnerable to observer error.

Another limitation is the difficulty associated with undertaking a definitive search of the Internet for videos of this activity as there are many names for the choking game and likely many colloquial terms that are unknown. It is possible that the large number of terms applied to this activity reflects the determination of adolescents to prevent removal of the videos from Web sites. As well, the videos are often hidden among hundreds of similarly named videos. For example, one name for this activity is

"Space Monkey," which is also the name of a song by a popular band. Of the 1330 YouTube hits for "Space Monkey," the first video for this activity is video number 244.

The choking game represents an insidious threat as parents and physicians are often unaware of this dangerous activity. And of particular concern, according to Deevska et al,<sup>11</sup> 40% of young people perceived no risk associated with the activity. Warning signs that a young person may be playing asphyxial games include bruises or abrasions on the neck, wearing clothing that covers the neck, the presence of petechiae on the eyes, eyelids, face and/or neck, frequent headaches, and a noticeable increase in alone time in his or her room, as reported by Andrew.<sup>18</sup> It is important that physicians, parents, and teachers know the signs that may indicate participation in this dangerous activity. Besides adult awareness and vigilance, it is necessary to address this issue in association with other risk behaviors in adolescents. Prevention programs that fail to engage multiple adolescent risk activities are unlikely to be successful or to generate lasting effects.<sup>26</sup> Therefore, the choking game should be considered a common and real threat to the health and safety of youth and should be addressed as a part of a comprehensive risk-reduction message. Education for adolescents addressing the risks of this activity will help to dispel the common misconception that this is a harmless activity and provides a "safe" high. The Internet would be a possible mode of communicating this message to adolescents, although research has found that the most respected source of the preventative message was parents for pre-adolescents or a victim or victim's family for older adolescents.<sup>11</sup>

Awareness of this activity and its prevalence on YouTube among parents, teachers, and health care providers may allow for proactive education and discussions of its potential dangers and may therefore prevent some youth from participating and potentially harming themselves or others.

## References

1. Casey BJ, Getz S, Galvan A. The adolescent brain. *Dev Rev.* 2008;28:62-77.
2. Ullrich NJ, Bergin AM, Goodkin HP. "The choking game": self-induced hypoxia presenting as recurrent seizurelike events. *Epilepsy Behav.* 2008;12:486-488.

3. Centers for Disease Control. Unintentional strangulation deaths from the “choking game” among youths aged 6-19 years—United States, 1995-2007. *MMWR Morb Mortal Wkly Rep*. <http://www.cdc.gov/mmwr/preview/mmwrhtml/mm5706a1.htm>. Accessed February 18, 2008.
4. YouTube Fact Sheet. [http://www.youtube.com/t/fact\\_sheet](http://www.youtube.com/t/fact_sheet). Accessed December 12, 2007.
5. Howard P, Leathart GL, Dornhorst AC, Sharpey-Schafer EP. The “mess trick” and the “fainting lark”. *BMJ*. 1951; 2:382-384.
6. Keelan J, Pavri-Garcia V, Tomlinson G, Wilson K. YouTube as a source of information on immunization: a content analysis. *JAMA*. 2007;298:2482-2484.
7. Whitlock J, Lader W, Conterio K. The internet and self-injury: what psychotherapists should know. *J Clin Psychol*. 2007;63:1135-1143.
8. Freeman B, Chapman S. Is “YouTube” telling or selling you something? Tobacco content on the YouTube video-sharing website. *Tob Control*. 2007;16:207-210.
9. Andrew TA, Fallon KK. Asphyxial games in children and adolescents. *Am J Forensic Med Pathol*. 2007;28: 303-307.
10. Centre for Addiction and Mental Health. The mental health and well-being of Ontario students, 1991-2007: OSDUHS highlights. [http://www.camh.net/Research/Areas\\_of\\_research/Population\\_Life\\_Course\\_Studies/OSDUS/OSDUHS2007\\_MentalHealth\\_Highlights\\_Final.pdf](http://www.camh.net/Research/Areas_of_research/Population_Life_Course_Studies/OSDUS/OSDUHS2007_MentalHealth_Highlights_Final.pdf). Accessed May 14, 2008.
11. Deevska M, Gagnon F, Cannon WG, Thamboo A, Macnab AJ. An adolescent risk-taking behavior: “the choking game”. *Paediatr Child Health*. 2008;13 (suppl A):52.
12. The Dylan Blake Foundation. The choking game victims registry. <http://thedbfoundation.com/NationalDatabaseofaccidentalasphyxiavictims.html>. Accessed November 24, 2007.
13. Games adolescents shouldn’t play. Victims list. <http://www.stop-the-choking-game.com/en/stats-victims.asp>. Accessed November 24, 2007.
14. Centers for Disease Control and Prevention. WISQARS Injury Mortality Reports, 1999-2005. [http://webapp.cdc.gov/sasweb/ncipc/mortrate10\\_sy.html](http://webapp.cdc.gov/sasweb/ncipc/mortrate10_sy.html). Accessed November 26, 2007.
15. Centers for Disease Control and Prevention. WISQARS Years of Potential Life Lost (YPLL) Reports, 1999-2005. <http://webapp.cdc.gov/sasweb/ncipc/ypll10.html>. Accessed November 26, 2007.
16. Stephenson JBP. Fainting and syncope. In: Maria BL, ed. *Current Management in Child Neurology*. 3rd ed. Hamilton, Ontario, Canada: BC Decker; 2005:377-384.
17. Lempert T, Bauer M, Schmidt D. Syncope: a videometric analysis of 56 episodes of transient cerebral hypoxia. *Ann Neurol*. 1994;36:233-237.
18. Andrew TA. Child’s play: the deadly consequences of asphyxial “games.” <http://www.tweensandteensnews.com/archives/2006/jan/ChildPlay.php>. Accessed November 24, 2007.
19. Shlamovitz GZ, Assia A, Ben-Sira L, Rachmel A. “Suffocation roulette”: a case of recurrent syncope in an adolescent boy. *Ann Emerg Med*. 2003;41:223-226.
20. Ho LY, Abdelghani WM. Valsalva retinopathy associated with the choking game. *Semin Ophthalmol*. 2007;22: 63-65.
21. Senanayake MP, Chandraratne KA, de Silva TU, Weerasuriya DC. The “choking game”: self-strangulation with a belt and clothes rack. *Ceylon Med J*. 2006; 51:120.
22. Urkin J, Merrick J. The choking game or suffocation roulette in adolescence. *Int J Adolesc Med Health*. 2006;18:207-208.
23. Le D, Macnab AJ. Self strangulation by hanging from cloth towel dispensers in Canadian schools. *Inj Prev*. 2001;7:231-233.
24. Behrendt N, Modrig J. The lethal paraphiliac syndrome. Accidental autoerotic deaths in Denmark 1933-1990. *Am J Forensic Med Pathol*. 1995;16:232-237.
25. Gordon KE, Gay TL, McTimoney M. Helmet and gloves: a new piece of the concussion puzzle. *Clin J Sport Med*. 2006;16:195-198.
26. Jessor R. Risk behavior in adolescence: a psychosocial framework for understanding and action. *J Adolesc Health*. 1991;12:597-605.