



## An evaluation of the reliability of videos on youtube related to shoulder dislocation reduction methods

### Youtube'da omuz dislokasyonları videoları güvenilir mi?

Shoulder dislocation reliable on youtube?

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#### Öz

**Amaç:** Youtube da gösterilen omuz dislokasyonu ile ilgili redüksiyon manevralarının eğitim amacı ile kullanılabilirliğini belirlemeyi amaçladık. **Gereç ve Yöntem:** 536 adet videodan kriterlere göre 389 video dışlandı. En çok videoların omuz dislokasyonu ile ilgili olmaması nedeniyle dışlandığı görüldü. Dışlanmayan 147 video incelendi. **Bulgular:** Çalışmaya dahil edilen, 147 videodan; 70 videoyu hekim gibi konu ile ilgili kişilerin yüklediği görüldü. Görüntülenme sayısı 89149,19(min-max: 7-2593041) olduğu, ortanca sürenin 4,44 (min-max0,18-51,58) second olduğu, en çok 2015 yılında 41 videonun yüklendiği, 93 video da gerçek kişilerin kullanıldığı tespit edilmiştir. Videolar incelendiğinde 98 videonun doğru uygulandığı görülmüştür. Videoları uygulamanın doğru olup olmamasına göre değerlendirdiğimizde, görüntüleme sayısı ve videonun yüklendiği tarih ile videoların doğruluğu arasında istatistiksel anlamlı fark olduğu görülmüştür ( $p \leq 0,05$ ) yine videoyu kimin yüklediği ile doğruluğu arasında anlamlıya yakın fark bulunmuş olup ( $p:0,058$ ), kime uygulandığı ve video süresi ile doğruluğu arasında istatistiksel anlamlı bir farklılık tespit edilmemiştir (sırasıyla;  $p: 0,213- 0,625$ ). **Tartışma:** Çalışmamızda omuz dislokasyonu ile ilgili YouTube 'ye yüklenen videoların %100 doğru ve eğitici olmadığını, bu videolara bakarak öğrenmeye çalışan kişilerin yanlış manevralarla omuz dislokasyonu redüksiyonuna bağlı oluşacak komplikasyonlarla karşı karşıya kalabileceğini gördük. Tek manevra gösteren videoların değil de bir kaç manevra anlatılan videoların daha doğru sonuçları olduğunu belirledik.

#### Anahtar Kelimeler

Omuz Dislokasyonu; Redüksiyon Manevrası; You Tube Video; Dislokasyon

#### Abstract

**Aim:** We aimed to determine the availability of videos on YouTube related to shoulder dislocation reduction manoeuvres, which could be used for training. **Material and Method:** Of a total 536 videos, 389 were excluded, primarily because they were not related to shoulder dislocation. The remaining 147 videos were watched and evaluated. **Results:** Of the 147 videos evaluated in this study, 70 had been uploaded by relevant healthcare personnel such as doctors. The number of views was determined as mean 89149.19 (min-max: 7-2593041), the median time was 4.44 minutes (min-max 0.18-51.58 mins), the maximum number of video uploads was made with 41 videos in 2015, and in 93 videos real people were used. When the videos were watched, 98 videos were determined to show manoeuvres applied accurately. When the videos were evaluated according to the correct application, a statistically significant relationship was observed between the number of views, the upload date and the accuracy of the manoeuvre shown ( $p \leq 0,05$ ). A significant difference was also found between the accuracy of the video and who uploaded it ( $p:0,058$ ). No statistically significant relationship was determined between the lengths of the videos, to whom the manoeuvre was applied and accuracy. ( $p: 0,213- 0,625$  respectively). **Discussion:** The results of this study showed that videos related to shoulder dislocation uploaded to YouTube are not %100 accurate and instructive. Therefore, taking these videos as a guide in training may result in the application of incorrect manoeuvres causing some complications during the shoulder dislocation reduction. Videos which showed more than one manoeuvre were observed to be more accurate than those showing a single manoeuvre.

#### Keywords

Shoulder; Dislocation; Anterior Shoulder Dislocation; Reduction; Manoeuvre; Youtube Videos; Education; Joint Dislocation; Reduction; Joint Reduction; Social Network

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## Introduction

The most commonly encountered dislocations in the Emergency Department are shoulder dislocations [1,2,3]. Of all shoulder dislocations, 85%-90% are towards the anterior [4,5]. Shoulder dislocations are usually treated by orthopedic specialists, but when an orthopedic surgeon is not available, for example in rural areas or at certain times of the day, it can also be performed by the emergency doctors or auxiliary health personnel. During shoulder dislocation reduction, various complications may be encountered. The most common complications can be listed as proximal humerus fracture, axillary nerve and/or axillary artery injury, and brachial plexus injury [6]. The person who performs the reduction needs to be aware that these complications may occur and because of these complications, the instructions for shoulder reduction must be taken seriously.

The instructions related to shoulder dislocation reduction are given in the Faculties of Medicine. It is necessary to see how the theoretical information, which is an important step of the instructions, is applied and to consolidate the method thoroughly. Visual learning can be performed by learning from the orthopedic specialists and may be augmented by videos on social networks on the Internet.

YouTube is a social network where people can upload and share videos easily. As it is easy to access, this increases the prevalence, but the possibility of incorrect information contained on the videos may lead to the rapid spread of misinformation [7,8,9].

In this study, we watched 537 videos that can be accessed from a total of 3350 videos by searching "shoulder dislocation reduction" on "YouTube", which is a social network. It was aimed to determine the accuracy of videos related to reduction manoeuvres published on this search engine, which can be easily accessed and to determine whether or not the manoeuvre was performed correctly.

## Material and Method

This study comprised an assessment by 6 Orthopedics and Traumatology Specialists trained in shoulder dislocation, who watched videos about shoulder reduction manoeuvre installed on YouTube. To create a common language, the most common reduction manoeuvres were repeated before the study. Techniques such as Hippocrates [10], Kocher [3,11,12,20], Traction-counter traction [12], Milch technique [13,14,17], scapular manipulation techniques [15,16] and Stimson technique [17,18] were revised. The videos in which these techniques were not used, were assessed under the title of "others". First of all, by typing "shoulder dislocation reduction manoeuvre" on "https://www.youtube.com" search engine, the videos found were assessed according to conformity and sufficiency. During the assessment of the videos, situations considered as the exclusion criteria of the videos are shown in Table 1.

While watching the videos, the video uploaders (uploaders are official institutions, public institutions such as Universities related to this subject), professionals such as Doctors-Paramedics related to this subject, unknown uploaders, Agencies (News), Companies (companies advertising courses) were noted. Also, the duration of the video, the number of views, and to whom the manoeuvre was applied (applied to a person, to a model, or both) were analyzed.

Table 1. Video exclusion criteria

Video medical but not related to shoulder dislocation
No demonstration, only description
Language is not English
A news item, not related to training
Advertising content (courses advertised ...etc)
Entertainment or comedy videos
Including non-medical material
Repeated Videos

All the videos were analyzed by six independent Orthopedics and Traumatology Specialists to assess whether or not the applications in the videos were performed accurately. While watching the videos, when there was disagreement between the evaluators about the evaluation of the application, the video was re-evaluated by 2 Professors of Orthopedics. The compliance and accuracy of the videos were assessed by the previous transmissions [10,17].

The statistical analyses of all the data obtained from this study were made using "Statistical Package for Social Sciences for Windows 20" software. Quantitative variables were stated as the mean  $\pm$  standard deviation (SD) and categorical variables as number (n) and percentage (%). Frequency analysis was applied. While the comparisons among the groups were analyzed, conformity to a normal distribution was assessed. For the comparison of normally distributed data, the parametric Independent samples test was used, and where distribution was not normal, the non-parametric Mann-Whitney U-test was applied. A value of  $p \leq 0.05$  was considered statistically significant.

## Results

When "shoulder dislocation reduction manoeuvre" was searched on "You Tube" search engine, 3360 results were found. On every page, there were 20 uploaded videos and a total of 28 pages. One page could not be opened, so a total of 26 complete pages and 16 videos on the 27th page resulted in a total 536 videos which were watched (There was only permission to watch 536 of 3360 videos).

Following the exclusion criteria, a total of 389 videos (72.57%) were excluded, primarily because they were not related to shoulder dislocation, leaving 147 videos for evaluation (Table 2).

Of the 147 videos included for analysis, 42 were uploaded by an unknown uploader, 70 were uploaded by relevant health-care personnel such as doctors, and 23 were uploaded by of-

Table 2. Table 2. Reason for exclusion

	n	%
Video medical but not related to shoulder dislocation	129	24.06
No demonstration, only description	15	2.79
Language is not English	14	2.61
A news item, not related to training	34	6.34
Advertising content (courses advertised ...etc)	36	6.71
Entertainment or comedy videos	17	3.17
Including non-medical material	22	4.10
Repeated Videos	82	15.29
Not excluded	147	27.42
Total	536	100

ficial institutions. The number of views was mean 89149.19 (min-max: 7-2593041), the median duration was 4.44 (min-max, 0.18-51.58 mins), the most videos were uploaded in 2015 (n=41) and the least in 2006 (n=0) and in 93 videos, the manoeuvre was applied to people (Table 3). The data related to which manoeuvre or technique was used and how many times it was repeated in the video are shown in Table 3.

Table 3. Characteristics of the videos included in the analysis

Date	2005	2007	2008	2009	2010	2011	2012	2013	2014	2015
n	1	2	5	10	12	20	14	26	16	41
%	0.7	1.4	3.4	6.8	8.2	13.6	9.5	17.7	10.9	27.9
Uploader									n	%
Official institutions (such as AHA/ERC or University...)									23	15.6
Healthcare professional(s) (physician, emergency medical technician, nurse etc.)									70	47.6
Individual with unspecified credentials									42	28.6
Private agency									9	6.1
News program									3	2.1
Procedure applied to									n	%
Human									93	63.3
Model									16	10.9
Both									18	12.2
Described with pictures									20	13.6
Number of times the manoeuvre was shown									n	%
Hippocrates Manoeuvre									19	12.9
Kocher Manoeuvre									47	32
Traction-countertraction Manoeuvre									28	19
Milch Manoeuvre									29	19.7
Scapular Manipulation Manoeuvre									20	13.6
Stimmson Manoeuvre									10	6.8
Other Manoeuvres									29	19.7
Total									147	100

In 98 videos, the manoeuvre was determined to be applied accurately. When the videos were assessed according to the accurate application, a statistically significant relationship was determined between the number of views and the upload date and the accuracy of the video ( $p \leq 0.05$ ). A close to a statistically significant relationship was determined between the uploader of the video and accuracy of the manoeuvre applied ( $p: 0.058$ ). No statistically significant relationship was determined between the video duration and to whom it was applied and accuracy ( $p: 0.213$ ,  $p: 0.625$  respectively).

Of the watched videos, it was observed that few manoeuvres were shown. When the accuracy rate of the applied manoeuvres was evaluated separately, the Stimmson technique was applied accurately in 10 videos, and in the 24 videos labeled as 'other manoeuvres', the manoeuvre was observed to be applied accurately (82.75%). Of the other manoeuvres, the Cunningham technique was applied most, and the accuracy rate was higher (15 patients, 87.7% accuracy). The traction-counter traction manoeuvre was determined to be applied accurately in 22 videos (78.57%), and the scapular manipulation manoeuvre was applied accurately in 14 videos (70%). Although the Kocher manoeuvre was the numerically most applied technique (n:32), the accuracy rate was 68.08%, the Milch manoeuvre was applied

accurately in 19 videos (65.51%) and the most commonly known manoeuvre, the Hippocrates technique was applied accurately in only 15 videos (78%) (Table 4). More than one technique was used in 19 videos and in these videos all the techniques were applied accurately. (100%) (Table 4).

Table 4. Table 4. Accuracy rates of techniques

	n	%
Hippocrates Manoeuvre	15	78.9
Kocher Manoeuvre	32	62.08
Traction-countertraction Manoeuvre	22	78.57
Milch Manoeuvre	19	65.51
Scapular Manipulation Manoeuvre	14	70
Stimmson Manoeuvre	10	100
Other Manoeuvres	24	82.78
(Cunningham Manoeuvres)	15	87.7
Videos showing multiple Manoeuvres	19	100

## Discussion

The results of this study demonstrated that the uploaded videos on YouTube were not 100% accurate and instructive and therefore watching these videos, may result in incorrect manoeuvres of shoulder dislocation reduction causing complications. It was also seen that the videos in which a few manoeuvres were explained were more accurate than those demonstrating a single manoeuvre.

YouTube is a widely used social network where people upload videos and people can easily access these throughout the world. It has been used since 2005 and is so widespread that people access much information via a YouTube search. However, the widespread use may create problems regarding the accuracy and reliability of the videos. Many studies have been conducted on the reliability and accuracy of YouTube videos. For example, In a study by Yaylacı et al. assessing the accuracy and reliability of YouTube videos, cardiopulmonary resuscitation (CPR) and basic life support (BLS) were investigated, and it was reported that of 1994 videos uploaded, 1785 did not meet the study criteria, and only 209 videos conformed to the 2010 guidelines [9]. Thus it has been stated that few of these videos are suitable for training. In the current study, according to the data obtained in the same way, only 27.42% of all the available videos were about shoulder dislocation reduction manoeuvre. Thus, only one in four videos was meaningful for healthcare personnel to watch for training.

It was observed that from 2005 to 2015, the number of uploaded videos increased. Of the videos included in the study, 27.9% were uploaded in 2015, and 56.5% of all the videos included in the study had been uploaded in the last 3 years. As the number of published videos increased, so the accuracy of the videos was also observed to increase. This means that visual technology is used efficiently and has become increasingly common. Murugiah et al. evaluated YouTube videos by performing BLS and CPR scans [9]. No relationship was determined between the length of the video, to whom the procedure was applied, the number of downloads and the accuracy of the video and that a high number of views did not indicate accuracy. In the current study, no statistically significant relationship was de-

terminated between the duration of the video and to whom the manoeuvre was applied, but in contrast to the previous study, it was determined that the videos with a greater number of views were those which demonstrated the procedure more accurately ( $p \leq 0,05$ ).

In a study by Bezner et al., gastroschisis, diaphragmatic congenital hernia, pediatric inguinal hernias, and pectus excavatum were searched on YouTube [19]. The first 40 videos for each of the results in English were watched and scored, and it was reported that most of the videos were uploaded by medical professionals and these videos were more accurate than others. In the current study, when the uploaders of the videos were analyzed, although to a small degree, it was determined that the videos uploaded by official institutions and doctors were more reliable ( $p:0.058$ ), which can be considered an anticipated result.

When the methods were observed separately, the accuracy rate of the Stimson manoeuvre was 100%, and of other methods 82.5% (Cunningham manoeuvre 87.7%), Hippocrates manoeuvre 78.9%, traction-counter traction manoeuvre 78.57%, scapular manipulation manoeuvre 78.57%, Milch/Modified Milch manoeuvre 65.51%, Kocher manoeuvre 62.8%). Although the Kocher manoeuvre was the most applied manoeuvre, the applicability was deemed to be low. In all 19 videos where more than one manoeuvre was demonstrated, all the manoeuvres were seen to be described and performed accurately. Therefore, except the Stimson manoeuvre, watching the videos for training purposes may cause problems in terms of learning. Only those videos in which more than one manoeuvre is explained should be considered suitable for training.

### Conclusion

In the modern technological age, it is normal that the Internet is used as an educational tool. However, when used as a supplement to medical training, care must be taken to exclude material giving inaccurate information to thereby minimize errors in practice both for the patient and practitioner. If health-related videos were only published by relevant institutions or if the published videos of these institutions were prioritized, the problems would be reduced.

A significant limitation of this study was that when the YouTube search was made for "shoulder dislocation reduction manoeuvre", although there were 3360 results, we could only watch 536 of these videos. It could be considered that if a greater number of videos were watched, the results would be strengthened.

### Scientific Responsibility Statement

*The authors declare that they are responsible for the article's scientific content including study design, data collection, analysis and interpretation, writing, some of the main line, or all of the preparation and scientific review of the contents and approval of the final version of the article.*

### Animal and human rights statement

*All procedures performed in this study were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and*

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