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The use of online resources to explain difficult physiological concepts by medical students at a Middle Eastern university – shouldn't we do something about this?

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The use of online materials as learning supplements has escalated over the past 20 years (O'Malley *et al.*, 2019). This escalation has been accompanied by an increase in the online resources available for students. The educational rigor of these resources is unregulated, and it has been shown that a high percentage of students do not have the ability to judge the accuracy of information from the free videos provided online on the YouTube platform (Holroyd, 2020). Students in the medical program at Weill Cornell Medicine Qatar were surveyed to determine their use of online resources to accompany their study. The results of this survey were used to evaluate the physiological content of videos watched. Students in the 2nd and 3rd year of the 6-year Medical Program were provided with a link to the survey via their learning platform. The survey was voluntary and anonymous. Students were asked how they would review a physiology lecture on the pressure changes that occur during quiet breathing at rest. 70% referred to a recording of the lecture first, 12% went to online resources. When asked would they ever go online to review, over 85% of all students indicated they would, with 37% of these reporting using YouTube often or always. 96% of students who went online to review study materials used YouTube. Students were then asked which search terms they would use to review the physiology lecture described above, the most popular being "pressure changes" and "breathing". Further to this, students were asked how they would select videos to view from their search results. Students, on average, abandoned their search after scrolling past 10 videos and would not look at videos longer than 29 minutes. Interestingly, more than 50% of the students would be likely or extremely likely to scroll through a long video to find a relevant section. Using this survey data, the term "pressure changes breathing" was used to search YouTube. The first ten suitable videos were selected and evaluated on accuracy and content and scored on a scale of 0-30. The average score was 11.8 / 30 indicating a lack of quality and/or content. Further to this, several of the videos contained erroneous explanations that, if accepted as true by the student, could lead to a lack of understanding of basic physiological concepts. The results of this study indicate that students who are unable to understand physiological concepts after reviewing lectures are likely to go online and use resources such as YouTube as a study tool. Mimicking a student search in YouTube provided a group of videos that are of questionable quality, with the omission of important concepts and in some cases physiological explanations that are wrong. These results, along with the evidence that students are unable to judge the accuracy of physiology YouTube videos should be of a worry to all educators. One option would be to teach students how to critically assess the content of YouTube videos, however it could be argued that they do not have the physiological knowledge to do this. We suggest that students could be directed to specific online materials (either free or paid subscription) by their professor at the end of each lecture or as part of the syllabus given at the beginning of each course. A better option could be to have students prepare their own videos, under faculty supervision, and have videos available to all students at no cost. No matter what option is chosen, something needs to be done to ensure that students are accessing reputable physiological material online.

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O'Malley, Barry, Rae (2019) *Adv Physiol Educ* **43:** 383-391