

A Respiratory Health Report LEVEL 1

A

Dear Doctor,

My name is [redacted] and I am a respiratory technician. I've been gathering information and conducting experiments on smokers in your county. I tested ten patients, all male and all around the same age to ensure that the findings would be fairly comparable. Five of the patients selected are smokers, and five are not.

Other factors that might affect their vital lung capacity are: living in a household where others smoke, whether the patients usually walk or drive to where they are going, whether the patients live in the city or in the country. With the data that I have compiled it is quite clear that smokers have compromised their vital lung capacity due to smoking tobacco and some have admitted to chewing tobacco as well.

The non-smokers seem to have a more active lifestyle while the smokers are lazier and not into physical activities as often as non-smokers. In the future, the vital lung capacity of smoking patients will continue to drop as they continue smoking, and in the long run will probably have more serious health problems. My suggestion to help these teens is to get more information out to them letting them know what smoking is doing to them and the benefits of physical activities.

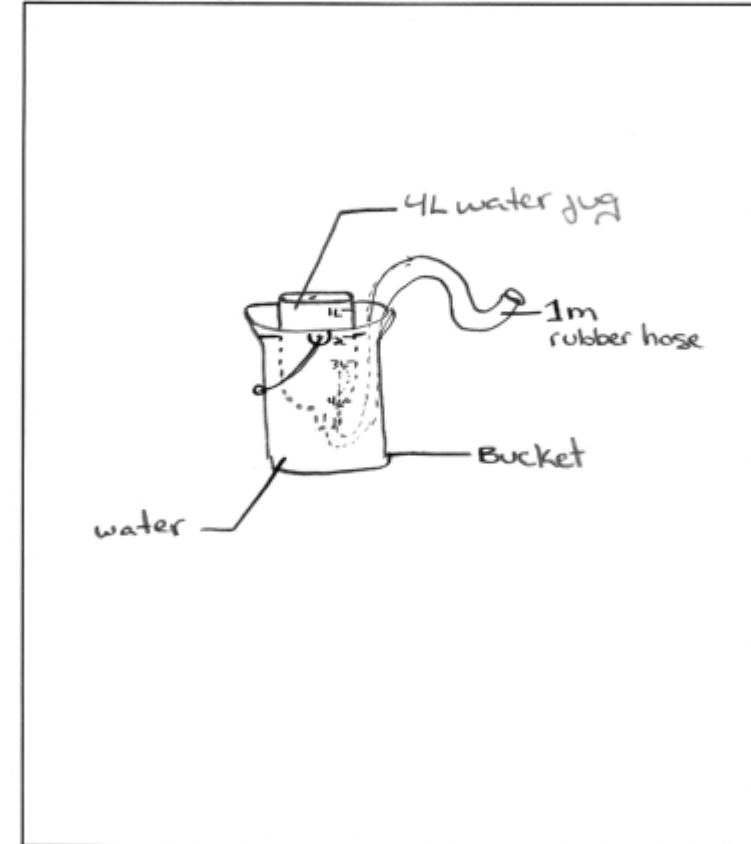
I sincerely appreciate you having me complete this job. I would really like to follow up on this research at a later date.

Sincerely,
[redacted]

B

Appendix A: Apparatus Diagram

Scientific Diagram of Apparatus



C

Introduction:

The purpose of the experiment is to find out the vital lung capacity of a subject, also putting into account the factors that might have contributed to their results. It is known that many things in our society can contribute to our own health and well being. Smoking is one of the top contributors to damaging respiratory health. So I will be attempting to find people vital lung capacity and what smoking might have done to it.

Materials:

- Regular 4L jug
- Good supply of water
- Bucket
- 1m rubber hose

Procedure:

Prepare the 4L jug by measuring out 1L of water and pour it into the jug marking it where it levels off, continue until it is marked to 4L's. Take the bucket put it in a sink. Fill the 4L jug with water and place hand over the opening and tip upside down into the bucket of water. Get the 1m of rubber hose and stick it into the 4L jug. You are now ready to test your patients vital lung capacity. Just get your patient to take in one deep breath and exhale out all they can, where the jug stops that is how many liters of air they blew out into the jug that forced the water out.

Safety First

When performing this experiment please make sure to mop up all access water that might spill to make sure this experiment is a safe and fun one.

Modifications:

I had to hold the jug up a little by hand to allow it to work properly.

D

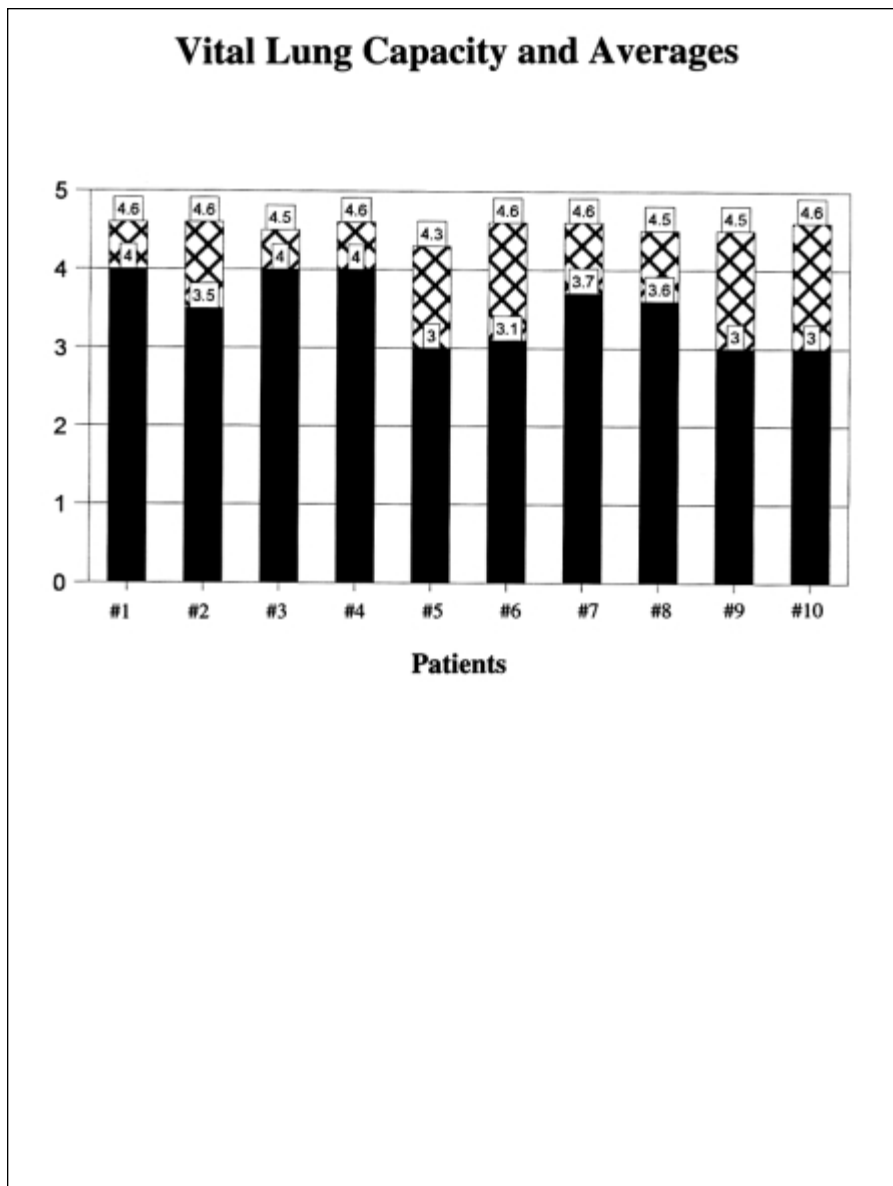
Observations

Patient Information

Patient	m/f	Smoke tobacco	Chew tobacco	Live in City	Physically active	Drive a car	Live near a mill	Live in a smoking household
1.	M	NO	NO	YES	NO	NO	NO	YES
2.	M	YES	YES	YES	YES	YES	NO	YES
3.	M	NO	NO	NO	YES	YES	NO	NO
4.	M	NO	NO	NO	YES	YES	NO	NO
5.	M	YES	YES	NO	NO	YES	NO	YES
6.	M	YES	YES	YES	NO	YES	NO	YES
7.	M	NO	NO	YES	YES	YES	NO	YES
8.	M	NO	NO	YES	NO	NO	YES	YES
9.	M	YES	NO	YES	YES	YES	NO	YES
10	M	YES	YES	YES	NO	YES	NO	YES

LEVEL 1

E



F

Bibliography

<http://health.discovery.com> "smoking" June 3 2002.

Galbraith, Don, et. al. Biology II. Toronto : McGraw-Hill Ryerson, 2001.

Teacher's Notes

Knowledge/Understanding

- The student demonstrates limited understanding of the concept of vital capacity in the diagram. Although the diagram is neat and labelled, it is too small. A scale of measurement is shown on the water jug, but the scale shows only whole numbers of litres. The volume of the bucket seems inadequate for the experiment.
- The student demonstrates limited understanding of the concept of vital capacity in the description. He or she understands the basic steps necessary to build and operate the apparatus (e.g., calibrate a jug, fill it with water, invert the jug into a larger container of water, and have a patient displace the water in the jug). However, the student gives some unclear instructions in unscientific language (e.g., “Just get your patient to take in one deep breath and exhale out all they can, where the jug stops that is how many liters of air they blew out into the jug that forced the water out”). The student’s modification is actually a description of how the existing apparatus is used effectively, not a modification to the design.

Inquiry

- The student analyses the collected data and research with limited effectiveness. He or she uses research on smoking to decide the focus of the data collection and concludes that “With the data that I have compiled it is quite clear that smokers have compromised their vital lung capacity due to smoking tobacco”. However, the student does not explain this conclusion and does not use research to support or refute it. The report includes no justification for the statement that “the vital lung capacity of smoking patients will continue to drop”.

Communication

- The student communicates the results in a table and graphs with limited effectiveness. The table is neat and organized, but it lacks the vital capacity data. Although some valid variables are present, the reasons for including others are unclear (e.g., “Chew tobacco”, “Drive a car”). The bar graph lacks clarity. The meanings of the two parts and two numbers for each bar are unexplained, and there are no units on the vertical axis.

- The student communicates written information and ideas with limited effectiveness. He or she clearly describes why particular test subjects were selected. However, the written parts of the report are very brief and are lacking in detail. Sentence structure is sometimes awkward, and there are several grammatical errors (e.g., “also putting into account”).

Making Connections

- The student produces suggestions that have limited practicality for the community. For teenagers who smoke, the only solution offered is to “get more information out to them”, but no steps are provided for implementing the suggestion. The student also advocates “physical activities”, but this suggestion appears to be based on the unsupported claim that smokers are “lazier and not into physical activities as often as non-smokers”.

Comments

This work is representative of a solid level-1 performance. The student demonstrates a limited degree of achievement in all four categories of knowledge and skills.

Next Steps

In order to improve his or her performance, the student needs to:

- review the water displacement method for measuring vital capacity;
- include a larger diagram in which all parts of the apparatus are appropriate;
- outline the procedure in step form and use scientific language more clearly;
- include the vital capacity data in the table;
- provide a detailed analysis of the data, including a comparison of the data for smokers and non-smokers;
- incorporate research more thoroughly;
- check the accuracy of information that is presented as an unsupported fact;
- produce suggestions that are more practical, and suggest ways of implementing them;
- edit and proofread the report to eliminate unclear statements and errors in grammar and spelling.