Respiratory Physiology. Paper details 1. Format (10 points): Cover sheet with your name, BIO 240L with lab section, name of the exercise, date that it is due, and name of your lab professor. The lab report should be computer processed and spell-checked, double-spaced, printed font size 11 or 12, with one-inch margins. Skip a space between sections and include the section titles (e.g. Introduction, Results, etc). \*Be sure to read the lab report in its entirety before submitting. Points will be deducted for sloppy lab reports with multiple spelling errors, sentences that are not clear, disagreement between subject and verb, incomplete sentences, etc. 2. Introduction (20 points): 2 pages maximum This section should provide an overview of the respiratory system and how it works. Sources of information should be cited within the text. If each sentence has information from a different source/reference, place the reference in parentheses after each sentence. If an entire paragraph is from the same source, cite the source after the first sentence and then at the end of the paragraph. Explain how the respiratory system works by describing: i. The components and functions of each component of the respiratory system ii. The path air follows through the respiratory system when you inhale and when you exhale iii. Whether the air is oxygenated vs. deoxygenated and whether it has low vs. high levels of carbon dioxide when you inhale and when you exhale iv. The action of your intercostal muscles, their effects on your ribcage and the size of your thoracic cavity when you inhale and when you exhale. v. The effect on pressure within your thoracic cavity when it increases in size and when it decreases in size and whether this promotes inhalation or exhalation (and the effect on the lung tissue – when does it expand and when does it contract?). vi. The components of a standard spirogram including descriptions/definitions of each volume and capacity and how they relate to each other. vii. Answer the following question: Did the vital capacity change depending on your level of activity? Should the vital capacity have changed depending on your level of activity? Explain both responses. viii. Labeled diagram of a spirogram. The source of the image must be placed below the image. For example, if the image is retrieved from a Web site, you should type: Retrieved on [date], 2021, from http://www... For this section, you may use your hand-outs, lecture textbook, or other sources of information. Make sure you properly reference any source that you use. Purpose statement: What was the point of the lab exercise? What did we hope to gather information about? 3. Materials and Methods (10 points): 1 page maximum List all materials used for this lab. In the methods section, you should describe what you did (in paragraph format). This section should be in the past tense. Include enough detail so that if someone reads your lab report they would be able to replicate the lab. Include the placement of electrodes, the recording conditions (lying down, seated, etc.) and the duration of each recording. • DO NOT use first person: “I” or “We” • DO NOT use direct quotes from your sources 4. Results (30 points): 2 pages maximum; 2 column charts: Your results should present your data in column charts comparing parameters under all the breathing conditions tested (before and after exercise) and with each respiratory value measured [tidal volume (TV), expiratory reserve volume (ERV), inspiratory reserve volume (IRV), vital capacity (VC)]. The column charts should show comparisons of the mean values for each recording condition, NOT the data from each trial. Each graph and table should have a number and a title. Units of measure should also be included. (e.g., Graph 1: Comparison of Respiratory Volumes and Capacities at Rest and After Exercise (L)). Each graph and table should also have a caption below summarizing the result illustrated. One to three sentences should be sufficient but the point is to describe the result. Sentences such as “This graph shows the mean values of the tidal volume (TV) recording while the subject was at rest” are not acceptable. Rather, describe the result: “The subject had the lowest tidal volume (0.5 L) while at rest and the highest (2.5) immediately after exercise…”. Do NOT interpret your results in this section; that’s what the Discussion is for! 5. Discussion (20 points): 2 pages maximum The purpose of this section is to discuss the meaning or significance of the results especially in light of what is already known about the respiratory system and how it should function under different circumstances (e.g., different levels of exertion). Explain what happened to the different volumes and capacities in each condition ( at rest and after exercise). Were there any changes from one condition to the next? Were they the changes you expected? Are your results consistent or inconsistent with the expected results? Why did you expect a given result? It is in this section that you should interpret and speculate on the meaning of your results, especially given what you now know about how the respiratory system functions and the relationship between the different volumes and capacities. Be sure to cite corroborating evidence from your research. In this section, you should also discuss any difficulties/possible sources of error in performing the lab exercise which might have resulted in an ‘abnormal’ reading. Also include any additional factors that might have affected the recording including having a cold or asthma. 6. References\*\* (10 points): In addition to citing your sources within the lab report, list in alphabetical order by the author’s last name, all written material you used for this lab report. This section should be after the discussion. Use may use any format for citing your references (APA, CSE, etc.) as long as it is the same format throughout the report. NOTE: You are required to use additional sources of information – not just the lab handout.​​