This study aims to measure the lung function between 1st year sports therapy univ...

Education, University

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Introduction

This study aims to measure the lung function between 1st year sports therapy university students. This is appropriate to assess the level of severity of lung diseases such as asthma or cystic fibrosis and identify characteristics when diagnosing other participants. The study tests both static and dynamic lung volumes by measuring the volume of air expired from the lungs as well as the power of which it is expired. These are measured by a Spirometer machine, which calculates the volume of the lungs forced vital capacity (FVC), which is the maximum volume of air, expired after one maximum inspiration. Also forced expiratory volume (FEV1) showing the percentage of FVC expelled over the time in seconds of which the measurement is made. Lastly by calculating the final measurement of the forced expiratory volume to forced vital capacity ratio (FEV1/FVC) we can see the expiatory power to resistance of airflow within the lungs, allowing to show signs of the lungs percentage ability to forcibly expel air within the lungs.

This study could be seen to look into the physical fitness and ability of the lungs and other pulmonary factors to perform. With the use of the participants we can see the different levels of fitness between subjects and assess other factors, which could contribute to the outcome of the study. The test itself can be described as a random sampling test, subjects were previously assigned you groups that vary in gender and physical fitness. It is conducted by subjects in a seated position on a bench firstly testing FVC values by forcibly expelling as much air as possible, in one rapid expiration after one inspiration into the spirometer. Secondly by forcibly expelling as much air as possible for as long as possible to calculate the FEV1 value. Finally to show an entire resistance to airflow a FEV1/FVC can be calculated. Averages will be taken of each group and higher values can be seen to show a more powerful and resourceful lung function between Subjects. Other variables and factors considered within the tests are the subject’s height, gender and illnesses or conditions to show any outliers or considerable variances between groups. With these in mind the results will be assessed to show the level of performance within the groups and how these could be affected.

- Results
- SUBJECT
- Group
- INITIALS
- Gender

Discussion

After conducting the study there is much to discuss. Raw data (figure 1) from the tests indicate that some participant did not fill in the required data needed. This can be down to competence of conducting the procedure or observer error asking the question whether this is entirely valid. Furthermore a correct procedure must be outlined and overlooked so that each group performs the same method. Some subjects may have stood up and some may have sat down, possibly causing the results to differ. (Townsend, 1984; Allen et al. 1985) have shown that FVC is affected by body position, 1-2% lower by sitting rather than standing and 7-8% lower supine than to standing.

Taking these into account the results could not be described as entirely valid or reliable. As the study looks into identifying and discussing results between student groups we can see how they performed compared to normal values. The subjects appear to deliver between the normal values of 4-5L in males and 3-4L in females for FVC (figure 7. 0) this appears to show a significant result meaning males have a higher FVC than females with group C performing the best on average (figure 2. 4). (Figure 4. 0) shows that the statistic of FVC between the groups has a significance of . 007 meaning there is a small difference between them however (figure 4. 1) states that the difference is not significant. This essentially shows that although there is an apparent difference between the groups this can be seen as not having an effect on the study. (Figure 3. 0) shows that Group A has the highest average FEV1 meaning they have the most power of expiration of air. (Figures 5. 0 –

5. 1) state that there is no significant difference between the values of all the groups with each subject showing results near to the value of 85% this could be seen to have a normal result.

With such an apparent loosely based study it is important to consider certain group or subject variances, which can effect the study. Identifying these can create a more reliable and valid study as well as identify further ideas for research. The FVC method is highly effort dependant and has poor reliability as it is measured upon volume of air as well as a less reliable observed rate of exertion. Certain people may not want to exert the entire force needed due toanxietyor other factors such as illness or conditions. (Eston. R. et al. 2009) shows us that although there is no difference between FVC values for healthy people and asthmatics there is a considerable change in dynamic FEV1 values with asthmatics having a much larger decrease in performance from the FVC value. This could be mainly attributed to the fact that asthmatics have difficulty breathing out and therefore exerting a larger force of air from their lungs for a long time could be harder. With this in mind it could be advised that a screening process becomes more prominent before the test it taken these can identify, illnesses, conditions, injuries and even a physical activity questionnaire to see whether more active subject have better results. Any hidden values could the research and discovering more about the subject can help to answer more questions. Height comparisons (figure 6. 0) show there is no relationship between the subjects height and FVC value, however it is hard to follow this when it not clear of whether the sitting or standing method has been used. (Ferris et al 1971; Cotes 1979)

show that sitting height provides less variability in lung function than standing height, this could show that (figure 6. 0) with its varied results show that subjects were standing. (Becklake 1968) explains that there are many other factors that effect lung function results, some of which are not identified within this study. Gender amounts to a change in 30%, body size 22%, age 8% and ethnicity 10% most of which can be identified through a survey.

This study may be described as having no significant purpose without the inclusion of further factors detailed by (Becklake 1968). With these included it could be seen to show a purpose and significance with vision to elaborate upon affecting factors however currently this shows a significant variety of results between subject groups.

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