INTRODUCTION

- Asthma is one of the most commonly diagnosed conditions in the United States, affecting 25 million individuals (NHBLI, 2018).
- 90% of individuals with asthma will experience exercise-induced bronchoconstriction while performing physical activity (AAFA, 2015).
- In one study, 70% of the participants in the asthma group were classified as "predominantly sedentary." (Hul et al., 2016)
- In one survey, 20% of parents of children with asthma stated they believed exercise is dangerous for their child (Lang, Buti, Duggan, and Serewit, 2004).

OBJECTIVES

- To determine if physical activity differs between those with or without asthma.
- To determine if fitness or physical activity is associated with FVC/FEV1 measures.

HYPOTHESES

- Participants with asthma will have lower levels of physical activity compared to those without the condition.
- Physical activity will have a correlation with FVC/FEV1 measures.

METHODS

- Participants
  - University of Arkansas students ages 18-25 recruited through EIM.
  - Completed the International Physical Activity Questionnaire, as well as a standardized fitness assessment.
- Measures
  - Participants self-reported data regarding physical activity on the survey.
  - Participants took a standardized spirometry test.
  - Asked to deeply inhale, then exhale as long as they possibly could.
  - This test provided our FVC/FEV1 data.
  - Actigraph GT9x accelerometers worn on the non-dominant wrist for one week to track physical activity.
  - Data used to calculate counts/minute and steps/day.
- Physical activity between groups compared using Wilcoxon Rank Sum test.
- Associations between fitness and physical activity made using Spearman Correlations.

RESULTS

Table 1: Comparing physical activity from IPAQ between those with and without asthma, mean (SD)

<table>
<thead>
<tr>
<th></th>
<th>No Asthma (n=259)</th>
<th>Asthma (n=140)</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vigorous mins/day</td>
<td>44.8 (68.5)</td>
<td>36.8 (65.5)</td>
<td>.068</td>
</tr>
<tr>
<td>Moderate mins/day</td>
<td>96.6 (114.0)</td>
<td>99.4 (131.6)</td>
<td>.464</td>
</tr>
<tr>
<td>Walking mins/day</td>
<td>100.0 (104.6)</td>
<td>93.5 (116.3)</td>
<td>.164</td>
</tr>
<tr>
<td>Total METMIN/week</td>
<td>4850.3 (4917.4)</td>
<td>4513.0 (6037.7)</td>
<td>.059</td>
</tr>
</tbody>
</table>

Table 2: Description of participants who completed fitness assessment, mean (SD)

<table>
<thead>
<tr>
<th></th>
<th>Males (n=14)</th>
<th>Females (n=14)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (years)</td>
<td>21.4 (1.1)</td>
<td>21.1 (0.9)</td>
</tr>
<tr>
<td>VO2max (mL/kg/min)</td>
<td>42.7 (6.8)</td>
<td>36.0 (4.3)</td>
</tr>
<tr>
<td>FVC (L)</td>
<td>4.51 (0.57)</td>
<td>3.24 (0.83)</td>
</tr>
<tr>
<td>FEV1 (L)</td>
<td>3.56 (0.86)</td>
<td>2.71 (0.76)</td>
</tr>
<tr>
<td>Counts/Min</td>
<td>2080.4 (457.1)</td>
<td>1922.1 (388.9)</td>
</tr>
<tr>
<td>Steps/Day</td>
<td>11944.5 (3635.3)</td>
<td>11846.1 (2359.0)</td>
</tr>
</tbody>
</table>

Table 3: Spearman correlation associations between spirometry and fitness/physical activity

<table>
<thead>
<tr>
<th></th>
<th>FVC</th>
<th>FEV1</th>
</tr>
</thead>
<tbody>
<tr>
<td>VO2max</td>
<td>.35</td>
<td>.10</td>
</tr>
<tr>
<td>Accelerometer counts per min</td>
<td>.08</td>
<td>.73</td>
</tr>
<tr>
<td>Accelerometer steps per day</td>
<td>.18</td>
<td>.43</td>
</tr>
</tbody>
</table>

DISCUSSION

- No statistically significant difference in physical activity levels between participants with asthma and those without.
- Fitness and physical activity has no association with spirometry.
- Contradicts Netherlands study that found participants with asthma to be significantly less active than others (Hut et al., 2016).
- Study was limited by small number of fitness assessment participants with asthma.
- Future studies could include larger sample size and potentially a larger age range, as this study focused on young adults.

CONCLUSIONS

- This study suggests that physical activity levels do not differ between participants with asthma and those without.
- The study suggests there is no association between fitness/physical activity and FVC/FEV1.

ACKNOWLEDGEMENTS

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REFERENCES

- Hul et al. (2016) Decreased physical activity in adults with bronchial asthma. Respiratory Medicine. 114, 72-77

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