Pulmonary hypertension (PH) is a complex disease resulting in severe limitation to exercise performance because of dyspnea and fatigue. The six-minute walk test (6MWT) is a commonly used exercise test in the evaluation of patients with PH. Despite the use of the absolute distance covered, recently there has been a focus on the derived parameters from the 6MWT. The six-minute walk test (6MWW) has been studied in heart failure, while the distance saturation product (DSP) has been studied in other chronic airway diseases. However, its relevance in PH has yet to be explored.

**OBJECTIVE**

To assess the derived parameters of the 6MWT in PH and to determine the correlation between these derived measures and other parameters like 6MWD, quality of life, right ventricular systolic pressure and tricuspid annular plane systolic excursion.

**METHODOLOGY**

Study design: Baseline data analysis from a prospective randomized controlled trial

Study setting: Cardiac Rehabilitation Clinic, Kasturba Hospital & Department of Cardiology, Kasturba Hospital

Study duration: April 2012 – February 2016

**INCLUSION CRITERIA**

- Diagnosis of PH
- Stable on medical therapy
- WHO functional class II-IV
- Age 18-70 years
- Either gender
- Tricuspid regurgitant velocity > 3 m/s ± RV dysfunction

**EXCLUSION CRITERIA**

- Acute myocardial infarction
- Acute pulmonary embolism
- Unstable arrhythmia
- Unstable PH
- Acute renal failure
- Severe neurological or orthopaedic problems limiting rehabilitation
- Patients on long term oxygen therapy and those receiving continuous positive airway pressure

**RESULTS**

<table>
<thead>
<tr>
<th>Baseline Variables</th>
<th>Value (n=84)</th>
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<tbody>
<tr>
<td>Age in years</td>
<td>49.39 ± 14.78</td>
</tr>
<tr>
<td>Gender, Male/Female (n%)</td>
<td>51 (60.7)/33 (39.3)</td>
</tr>
<tr>
<td>Height (m)</td>
<td>151.84 ± 12.6</td>
</tr>
<tr>
<td>Weight (Kg)</td>
<td>53.18 ± 14.5</td>
</tr>
<tr>
<td>RVSP</td>
<td>82.52 ± 26.53</td>
</tr>
<tr>
<td>TAPSE</td>
<td>14.16 ± 2.74</td>
</tr>
<tr>
<td>6MWD</td>
<td>270.39 ± 92.11</td>
</tr>
</tbody>
</table>

**Clinical profile**

- WHO group 1 / 2 / 3 / 4 / 5 (n%) | Value (n=84) |
- Functional class I / II / III / IV, (n%) | Value (n=84) |

**Derived parameters of the 6MWT**

- Six minute walk work (m.Kg) | 14187.03 ± 5942.42 |
- Distance saturation product (mKg) | 244.68 ± 86.95 |
- Percentage predicted distance (%) | 49.53 ± 17.69 |

**DISCUSSION**

This study reports the various derived parameters from the 6MWT in PH. 6MWW and DSP show trends of worsening with worsening functional class. This trend was not observed across the various etiological groups of PH. The 6MWW seen to be lower than a group of heart failure patients irrespective of receiving in-patient cardiac rehabilitation. This suggests a greater limitation in PH than those with heart failure. DSP seen in this group was lower than those observed in idiopathic pulmonary fibrosis and in COPD which suggests greater degree of ventilation perfusion abnormalities in PH. Better correlations with physical component of quality of life on the SF36 were seen with the DSP than the 6MWW suggesting that the DSP maybe an important measurement in PH. Percentage predicted distances were much lower than the population norm of Indians. The multifactorial contribution to exercise limitation in PH would grossly limit exercise performance. Thus, there remains a strong rationale for exercise prescription in this group.

**CONCLUSION**

Derivatives of the 6MWD are useful in providing information on various aspects of function. Correlations are observed between the various derived parameters and between them and quality of life. They are however not related to indices of right heart function. More studies are needed to ascertain their prognostic relevance in PH.

**REFERENCES**

5. Dhahale N, Tiwana J, Medakalam A. Distance-Saturation Product, And Distance-Weight-Saturation Product As Predictors Of COPD Severity And Pulmonary Prognostic Risk. Am J Respir Crit Care Med 2011;183:A4594