dry power inhalers (DPDs). Here, we present the comparison of the peak inspiratory flow (PIF) rates achieved by COPD patients, with varying degrees of airflow limitation, through three types of DPDs (Breezhaler®, Ellipta® and HandiHaler®). We also assessed the effect of severity of airflow limitation on PIF rates.  

**Methods** This randomised, open-label, multicentre and cross-over study recruited patients with moderate-to-severe airflow limitation (GOLD 2014) aged ≥40 years with a smoking history of ≥10 pack years. No active drug or placebo was administered during the study. After training the patients on correct use, inhalation flow profiles of patients were recorded using pressure-tapped inhalers attached to a pressure transducer. For each patient, the inhalation profile with the highest PIF rate, out of three replicate inhalations per device, was selected for analysis. The primary analysis was based on the per-protocol set comprising 93 patients who completed all three inhalations per device. A paired t-test was performed to compare PIF means between each combination of devices.

**Results** In total, 97 COPD patients were randomised, of whom 96 completed the study and 93 patients (per-protocol set) were included in the analysis. The highest mean PIF rate (L/min ± SE) was observed with the Breezhaler® (107.5 ± 2.4), followed by the Ellipta® (80.0 ± 2.2) and the HandiHaler® (53.6 ± 2.1), in all patients (patients with moderate-to-severe airflow limitation). The mean PIF rate (L/min) achieved via the Breezhaler® was higher vs the Ellipta® (mean difference Δ = 27.7; p < 0.0001) and also vs the HandiHaler® (Δ = 53.9; p < 0.0001). Also, when assessed by severity of airflow limitation, the Breezhaler® device exhibited significantly higher PIF rate vs the Ellipta® and vs the HandiHaler® (Table).

**Conclusions** COPD patients with varying degree of airflow limitation (moderate-to-severe COPD) achieved the highest PIF rates via the Breezhaler® compared with the Ellipta® or the HandiHaler® inhaler.