

**Physical activity in adults with severe asthma on-treatment with biological therapies:
a one-year retrospective study**

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Background: Asthma is a complex condition that affects over 350-million people worldwide. It is estimated that up to 10% of adults and 2.5% of children have severe disease which is associated with activity limitation and impaired quality of life. Biological therapies have revolutionised the management of severe asthma (SA); however, it remains to be determined whether this translates into improvements in physical activity (PA) status. **Method:** One-year retrospective study. Inclusion: adults ≥ 18 years with SA on-active treatment with a form of biological therapy (GINA step 5). Two matched sub-groups were also recruited: (i) mild asthma (GINA step 1-2); (ii) healthy controls. Step-based PA was quantified via a smartphone in-built pedometer. **Results:** Sixty participants ($n = 20$ SA; $n = 20$ mild asthma; $n = 20$ healthy controls) (62% female) completed the study (49 ± 15 years; BMI: 28 ± 4 kg·m²). In the SA cohort, the FEV₁ was 2.27 ± 0.88 (74.3 ± 22.7 %pred) with all receiving treatment for >2 years (mepolizumab [65%]; omalizumab [20%]; benralizumab [10%]; dupilumab [5%]). The annual daily step-count was less in adults with SA (4698 ± 1927) vs. mild asthma (7239 ± 1815) ($P = 0.009$) and healthy controls (8252 ± 2115) ($P = 0.001$). No difference in PA was observed between those with mild asthma and healthy controls ($P > 0.05$). This pattern was consistent when stratifying data according to average monthly steps ($P < 0.05$). **Conclusion:** Despite long-term treatment with biological therapies, PA remains significantly

lower in adults with SA. The development of personalised evidence-based interventions to promote PA in people with SA remains an important priority for future research.