Abstract P49 Figure 1 Graph showing average QFracture scores for patients within the cohort, plotted against: QFracture scores with no risk factors and asthma as only risk factor

significant proportion of patients are treated with high-dose ICS; further research is required to evaluate the effect of ICS use on bone health. If this is found to be significant, it should be incorporated in future risk calculators. Until then, a high-suspicion clinical approach for osteoporosis development in patients with severe asthma should be adopted in primary and tertiary care.

REFERENCE

1. Chaltisios C V, Shaw DE, McKeever TM. Risk of osteoporosis and fragility fractures in asthma due to oral and inhaled corticosteroids: two population-based nested case-control studies. *Thorax*. 2021;**76**(1):21–8.

P50 USE OF ACCELEROMETERS TO COMPARE PHYSICAL ACTIVITY LEVELS IN PARTICIPANTS WITH ASTHMA GROUPED BY BODY MASS INDEX AND ASTHMA SEVERITY

¹HC Ricketts, ¹R Chaudhuri, ²F Steffensen, ³JS Baker, ⁴DS Buchan, ²DC Cowan. ¹University of Glasgow, Glasgow, UK; ²Glasgow Royal Infirmary, Glasgow, UK; ³Hong Kong Baptist University, Kowloon Tong, Hong Kong; ⁴University of the West of Scotland, Hamilton, UK

10.1136/thorax-2021-BTSAbstracts.160

Background Patients with asthma may find it impacts their ability to be physically active. Physical activity (PA) has been demonstrated to be lower in asthmatics compared to healthy controls. Obesity is commonly linked with difficult-to-control asthma and can worsen outcomes. At least 150 minutes of moderate physical activity (PA) per week is recommended for all adults by the World Health Organisation. We aimed to compare PA levels in patients with difficult-to-control asthma and body mass index (BMI) ≥ 25 kg/m² (DOW group) and two control groups with mild-moderate asthma, one with BMI < 25 kg/m² (MHW group) and one with BMI ≥ 25 kg/m² (MOW group).

Methods This cross-sectional study used 7-day recordings from wrist-worn accelerometers to compare PA between groups. We recorded inactive time, light (LPA) and moderate-vigorous physical activity (MVPA). We also measured novel metrics:

intensity gradient (IG) reflecting PA intensity, and average acceleration (AA) reflecting PA volume. Parameters were compared across groups using ANOVA testing for normally distributed data and Kruskal-Wallis for skewed data. Correlation analysis explored associations between PA parameters and asthma measures. As AA was most closely correlated with asthma measures, we compared the highest and lowest AA quartiles using unpaired t and Mann-Whitney U tests, depending on normality.

Results 75 participants were recruited, 25 per group. Inactive time was significantly higher ($p < 0.001$), and LPA ($p = 0.007$), MVPA ($p < 0.001$), IG ($p < 0.001$) and AA ($p < 0.001$) all significantly lower in DOW group compared to MHW and MOW groups, even after adjusting for age and BMI. For AA, notable correlations included beclometasone dipropionate-equivalent dose of inhaled corticosteroid ($r = -0.591$, $p < 0.001$), asthma-related quality of life score ($r = 0.531$, $p < 0.001$) and six-minute walk distance ($r = 0.719$, $p < 0.001$). Highest and lowest AA quartiles revealed significant differences in 14 of 21 asthma outcomes including the above, and pre-bronchodilator forced expiratory volume in 1 second, 6-point asthma control questionnaire and BMI.

Conclusions Participants with difficult-to-control asthma who were overweight/obese performed less physical activity, and activity of reduced intensity and volume compared to

Abstract P50 Table 1

	MHW (mild-moderate healthy weight)	MOW (mild-moderate overweight)	DOW (Difficult-to-control overweight asthma)	P value (MHW vs. MOW vs. DOW)
Inactive time	1079 (1037 - 1122)	1128 (1094 to 1161)	1202 (1170 - 1234)	<0.001
LPA	259 (228 - 289)	237 (212 to 263)	196 (171 - 222)	0.007
MVPA	103 (80 - 127)	79 (58 to 99)	42 (33 - 52)	<0.001
Intensity gradient	-2.63 (-2.97 - -2.33)	-2.62 (-2.74 - -2.55)	-2.85 (-2.96 - -2.73)	<0.001
Average acceleration	27.8 (21.7 - 31.0)	24.4 (20.4 - 27.5)	17.1 (13.7 - 20.5)	<0.001

Abbreviations used in table: LPA-low physical activity, MVPA moderate-vigorous physical activity.

Units: inactive time, LPA and MVPA- minutes per day, average acceleration- mg.

Data expressed as mean with 95% confidence intervals for inactive time, LPA and MVPA; and median and interquartile range for intensity gradient and average acceleration.