

## Impact of Increased Step Count on Adult Asthmatic Patients: A Pilot Study

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Despite the well-documented benefits of physical activity for asthma control, individuals with asthma may be hesitant to exercise, due to the risk of symptom exacerbation.<sup>1</sup> A downward spiral, where inactivity leads to deconditioning and worsening respiratory symptoms, may ensue.<sup>2,3</sup> To investigate this phenomenon, we designed and conducted a quasi-experimental study to ascertain whether a gradual escalation in physical activity, via increased daily step count, would enhance the quality of life in young adult patients, diagnosed with mild to moderate asthma, using a self-reported symptom questionnaire (IRB #2021-0434). Due to suboptimal recruiting, the study was later converted to a pilot study.

We assessed participants' thoughts on how asthma affects their motivation to engage in physical activity through the Mini Asthma Quality of Life Questionnaire (MiniAQLQ).<sup>4</sup> After the administration of an initial MiniAQLQ, patients in the intervention group were enrolled in a standardized step-based program to gradually increase their physical activity. On a weekly basis, the participants were asked to increase their step counts, ideally by 1,000 daily steps each week, and to self-report them on a log in their patient online portal. Additionally, they answered a single question on their motivation to continue the intervention. Subsequently, all participants were administered another MiniAQLQ.

At the conclusion of the study, three of the four intervention group participants demonstrated improvement in overall MiniAQLQ scores. While their median (interquartile range [IQR]) baseline overall MiniAQLQ score was 5.9 (5.9, 6.3) compared to 5.2 (3.9, 6.7) for the control group, their overall MiniAQLQ score increased by a median (IQR) of 0.5 (-0.2., 0.9) points. Contrarily, the control group score decreased by a median (IQR) of -0.1 (-0.5, 0.1). Therefore, 75% of the intervention group demonstrated improvement in their perception of their asthma control, but only 44% of the control group did. Although their perception of their asthma control improved, it should be noted that only one of the four participants consistently increased his weekly step counts to the expected target goal. We believe that an extraordinarily high baseline step count average (9,440 steps) contributed to this outcome. Despite promising results, the data were not statistically significant due to the small sample size. Nonetheless, the increase in physical activity appeared to improve the patients' perceptions of their asthma control.

Unfortunately, poor recruitment hindered the study. The authors suspect that the cause of this major limitation proved to be multifactorial, including the challenges of research during the COVID-19 pandemic, the limited age range and severity of diagnoses of the participants, the small number of participating sites, the potential that telephonic recruitment was not as effective as in-person recruitment, and finally, the requirement for patients to assume personal responsibility for undertaking the intervention independently.

Overall, we believe that the framework of the study provides positive preliminary data on the effect of increased daily step counts on patients' perceptions of their asthma control. Additional research may provide further

insight into the impact of increased physical activity on patients' perceptions of their asthma control, which could ultimately improve their quality of life.

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