Title: Exhaled nitric oxide decreases during exercise in non-asthmatic children

Mrs. Bjørg 31488 Evjenth bjorg.evjenth@gmail.com MD ¹, Mrs. Tonje E. 31489 Hansen Tonje.Elisabeth.Hansen@nlsh.no MD ¹ and Dr. Jan 31490 Holt jan.holt@nlsh.no MD 1,2. ¹ Department of Pediatrics, Nordland Hospital, Bodø, Norway, 8092 and ² Institute of Clinical Medicine, University of Tromsø, Tromsø, Norway, 9037.

Body: Introduction: Exhaled nitric oxide (FENO) measurements are recommended to be performed before spirometry and exercise challenge tests because forced breathing might influence FENO values. Information on the effect of exercise on FENO is lacking in non-asthmatic children. Aim: To investigate the effect on FENO of a standardized exercise challenge test on a treadmill in non-asthmatic children with and without allergic rhinoconjunctivitis (AR) symptoms. Methods: From the case-control study “Asthma and allergy among schoolchildren in Nordland”, 330 non-asthmatic pupils age 8-16 years were enrolled. FENO was measured at baseline and at 1 and 30 min after exercise challenge test by the single breath technique with EcoMedics Exhalazer®. Results: Pair-wise comparison of FENO from baseline demonstrated a highly significant reduction in FENO post exercise for all children at 1 min (27.4%) and at 30 min (16.1%) (p <0.001). The AR group had a significantly higher decline in FENO value at 1 min post exercise compared to the non-AR group, 4.2 ppb versus 2.6 ppb (p <0.001). Decline in FENO immediately post exercise was more significant if baseline FENO was 20 ppb; mean reduction 9.9 (95% CI: 8.7-11.4) ppb. Conclusion: FENO is reduced by 27.4% immediately after a standardized treadmill exercise test in non-asthmatic children. Pupils reporting AR symptoms demonstrate a larger decline in FENO value at 1 min post exercise compared to pupils without AR symptoms. These findings confirm that children should refrain from physical activity before FENO measurement.