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**Title:** Acute exercise in cystic fibrosis patients increases neutrophilic pulmonary inflammation

Dr. Mikhael 17559 Laskine laskine1@gmail.com MD <sup>1</sup>, Mr. Stanislaw 17560 Ptaszynski stanislaw.ptaszynski.chum@ssss.gouv.qc.ca <sup>2</sup>, Dr. Claude 17561 Poirier claud.poirier@umontreal.ca MD <sup>2</sup>, Dr. Alphonse 17562 Jeanneret-Grosjean alph.jeanneret@sympatico.ca MD <sup>2</sup>, Ms. Annie 17563 Landry annie.landry.chum@ssss.gouv.qc.ca <sup>2</sup>, Ms. Guylaine 17564 Lebeuf guylaine.lebeuf.chum@ssss.gouv.qc.ca <sup>2</sup> and Dr. Celine 17565 Bergeron celine.bergeron.1@umontreal.ca MD <sup>2</sup>. <sup>1</sup> Internal Medicine, University Hospital, Montreal, QC, Canada, H2W 1T8 and <sup>2</sup> Pneumology, University Hospital, Montreal, QC, Canada, H2W 1T8 .

**Body:** Background: Neutrophilic inflammation mainly from recurrent bacterial infection characterizes cystic fibrosis (CF) airways. Repeated inflammatory insults may lead to progressive lung function decline. Acute exercise is reported to trigger a systemic inflammatory response, but inflammation pattern has been poorly studied. As exercise is part of a healthy lifestyle, we aim to depict the modulation of inflammation after an acute exercise in CF. Methods: 12 subjects with mild to moderate stable CF (FEV1>50% of p.v.) underwent a constant load exercise test at 80% of their maximal load. Sputum and blood were sampled before and 1 hour after exercise and analysed for differential leucocyte counts. Results: 6 females and 6 males completed the study with a mean FEV1 of 72.2% and a mean exercise time of 4.6 minutes. No desaturation was reported. Table 1 summarizes the differential leucocytes counts in blood and sputum. Exercise induces a 2.2 fold increase in airway neutrophils (p=0.019) and 1.4 fold increase in blood neutrophils (p=0.01).

Table 1

	Neutrophils	Eosinophils	Lymphocytes	Monocytes
Sputum pre-exercise	2.47±0.8	0.06±0.04	0.03±0.01	0.35±0.1
Sputum post-exercise	5.5±1.8	0.37±0.27	0.06[plusmn0.02	0.77±0.2
Blood pre-exercise	5.8±0.8	0.13±0.04	1.65±0.1	0.5±0.03
Blood post-exercise	7.6±0.9	0.13±0.04	1.54±0.15	0.5±0.03

**Conclusion:** We demonstrate that acute exercise increases the peripheral and airway inflammation in stable CF subjects. This burst of neutrophils might have a dual role in which it might improve local defense against infections and participate in airway destruction through release of elastase and other mediators. The

modulation of this inflammatory response by exercise training has to be explored.