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The effect of physical exercise on salivary secretion of MUC5B, amylase and lysozyme

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Highlights

- Saliva secretion increases after 10 minutes exercise
- Secretion of total salivary protein, amylase and lysozyme increase after exercise
- MUC5B secretion increases after exercise which may increase mucosal viscosity and subsequently the susceptibility for airway infections

ABSTRACT
Objectives: Saliva secretion is regulated by the autonomic nervous system. Parasympathic stimuli increase the secretion of water and mucin MUC5B, whereas sympathetic stimuli such as physical exercise increase the secretion of amylase and other proteins. In the present study we investigated the effect of physical exercise, as a sympathetic stimulus, on salivary flow rate and output of MUC5B, amylase, lysozyme and total protein.
Design: Unstimulated whole saliva was collected before exercise (1), after 10 minutes exercise with moderate intensity by running with a heart rate around 130 beats per minute (2), followed by 10 minutes exercise with high intensity by running to exhaustion (3) and after 30 minutes recovery (4). Salivary flow rate, protein and MUC5B concentration, and amylase and lysozyme activity were determined. Saliva protein composition was analysed using SDS-PAGE and immunoblotting.
Results Salivary flow rate, protein and lysozyme secretion increased after exercise with moderate intensity and increased further after exercise with high intensity ($p < 0.01$). Amylase