

ACOUSTICS2008/3379
**Chest wall dynamics and respiratory muscle recruitment during
flute playing**

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Respiratory parameters and sound were recorded during professional flute playing in order to assess what physiological processes were associated with the control of sound production that results in 'breath support' which in turn is associated with high quality playing. Four standing young professional flautists played flute excerpts with different technical requirements with and without breath support. Recordings included optoelectronic plethysmographic measurements of chest wall volume (V_{cw}) and its compartments, surface electromyography of the scalene, lateral abdominal, rectus abdominus, parasternal and sternocleidomastoid muscles, mouth pressure, and sound. Flow was estimated from differentiating V_{cw} during playing. Comparison in between various types of playing were performed. Results showed that flute support entails antagonistic contraction of non-diaphragmatic inspiratory muscles that tends to hold the rib cage at higher lung volume during long legato phrase playing. This relieves the expiratory muscles from the task of producing the right mouth pressure, especially at the end of the phrases, so they can contribute more to the finer control of mouth pressure modulations required for high quality playing.