

Publication**Heart rate variability and salivary cortisol in very preterm children during school age****JournalArticle (Originalarbeit in einer wissenschaftlichen Zeitschrift)****ID** 4107696**Author(s)** Urfer-Maurer, Natalie; Ludyga, Sebastian; Stalder, Tobias; Brand, Serge; Holsboer-Trachsler, Edith; Gerber, Markus; Grob, Alexander; Weber, Peter; Lemola, Sakari**Author(s) at UniBasel** [Urfer, Natalie](#) ; [Grob, Alexander](#) ; [Gerber, Markus](#) ; [Ludyga, Sebastian](#) ; [Brand, Serge](#) ;**Year** 2018**Title** Heart rate variability and salivary cortisol in very preterm children during school age**Journal** Psychoneuroendocrinology**Volume** 87**Pages / Article-Number** 27-34**Mesh terms** Autonomic Nervous System, physiopathology; Child; Female; Gestational Age; Heart Rate, physiology; Humans; Hydrocortisone, physiology; Hypothalamo-Hypophyseal System, physiopathology; Infant, Extremely Premature, physiology; Infant, Premature, growth & development; Male; Pituitary-Adrenal System, physiopathology; Polysomnography, methods; Saliva; Sleep, physiology; Sleep Stages, physiology

The autonomic nervous system (ANS) plays a major role in the human stress response and reflects physical and psychological adaptability to a changing environment. Long-term exposure to early life stressors may alter the function of the ANS. The present study examines differences in the ANS between children born very preterm and full-term as well as the association between the ANS and the hypothalamic-pituitary-adrenal (HPA) axis, the other main branch of the human stress system. Fifty-four healthy children born very preterm (<32nd gestational week) and 67 full-term children aged 7-12 years provided data for the present study. Polysomnography (PSG) assessments were obtained during a night at the children's home in lying position at rest (wake) and during different sleep stages (stage 2 sleep, slow wave sleep, rapid-eye-movement sleep). Autonomic function was assessed by use of heart rate variability, specifically low frequency power (LF), high frequency power (HF), total spectral power (Tot Pow), and the LF/HF ratio. HPA axis activity was measured using salivary cortisol the next morning at awakening, 10, 20, and 30min later. Children born very preterm had lower LF/HF ratio during wake and stage 2 sleep compared to full-term children. Moreover, higher LF, Tot Pow, and LF/HF ratio during wake, stage 2 sleep, and REM sleep were related to more post-awakening cortisol secretion. The present study provides evidence on long-term ANS alterations after very preterm birth. Moreover, findings suggest a relation between the ANS and the HPA axis and therefore support the notion of mutual feedback between the two human stress systems.

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