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Title: Multiscale entropy analysis of RR time series obtained from polysomnographic recordings in wide age spectrum group

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Body: Costs and complication of polysomnography lead to attempts to develop cheaper and simpler methods. The analysis of heart rate seems to be promising, however the heart rate's dynamics is biased by several physiological factors. The aim of that study was to check influence of age on multiscale entropy (MSE) of RR time series. 64 patients undergoing routine diagnostic in sleep lab were recruited (36 male, 28 female, age 1,5 – 63 yrs mean: 25,2 ± 20 yrs, RDI: 0 – 4,9 1/h mean:1,9 ± 1,5 1/h). The full night PSG (ASSM 2007) were performed. The R-R intervals were detected in recorded ECG signal (250Hz), and the multiscale entropy (Goldberg's MSE) was calculated (m=2, r=0.15, scale= 1-20). We found high correlation between entropy in SE(1) and age (Fig. 1) in adults, however in the children group (age<15) there was no such relation.

After removing subjects younger than 15yrs the correlation increase ($R=0.58$, $p<0.001$). Using MSE we found significant differences between the lowest and highest quartiles (Fig. 2)

We conclude that entropy is biased by age in adults and the lack of such relation in young group needs further investigations.