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**Title:** Prevalence of restless legs syndrome among patients with obstructive sleep apnea before and after CPAP treatment, compared to the general population. The Icelandic Sleep Apnea Cohort (ISAC)

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**Body:** Objectives: To compare the prevalence of reported restless legs syndrome (RLS) between subjects with obstructive sleep apnea (OSA) and the general population. Also possible changes with CPAP treatment. Materials and Methods: The OSA subjects (n=822) were newly diagnosed with moderate or severe OSA (665 males, 157 females). The control subjects (n=742) were randomly chosen Icelanders (394 males, 348 females) who participated in another epidemiological study ([www.boldcopd.org](http://www.boldcopd.org)). Measurements included a standardized RLS rating scale, questions about sleep and the Epworth Sleepiness scale. The change with CPAP treatment was assessed after 2 years (n=538). Results: Among OSA males 23.3% reported RLS but 12.9% of control males ( $p<0.001$ ). 35.8% of OSA females reported RLS but 24.4% of control females ( $p=0.03$ ). Both among OSA patients and controls those with RLS more commonly reported insomnia, daytime sleepiness, nocturnal sweating, snoring and gastro esophageal reflux ( $p<0.05$ ). No relationship was found between RLS and age, BMI, hypertension or respiratory disease in a logistic regression adjusting for the presence of OSA and the other factors mentioned. No relationship was found between RLS and sleep apnea severity. Subjects using CPAP had a decreased prevalence of RLS from 25.7% to 13.8% while no change was observed in those subjects not using CPAP ( $p=0.04$  for difference between groups). Conclusions: RLS is more prevalent among OSA patients than controls. CPAP treatment decreases RLS symptoms significantly.