

**MEASURING PERSISTENT SLEEP PROPENSITY:
THE EPWORTH SLEEPINESS SCALE**

Murray Johns

Sleep Disorders Unit, Epworth Hospital, Erin St., Richmond. 3121

The Multiple Sleep Latency Test (MSLT), or some modification of it, is the only method currently available for the measurement of daytime sleepiness. Such tests are cumbersome, time-consuming and expensive. Few sleep laboratories perform them on every patient. I have found that simply asking patients whether they sleep during the day or feel sleepy can be quite misleading. There is great need for a simple measurement of daytime sleepiness or, as I prefer to call it, Persistent Sleep Propensity (PSP). I have developed and validated the Epworth Sleepiness Scale (ESS) for this purpose.

The ESS is a brief, self-administered questionnaire. It asks the patient to rate, on a scale of 0-3, the chance that he would doze off, under his usual circumstances, when in 8 different situations of daily life. The ESS score is the sum of these 8 ratings and can vary from 0 to 24.

Evidence for the validity and accuracy of the ESS was derived from analysis of results in 230 subjects including normal controls, medical students and 150 patients with various sleep disorders (OSAS, simple snoring, narcolepsy, idiopathic hypersomnia, psychophysiological insomnia, periodic limb movements disorder). ESS scores significantly distinguished all patient groups (other than simple snorers) from controls (t-tests, $p < 0.001$). In the 87 patients with OSAS or simple snoring there were highly significant correlations between ESS scores and the Respiratory Disturbance Index measured overnight ($r = 0.66$, $N = 87$, $p < 0.001$) and the minimum SaO_2 reached during apneas ($r = -0.58$, $N = 87$, $P < 0.001$). There were significant correlations also between ESS scores and sleep latency measured during overnight polysomnography ($r = -0.379$, $N = 138$, $P < 0.001$) and in MSLT's during the day ($r = -0.514$, $N = 27$, $P < 0.05$). Of the 27 patients with either narcolepsy or idiopathic hypersomnia, all had ESS scores above normal, as did 12 of the 13 with severe OSAS. Patients with periodic limb movement disorder had higher ESS scores than normal ($p < 0.001$). Simple snores did not differ from controls. The insomniacs had lower ESS scores than normal ($p < 0.001$).

I propose 6 grades of PSP, based on ESS scores, as follows:-

<u>Grade of PSP</u>	<u>ESS Scores</u>	<u>Sleep Latency in MSLT</u>
1. Low	0 - 2	> 20 mins.
2. Lower normal	3 - 6	15.1 - 20
3. Upper normal	7 - 10	10.1 - 15.0
4. Moderately high	11 - 15	8.0 - 10.0
5. High	16 - 19	5 - 7.9
6. Very high	20 - 24	< 5

I use the ESS routinely in all patients as an aid to diagnosis and management. It provides a valid and reasonably accurate measurement of their PSP quickly and easily.