EVIDENCE TABLES
The Clinical use of the MSLT and MWT

Evidence Table I. MSLT IN NARCOLEPSY

Citation / Evidence Level	Study Design / Test Protocol / #naps / SL definition	Sample Size (Completed Study) / Mean age ± SD (range) / Gender	Comparison Measures or Groups (Drug Regimen)	Prior Total Sleep Time (minutes)	**Results or Mean sleep latency ± SD (minutes)**	Internal Bias / External Bias	Study Conclusion (Significant findings p< .05)	Comments from Reviewer
Alloway [96] / C3	Case-control volunteer / MSLT clinical / 5 naps / 20 min / 3 cons. epochs of any stage	Grp 1: 10; Grp 2: 10: / Grp1: 44.3±11.9 (29-62) Grp2 42.7±10.6 (28-56) / Grp1: 5M, 5F Grp2: 5M 5F	Grp1: narcolepsy Grp2: Normals	N/S	**Grp1: 3.5±3.2 Grp2: 10.3±6.4**	Prior TST not reported, but other paper on same data indicates no difference on PSG in normals & narcolepsy pts/ all narcolepsy pts had cataplexy but not stated if MSLT used in DX	Latency to stage1 shorter in narcolepsy pts than normals	

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Broughton [68] / C3	Case control volunteer / MSLT clinical / 5 naps / 20 min / 1 min stage1 or REM; also evaluated to stage2 or REM	Grp1: 11; Grp 2: 11 / Grp 1: 45.5±14.6 (22-63); Grp2: 45.2±13.9 (22-60) / Grp1: 6M, 5F; Grp2: 6M 5 F	Grp1: narcolepsy Grp2: Normals	Not evaluated	**Grp1: 2.7±2.9 Grp2: 10.4±6.3**	Prior TST not evaluated / some patients had previous MSLT/ DX criteria not clear but all narcolepsy patients had cataplexy	MSL was signficantly shorter in narcolepsy patients than controls.. Each nap latency was also significantly shorter for narcolepsy pts than controls	
Genton [98] / C4	Repeated longitudinal / 5 / 20 / Unknown	16 / 36.6±17.8 / 11M , 5F	narcolepsy	N?S	**5.43±3.0**	TST not reported; portable equipment used	No statistical findings; Continuous EEG monitoring detected more sleep onsets and SOREMPs than MSLT	

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Guilleminault [99] / C5	Database Review database / MSLT clinical / 4 or 5 naps / unknown / first epoch of any sleep stage	44 / 44.7±11.7 / (7-11.8) / NS	narcolepsy	N/S	**1.5±0.67**	PSG done but TST not reported / Population center is tertiary center for study of narcolepsy	No statistical findings	Prepubertal narcolepsy.
Mitler [24] / C5	Database review random / MSLT clinical / 5 naps / 20 min / unknown	40 / 45±12 (20-73) / 24M, 16F	narcolepsy	N/S	**2.98±3.7**	Prior TST not reported	No statistical findings; time of day effect was found on MSLT	.
Newman [97] / C3	Case-control volunteer / MSLT Clinical / 5 naps / 20 min / 2 consecutive 40 sec epochs of stage 1 or REM	Grp 1: 10; Grp 2 10 / Grp1 48.6±13.6; Grp2 49.0±13.8 / Grp 1: 21-70 Grp 2: 20-71; Grp 1; 6M, 4F; Grp 2: 6M, 4F	Grp1: narcolepsy Grp2: Normal	N?S	**Grp1: 3.35±1.48 SEM Grp2: 10.05±2.10SEM**	DX criteria for narcolepsy not clear since all had MSLT but all narcolepsy pts had cataplexy / prior TST measured but not reported	Narcolepsy MSL < normals; pts with narcolepsy entered REM earlier. No difference between narcolepsy & normals for latencies to stage2&3 on MSLT	

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Nykamp [100] / C3	Case controlled volunteer / MSLT clinical / 4 naps / 20 min / first epoch of any sleep stage	13 / Grp1: 13 / 38±9 / 3M 10F; Grp2: 13 / 39±9 / 3M 10F; Grp3:13 / 42±11 / 3M; 10F	Grp1: alert normals MSL >8 Grp2: sleepy normals MSL < 8 Grp3: narcolepsy	Grp1: 465.1 ± 18.4 Grp2: 480.9 ± 11.7 Grp 3: narcolepsy 441.7 ± 48.5	**Grp1: 13.1±3.7 Grp2: 3.3±1.1 Grp3: 2.2±1.6**	Normals subjects split based on MSL. Alert normals had MSLT ≥ 8; sleepy normals had MSLT < 5; narcolepsy pts had cataplexy - use of MSLT in diagnosis not noted	Alert normals differ from sleepy normals and narcolepsy patients	Control groups divided by MSLT result into sleepy and alert groups. 50% of normal controls had MSLT < 5 min
Richardson [23] / C4	Repeated longitudinal volunteer / MSLT clinical, research / 5 naps, 6 naps / 20 min / first epoch of any sleep stage	Grp1: 8; Grp2: 9; / Grp1: 44.6±13.6; Grp2: 44.1±5.8; / Grp1: 4M, 4F; Grp2: 9M, 8F;	Study1 Grp1: narcolepsy Grp2: Controls;	Study 1 Grp1: narcolepsy 417.2, ± 42.7 Grp2: Controls 469.8, ± 33.4, Study 2 TST not measured	**Grp1: 2.4±2.4 Grp2: 11.7±5.8**		Pts with narcolepsy had shorter latencies than controls p<.01	

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Rye [101] / C5	Clinical Series Database / MSLT clinical / 4 naps; 5 naps; 3 naps / unknown / first epoch of any sleep stage	Grp1 11; Grp2 10 / Grp1 55.64±10.15 (42-79); Grp2 57.8±11.27 (43-72) / Grp1 5M, 6F; Grp2 5M, 5F	Grp1 with cataplexy; Grp2 w/out cataplexy	Not reported	**Grp1: 3.35±1.80 Grp2: 5.71±3.47**	Error of measurement outcome: variable no. of naps among individuals; confounding factors:TST not reported; pts with cataplexy were 'allowed' to have apnea and PLMS	No statistical tests. Group w/ cataplexy had greater sleep disturbance, more sleep paralysis and hypnogogic hallucinations than those without cataplexy	.
van den Hoed [28] / C5	Clinical series, consecutive / MSLT clinical / 5 naps / 20 min / 2 epochs of stage 1 or 1 epoch any other stage	Grp 1: 46; Grp 2: 17; Grp 3: 18 Grp 4: 9 Grp 5: 3: Grp 6: 5 / Grp 1: 44 ±12.1; Grp 2: 42 ± 12; Grp 3: 34 ± 9.0: Grp 4: 42 ± 12.4 Grp 5: 34 ± 3.8 Grp 6: 28 ± 15.7/ 54 M 46 F	Grp1: narcolepsy; Grp2: IH Grp3: EDS with psychological or psychiatric problems Grp4: EDS with erratic SW schedule Grp5: EDS with drug abuse Grp6: EDS with no obj abnormalities	NS	**Grp1; 3.3 ±3.3 Grp2: 6.5 ±3.2 Grp3: 10.6 ±5.2 Grp4: 6 ±2.3 Grp5: 18.7 ±2.0 Grp6: 10.9 ±3.9**	2 pts with IH on stimulants, 7 with narcolepsy on stimulants / NS	MSL significantly different among groups. narcolepsy pts had shortest MSL among groups / 83% of narcolepsy pts had < 5min MSL.	

Citation / Evidence Level	Study Design / Test Protocol / #naps / SL definition	Sample Size (Completed Study) / Mean age ± SD (range) / Gender	Comparison Measures or Groups (Drug Regimen)	Prior Total Sleep Time (minutes)	**Results or Mean sleep latency ± SD (minutes)**	Internal Bias / External Bias	Study Conclusion (Significant findings p< .05)	Comments from Reviewer
Walsh [102] / C5	Database review volunteer / MSLT clinical / 5 naps / 20 min / first epoch of any sleep stage	Grp1: 13; Grp2:14 / Grp1: 43 (32-55); Grp2: 46 (27-66) / Grp1: 4M, 9F; Grp2: 10M,4F	Grp1: narcolepsy Grp2: OSA	N/S	**Grp1: 3.4±3.64 Grp2: 4.9±5.2**	DX criteria for narcolepsy not clear but all had EDS and cataplexy / PSG results not reported	No relevant statistics done. OSA pts were less sleepy on MSLT than narcolepsy pts	Descriptive study. narcolepsy patients had shorter latencies on naps 4 & 5 than OSA pts. Sleep latency longer at 1800 for each group
Zachariev [103] / C5	clinical series consecutive / MSLT / 3 naps / unknown / unknown	22 / 39.8±16.4 (7-78) / 13M, 9F	narcolepsy pts	NS	**2.8±0.27**	DX criteria unclear but 17/22 had cataplexy / prior TST not evaluated in all / only 3 naps performed / Exclusion criteria of EDS cases not clear	descriptive study, No statistics done	

Citation / Evidence Level	Study Design / Test Protocol / #naps / SL definition	Sample Size (Completed Study) / Mean age ± SD (range) / Gender	Comparison Measures or Groups (Drug Regimen)	Prior Total Sleep Time (minutes)	**Results or Mean sleep latency ± SD (minutes)**	Internal Bias / External Bias	Study Conclusion (Significant findings p< .05)	Comments from Reviewer
Zorick [104] / C5	Database review/ MSLT Clinical / 4 naps/20 min/ latency to stage 1	Grp1: 41/ 47.2±1.4 /40M, 1 F; Grp2 50 / 42.2 ±1.6 / 26M 24F; Grp3: 12/ 51.4±2.7; 8M 4F; Grp4: 23 / 41.9±2.6/ 13M 10F; Grp5: 22/ 32.6±3/ 10M 12F;Grp6: 13 / 43.9±3.7 / 5M, 8F	Grp1: OSA; Grp2: narcolepsy; Grp3: plm/RLS Grp4: insufficient sleep; Grp 5: no objective findings; Grp6: psychiatric	Grp1: 409 ± 10 Grp2: 446 ± 9.4 Grp3: 431 ± 26 Grp4: 495 ± 14 Grp5: 482± 12 Grp6: 460 ± 25	**Grp1: 3±1 Grp2: 3±0.9 Grp3 6.5±1.5 Grp4: 5.9±0.9 Grp5: 14±0.9 Grp6: 10±3.0**	MSL estimated from graph / narcolepsy cases limited to first 50	MSLT distinguishes disorders associated with EDS complaint / MSL of apnea is < insufficient sleep/ PLMS is < psychiatric group / apnea + narcolepsy is < than all others combined / insufficient sleep+ plms is < than no objective finding +psychiatric grp	OSA and narc have severe sleepiness <4min; PLMS and insufficient sleep have moderate sleepiness 5-8 min; psych and no objective findings have normal MSL / SOR higher in narcolepsy than any other group (72% vs ≤20%)

Evidence Table II. SOREMPS IN NARCOLEPSY

Citation / Evidence Level / MSLT evidence level	Study Design / Test Protocol / #naps-mins / SL definition	Sample Size (Completed Study)/Mean age ± SD (range)/Gender	Comparison Measures or Groups/Group Size	SOREMPS Results / # narcoleptics	Prior Total Sleep Time (minutes)	**Results or Mean sleep latency ± SD**	Internal Bias / External Bias	Study Conclusion (Significant findings p< .05)	Comments from Reviewer
Aldrich [105] / C4	Database Review All MSLT 1984-1996 /clinical / 4-5 / first epoch any stage	2,019-Grp1: 106 narcolepsy w/cataplexy (6-79) 46M, 60F; Grp2: 1,251 SRBD (6-85) / 938M, 313F; Grp3: 662 other sleep disorders (3-90) 314M, 348F	Grp1: narcolepsy with cataplexy Grp2: sleep related breathing disorders (SRBD) Grp3: other sleep disorders	% (#) with 0/1/2/3/4-5 SOR Grp1: 13% (14) / 13% (14) / 24% (25)/ 26% (28) / 24% (25) Grp2: 84% (1,051)/ 9% (113)/ 5% (63)/ 1% (13)/ 0.3% (4) Grp3: 82% (543) / 11% (73)/ 5% (34) / 1.2% (8) / 0.5% (4) >2SOR: Grp1 74% (78) Grp2 7% (88) / Grp3 7% (46)	Grp 1: 427 Grp 2: 400; Grp 3: 419	**Grp1: 87% (92) <5min 93% (99) <8min Grp2: 39% (488) <5 min 63% (788) <8min Grp3: 23% (152) <5min 48% (318) <8min >2 SOR + MSL<5 Grp1: 67% (71) Grp2: 4% (50) Grp3: 1.5% (10) >2SOR +MSL <8 Grp1: 71% (75) Grp2: 6% (75) Grp3: 4% (27)**	Pts with narcolepsy could have other DX including OSA / PSG done but TST not reported / Grp 2 SOR data does not add up to 100%	74% narcolepsy had >2SOR compared to 6.6% for non-narcolepsy	No stat tests reported; a group with narcolepsy without cataplexy required > 2SOR and was excluded

Citation / Evidence Level / MSLT evidence level	Study Design / Test Protocol / #naps-mins / SL definition	Sample Size (Completed Study)/Mean age ± SD (range)/Gender	Comparison Measures or Groups/Group Size	SOREMPS Results / # narcoleptics	Prior Total Sleep Time (minutes)	**Results or Mean sleep latency ± SD**	Internal Bias / External Bias	Study Conclusion (Significant findings p< .05)	Comments from Reviewer
Amira [106] / C5	Database Review Consecutive MSLTs / MSLT clinical / 5 naps / 20 min / 3 consec epochs of S1 or 1 epoch any other stage	144-Grp1: 80; Grp2: 12; Grp3: 52 / 42.5 (16-79) / 64M, 80F	Grp1: 0 SOR Grp2: 1 SOR Grp3: >2 SOR	Grp1: 1/80 narcolepsy Grp2: 9/12 narcolepsy Grp3: 51/52 narcolepsy Subgroup of 54 narcolepsy: 31 cataplexy+ had 3.4+0.2SOR 23 cataplexy- had 2.2+0.2SOR	NS	**Grp1: 11.58+0.54 Grp2: 7.95+1.3 Grp3: 4.38+0.28** **Subgroup of 54 narcolepsy: 31 cataplexy+: 4.5+0.4 23cataplexy-: 6.1+0.8**	All Beth Israel sleep disorder pts / no preceeding PSG in many and no TST given for any / OSA not screened	Mean SL differed among the 3 groups (<0.05); SL decreased as #SOR increased: Narc with cataplexy had more SOR and shorter MSL than those w/o cataplexy: >2SOR had sensitivity of 84% and specificity of 99%	One subject with > 2 SOR had undiagnosed OSA
Broughton [68] / C3	Case control volunteer / MSLT clinical / 5 naps / 20 min / 1 min stage1 or REM; also evaluated to stage2 or REM	Grp1: 11; Grp 2: 11 / Grp 1: 45.5±14.6 (22-63); Grp2 45.2±13.9 (22-60) / Grp 1 6M, 5F; Grp 2 6M 5 F	Grp1: narcolepsy Grp2: normals	Grp1: 2 = 5 SOR 4 = 4SOR 2 = 3SOR 2 = 2 SOR 1 =1 SOR Grp2: 0 SOR	Not evaluated	**Grp1: 2.7±2.9 Grp2: 10.4±6.3**	Prior TST not evaluated / some patients had previous MSLT/ DX criteria not clear but all narcolepsy patients had cataplexy	10/11 narcolepsy pts had 2 or more SORs. No normals had any SOR	The one narcolepsy pts with 1 SOR had a previous MSLT with 2 SORs

Citation / Evidence Level / MSLT evidence level	Study Design / Test Protocol / #naps-mins / SL definition	Sample Size (Completed Study)/Mean age ± SD (range)/Gender	Comparison Measures or Groups/Group Size	SOREMPS Results / # narcoleptics	Prior Total Sleep Time (minutes)	**Results or Mean sleep latency ± SD**	Internal Bias / External Bias	Study Conclusion (Significant findings p< .05)	Comments from Reviewer
Mitler [24] / C5 /	Cross-section Prospectively selected non-consecutive clinic pts / MSLT clinical / 5 naps / 20 min / unknown	40 / 44.7±11.7 (20-73) / 24M, 16F	narcolepsy patients	Nap1: 32 SOR Nap2: 29 SOR Nap3: 30 SOR Nap4: 28 SOR Nap5: 27 SOR Mean # SOR/pt 3.7±1.2	NS	**Nap1 3.2±2.7, Nap2 2.7±3.6 9, Nap3 2.5±3.6, Nap4 2.4±3.1, Nap5 4.1±5.5**	Prior TST not evaluated;	All narcolepsy patients had ≥2SOR	Time of day effect on MSLT
Moscovitch [89] / C5 /	Database review Consecutive clinic EDS pts with MSLT ≤ 8min / MSLT / unknown / unknown / unknown	Grp1: 200 / 43±13 yrs; Grp2: 106 / 41.7±13.2 / (9-75) / 162M 144F	grp1: EDS w/ cataplexy/200 grp2: EDS w/o cataplexy/106	Grp1: 34 < 2SOR, 166 ≥2SOR Grp2: 52 < 2SOR, 54 ≥ 2SOR #SOR for all subjects 0SOR = 12 <2SOR = 86 ≥2SOR =220 4-5SOR =17	subjects with disease, 419; subjects with cataplexy, 413, subjects without cataplexy, 432	**All grps MSL=2.7±2 ≥2SOR = 2.3 <2SOR = 3.9**	All EDS patients had MSLT ≤8 min for inclusion, unclear what the DX is in patients w/o cateplexy / 360 min of nocturnal sleep required	cataplexy defines a homogeneous group but group with ≥2SOR is heterogeneous / SOR not linked to cataplexy / pts with ≥2SOR had shorter MSL / cataplexy and 2SOR best criteria to DX narcolepsy.	Difference between groups in TST, sleep efficiency, # SOR, and MSLT.

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Nykamp [100] / C3 /	case-control volunteer / MSLT clinical / 4 naps / 20 min / first epoch of any sleep stage	39 / Grp1: 13 / 38±9 / 3M 10F; Grp2: 13 / 39±9 / 3M 10F; Grp3:13 / 42±11 / 3M, 10F	Grp1: Alert Normals MSL > 8; Grp2: Sleepy Normals MSL < 5; Grp3: narcolepsy patients	Grp1: 0 ± 0 SOR Grp2: 0.4+0.5 SOR Grp3: 3.7+1.1 SOR	Grp 1: 465.1, SD 18.4; Grp 2: 480.9, SD 11.7, Grp 3: 441.7, SD 48.5	**Grp1: 13.1±3.7; Grp2: 3.3±1.4; Grp3: 2.2±1.6**	Controls could have no more than 1 SOR / Basis of narcolepsy DX not clear but all had cataplexy.	Significantly more SORs occurred in narcolepsy pts than normal groups. / Alert normals differ from sleepy normals and narcolepsy patients	Control groups divided by MSLT result into sleepy and alert groups. 50% of normal controls had MSLT < 5 min
Van Den Hoed [28] / C5	Clinical series, consecutive / MSLT clinical / 5 naps / 20 min / 2 epochs of stage 1 or 1 epoch any other stage	46 / 44+12;	narcolepsy patients	39/46 had > 2SOR, 5/46 had 1 SOR, 2/46 had 0 SOR	NS	**3.3±3.3**	DX of narcolepsy required >2 SOR and/or cataplexy, however 41/46 pts with narcolepsy had clear cataplexy / 7 pts were on stimulants but data not differ substantially from others	No relevant statistic done	5 additional subgroups of EDS were reported but no SOR data included so data not included

Citation / Evidence Level / MSLT evidence level	Study Design / Test Protocol / #naps-mins / SL definition	Sample Size (Completed Study)/Mean age ± SD (range)/Gender	Comparison Measures or Groups/Group Size	SOREMPS Results / # narcoleptics	Prior Total Sleep Time (minutes)	**Results or Mean sleep latency ± SD**	Internal Bias / External Bias	Study Conclusion (Significant findings p< .05)	Comments from Reviewer
Walsh [102] / C5	Database Review/ / MSLT clinical / 5 naps / 20 min / first epoch of any sleep stage	Grp1: 13; Grp2: 14 / Grp1 43 (32-55); Grp2: 46 (27-66) / Grp1: 4M, 9F; Grp2: 10M, 4F	Grp1: narcolepsy; Grp2: OSA	Grp1: 47/65 naps w/ SOR; 13/13 pts ≥2SOR; 11/13 pts ≥3SOR; Grp2: 13/70 naps w/ SOR 8/14 pts ≥1SOR 4/14 pts ≥2SOR 6/14 pts =0SOR 4/14 pts =1SOR 3/14 pts =2SOR 1/14 pts =3SOR	N/S	**Grp1: 3.44±3.64; Grp2: 4.94±5.16.**	DX criteria for narcolepsy not entirely clear but all had EDS and cataplexy; PSG results not reported	No relevant statistics done. Narcolepsy patients had more SOR than OSA patients particularly in naps 1, 3, and 4.	Descriptive study. OSA pts were less sleepy on MSLT naps.
Zachariev [103] / C5 /	Clinical series consecutive / MSLT / 3 naps / unknown / unknown	22 / 39.8±16.4 (7-78) / 13M, 9F	narcolepsy pts	SOR in all 3 naps for all 22 patients, 66/66 naps with SOR	NS	**2.8±0.27**	DX criteria unclear but 17/22 had cataplexy, prior TST not evaluated in all, only 3 naps done	Descriptive study no statistics done	

Citation / Evidence Level / MSLT evidence level	Study Design / Test Protocol / #naps-mins / SL definition	Sample Size (Completed Study)/Mean age ± SD (range)/Gender	Comparison Measures or Groups/Group Size	SOREMPS Results / # narcoleptics	Prior Total Sleep Time (minutes)	**Results or Mean sleep latency ± SD**	Internal Bias / External Bias	Study Conclusion (Significant findings p< .05)	Comments from Reviewer
Zorick [104] / C5	Database review / MSLT clinical / 4 naps / 20 min /latency to stage 1	Grp1: 41/ 47.2±1.4 /40M, 1 F; Grp2 50 / 42.2 ±1.6 / 26M 24F; Grp3: 12/ 51.4±2.7; 8M 4F; Grp4: 23 / 41.9±2.6/ 13M 10F; Grp5: 22/ 32.6±3/ 10M 12F;Grp6: 13 / 43.9±3.7 / 5M, 8F	Grp1: OSA; Grp2: narcolepsy; Grp3: plm/RLS Grp4: insufficient sleep; Grp5: no objective findings; Grp6: psychiatric	% SOR naps (#SOR / #naps) Grp1: 14% (23/164); Grp2: 72% naps (144/200); Grp3: 18% (9/48); Grp4: 12% (11/92) Grp5: 10% (9/88); Grp6: 12% (6/52)	Grp 1: 409, SD 10; Grp 2:, 446, SD 9.4; Grp 3: 431, SD 26; Grp 4: 495, SD 14; Grp 5: 482. SD 12; Grp 6: 460, SD 25	**Grp1: 3±1 Grp2: 3±0.9 Grp3: 6.5±1.5 Grp4: 5.9±0.9 Grp5: 14±0.9 Grp6: 10±3.0**	MSL estimated from graph / narcolepsy cases limited to first 50	SOR higher in narcolepsy than any other group (72% vs ≤20%)	MSLT distinguishes disorders associated with EDS

Evidence Table III. IDIOPATHIC HYPERSOMNIA

Citation/Evidence level	Study design / Test Protocol / # naps-mins / SL definition	Sample size (completed Study) / Mean age ± SD (range) Gender	Comparison Measures of Groups (Drug Regimen)	Prior Total Sleep Time (Minutes)	**Results or Mean sleep Latency ± SD**	Internal Bias/External Bias	Study conclusion (significant findings p < .05)	Comments
Bassetti [107] / C5	Database review/ MSLT clinical /4-5, a fifth if one SOREMP in first 4/ 20 min / first epoch any stage	42 / NS / 15 M 27 F	Idiopathic hypersomnolence (IH)	464, ±* 50 * not specified in paper as SD or SEM	**4.3, ± 2.1;** **SOREMPS 12/303, 4%** **SOREMPS included PSG & MSLT**	MSL < 10 min used for patients selection in IH group, however only 3 of 45 patients clinically diagnosed with IH were eliminated for MSL>10 /	descriptive	Two other groups, narcolepsy w/cataplexy and narcolepsy wo/ cataplexy were also reported but not included here. A MSL of <6 minutes was required for inclusion in these narcolepsy groups./ A bias of < 10 min for IH seemed quite generous and only affected 3 patients so the data was included as the clinical criteria for DX was well elucidated

Citation/Evidence level	Study design / Test Protocol / # naps-mins / SL definition	Sample size (completed Study) / Mean age ± SD (range) Gender	Comparison Measures of Groups (Drug Regimen)	Prior Total Sleep Time (Minutes)	**Results or Mean sleep Latency ± SD**	Internal Bias/External Bias	Study conclusion (significant findings p < .05)	Comments
van den Hoed [28] C5	Clinical series, consecutive / MSLT clinical / 5 naps, 20 min / 2 epochs st 1 or 1 epoch any other stage	Grp1: 46; Grp2: 17; Grp3: 18 / Grp1: 44 ± 12.1 (NS) Grp2: 42 ± 12.0 (NS) Grp 3, 34 ± 9.0 (NS)	Grp1: narcolepsy; Grp2: IH Grp3: EDS with psychological or psychiatric problems	NS	**MSLT mean, Grp1: 3.3 ± 3.3 Grp2: 6.5 ± 3.2 Grp3: 10.6 ± 5.2**	2 pts with IH on stimulants, 7 with narcolepsy on stimulants / NS	MSL for IH > narcolepsy	
Billiard [108] / C5	Case review, database / NS / NS / NS	Grp1: polysymptomatic idiopathic hypersomnia, complete, 11 Grp2: monosymptomatic incomplete, 10	Grp1: polysymptomatic idiopathic hypersomnia, complete Grp2: monosymptomatic incomplete	Grp1: 506.7 ±46.8 Grp2: 517.5 ±32.1	**MSLT mean, Grp1: 10.4, ± 5.2 Grp2: 7.8, ± 3.9**	Methodology of MSLT not specified, and pts wakened at 7:30 am for MSLT / NS	MSLT: difference between complete and incomplete forms NS	Truncated nocturnal sleep monitored between 22:30 and 07:30, did not allow for MSLT to follow full sleep satiation
Dolenc [109] / C3	Case-control, database / MSLT clinical "probably" / 5 naps, duration NS / NS	36 / Median age; Grp1: = 37, Grp 2 = 33, Grp 3 = 36 Grp 1 = 23-57; Grp 2 = 15-60, Grp 3 = 15-64) / Grp 1=7 M, 5 F; Grp 2 = 5 M, 7 F; Grp 3 = 5 M, 7 F	Grp1: Dysthymic; Grp2: IH Grp3: Controls	NS	**MSLT mean, Grp1: 13±1 Grp2: 7± 1 Grp3: 15±1**	Prior TST not evaluated – PSG done but data not reported	MSL in IH < dysthymics and normals	

Evidence Table IV. PRE AND POST CPAP TREATMENT OF OSA

Citation / Evidence Level	Study Design / Test Protocol / #naps-mins / SL definition	Sample Size (Completed Study) / Mean age ± SD (range) / Gender	Comparison Measures or Groups (Drug Regimen)	Prior Total Sleep Time (Minutes)	**Results or Mean sleep latency ± SD**	Internal Bias / External Bias	Study Conclusion (Significant findings p< .05)	Comments from Reviewer
Barbe [122] / A1	Prospective Randomized Controlled Trial./MSLT/ unknown/ unknown /unknown	Grp 1: 29 (26 M 3 F), Grp 2: 25 (23 M 2 F). Grp 1: 54+/-10.8, Grp 2: 52+/-10	Grp1: CPAP Grp2: sham CPAP measures after 6 wks Rx	NS	**Grp1: 12±5 pre Rx, 13+/-5 post Rx Grp2: 10±5 pre Rx, 11±5 post Rx**	Selection of pts with RDI>30 and ESS<10	No change in MSL with CPAP	
Browman [111]/ C3	Cohort volunteer / MWT / 5 trials / 20 min / 3 consecutive epochs stage1 or 1 epoch any other sleep stage	Grp1 20; Grp2 15; Grp3 15 / Grp1 47.9 (19-67;); Grp2 42.5 (21-69); Grp3 36.7 (24-59) / Grp1 14M 6F; Grp2 7M 8F, Grp3 8M 7F	Grp1: sleep apnea Grp2: narcolepsy; Grp3: controls	NS	**Grp1: 10.98±5.62 Grp2: 10.54±5.54 Grp3: 18.76±3.27**	Selection procedure NS /	controls had higher MWT than apnea & narcolepsy pts (p < 0.001). MWT did not differentiate between sleep apnea and narcolepsy pts	

Citation / Evidence Level	Study Design / Test Protocol / #naps-mins / SL definition	Sample Size (Completed Study) / Mean age ± SD (range) / Gender	Comparison Measures or Groups (Drug Regimen)	Prior Total Sleep Time (Minutes)	**Results or Mean sleep latency ± SD**	Internal Bias / External Bias	Study Conclusion (Significant findings p< .05)	Comments from Reviewer
Cassel [73] / C3	Repeated/ longitudinal Prospectively selected noncosec clinic pt / MSLT clinical / unknown / unknown / first epoch of Stage1	59 / 49+/-7.7(25-65) /	Grp1: baseline Grp2: after 1 yr CPAP	NS	**Grp1: 12.0±5.1 Grp2: 16.8±5.5**	19/78 pts dropped; high baseline MSLT / prior TST monitored, but not reported / Males only	MSLT higher after 1 yr CPAP (p < 0.05)	
Engleman [124] / C3	Repeated/longitudinal Prospectively selected nonconsecutive clinic pts / MWT / 4 trials / 40 min / first epoch of any sleep stage	34 / 44±8 / 21M 13F	Grp1: Placebo Grp2: CPAP	NS	**Grp1: 14.4±8.5 Grp2: 16.2±10.6**	RDI-5-14 / reside > 50 miles from lab, shift workers, other sleep disorders, neuro or lung disease.	Placebo not different from CPAP	
Engleman [119] / C3	Non-randomized controlled trial consecutive / MSLT/ unknown / unknown / unknown	16 / 52±8 /	Grp1: Placebo Grp2: CPAP	NS	**Grp1: 9.9±6.0 Grp2: 10±5.6**	RDI 5-14, thus moderate to severe apnea was excluded	No significant difference between placebo & CPAP	

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Engleman [121]/ A1	Repeated/ longitudinal consecutive / MSLT clinical / 5 naps / 20 min / first epoch of any sleep stage	23 / 47±12 / 21M 2F	Grp1: Placebo; Grp2: CPAP	NS	**Grp1: 6.8±4.3 Grp2: 9.2±3.9**	Inclusion of RDI >15/h & 2 other sleep apnea / hypopnea daytime symptoms / Ss reside > 50 miles from lab, shift workers, other sleep disorders, neuro or lung disease.	MSL on Placebo < CPAP, p<0.001	
Engleman [120]/ C3	Repeated/longitudinal consecutive / MSLT clinical / 5 naps / 20 min / first epoch of any sleep stage	32 / 49±8.5 - (NS) /26M 6F	Grp1: CPAP Grp2: Placebo Drug	NS	**Grp1: 7.2±4.0 Grp2: 6.1±4.0**		MSLT higher on CPAP p=0.03 than on placebo	
Fietze [74] / C3	Clinical series other / MSLT clinical / unknown / uknown / unknown	22 / 43.6±9.2 /	Grp1: Baseline; Grp2: CPAP	All grps 382±53	**Grp1: 9.4±4.4 Grp2: 12.9±5.3**	Unclear how sleepiness defined /	MSLT higher after CPAP (p < 0.05;	

Citation / Evidence Level	Study Design / Test Protocol / #naps-mins / SL definition	Sample Size (Completed Study) / Mean age ± SD (range) / Gender	Comparison Measures or Groups (Drug Regimen)	Prior Total Sleep Time (Minutes)	**Results or Mean sleep latency ± SD**	Internal Bias / External Bias	Study Conclusion (Significant findings p< .05)	Comments from Reviewer
Fitzpatrick [77] / C3	Repeated/longitudinal unknown/ MWT /unknown / 40 min / unknown	18/ 50±15 (28-78) / 16M, 2F	Grp1: prefix CPAP Grp2: postfix CPAP Grp3: preadjusted CPAP Grp4: post adjust CPAP	Grp1:367±61 Grp2:385±53 Grp3:360±73 Grp4:386±53	**Grp1: 16.3±8.3 Grp2:23.3±10 Grp3: 15.3±9 Grp4:25.3±9.3**	Six patients withdrew from study for various reasons	CPAP significantly improved MSL/ no difference between preset CPAP level and self adjusting CPAP	
George [110] / B4	Cohort/ Consecutive (patients), volunteer (controls)/ MSLT / unknown / 20 min / unknown	Grp1 16; Grp2&3 21 / Grp1 39.6±15.2; Grp2 49.3±12.7; Grp3 46.1±15.1 / Grp1 12M, 4F; Grp2&3 21M	Grp1: Narcolepsy; Grp2: Apnea Grp3: Normal	NS	**Grp1: 4.9±4.6 Grp2: 7.2±6 Grp3: 13.2±2.4**	Some pts declined participation because study also looked at driving;	Narcolepsy < Apnea < Normals. Tracking error correlated with OSA MSLT (-.42) and with Narcolepsy MSLT (-.32).	
George [75]/ C4	Repeated/longitudinal unknown / MSLT / 4 naps / unknown / 3 consecutive epochs of Stage 1 or first epoch of any other stage	Grp1&4 18; Grp2&3 17 / (NS) / Grp1- 45.6±14.6; Grp2 49.7±11.2 / (NS) / NS	Grp1: controls Grp2: OSA Grp3: OSA with CPAP Grp4: controls with CPAP	NS	**Grp1: 12.3±6.0 Grp2: 7.2±6.0 Grp3: 13.2±6.7 Grp4: 12.9±5.9**		MSLT after CPAP significantly higher in OSA, but not in controls	

Citation / Evidence Level	Study Design / Test Protocol / #naps-mins / SL definition	Sample Size (Completed Study) / Mean age ± SD (range) / Gender	Comparison Measures or Groups (Drug Regimen)	Prior Total Sleep Time (Minutes)	**Results or Mean sleep latency ± SD**	Internal Bias / External Bias	Study Conclusion (Significant findings p< .05)	Comments from Reviewer
Guilleminault [112] / C3	Cross-section unknown / MSLT / unknown / unknown / unknown	15 / 44.07±12.69 (29-69) / 15M	Grp1: baseline Grp2: baseline2 Grp3 CPAP	Grp1: 399±15 Grp2: 348±22 Grp3: 400±14	**Grp1: 11.29±2.64 Grp2: 10.77±2.47 Grp3: 14.59±1.20**	method section states pt has 2 N baseline PSG w/ only one baseline MSLT. yet Table 3 reports MSLT for baseline 1 and baseline 2 /	MLST after CPAP higher than Baseline	
Guilleminault [113] / C5	Clinical Series other / MSLT clinical / unknown / unknown / unknown	14 / /	Grp1: baseline Grp2: baseline2 Grp3: after 1 min CPAP	Grp3: 398±21	**Grp1: 6.1±2.3 Grp2: 5.7±2.4 Grp3: 13±3**		MSLT higher after 1 month CPAP p < 0.0001	

Citation / Evidence Level	Study Design / Test Protocol / #naps-mins / SL definition	Sample Size (Completed Study) / Mean age ± SD (range) / Gender	Comparison Measures or Groups (Drug Regimen)	Prior Total Sleep Time (Minutes)	**Results or Mean sleep latency ± SD**	Internal Bias / External Bias	Study Conclusion (Significant findings p< .05)	Comments from Reviewer
Hakkanen [76]/ C3	Repeated/longitudinal / volunteers/ MWT / 4 trial / 40 min / first epoch any stage	Grp1: 10 Grp2: 10 Grp3:10 Grp4:10 / /	Grp1: OSA; Grp2: OSA after 9 wk CPAP; Grp3: controls; Grp4: controls after 9wk	NS	**Grp1: 23.2±10.2 Grp2: 31.8±6.03 Grp3: 35.4±6.8 Grp4: 34.1±5.5**	Prior TST not monitored/ bus drivers only / Drug criteria for OSA pts unclear	MWT changed significantly in mild OSA group w/ CPAP (p= 0.041); Normal controls had higher MWT at baseline but not after CPAP (p=0.023)	In normals test retest reliability was very high
Kribbs [114]/ C5	Clinical Series consecutive / MLST other / 4 naps / 20min / first epoch of any sleep stage	15 / 45.9±9 (37-63) / 14M 1 F	Grp1: Baseline Grp2: CPAP Grp3: Off CPAP	Grp1: 363+43 Grp2: 406+35 Grp3: 398+51	**Grp1: 363±43 Grp2: 406±35 Grp3: 398±51 Grp1: 3.1±2 Grp2: 55.5±3.6 Grp3: 2.9±2.3**		Pre-CPAP and Off-CPAP < On-CPAP	

Citation / Evidence Level	Study Design / Test Protocol / #naps-mins / SL definition	Sample Size (Completed Study) / Mean age ± SD (range) / Gender	Comparison Measures or Groups (Drug Regimen)	Prior Total Sleep Time (Minutes)	**Results or Mean sleep latency ± SD**	Internal Bias / External Bias	Study Conclusion (Significant findings p< .05)	Comments from Reviewer
Meurice [123]/ B2	Randomized controlled trial unknown / MWT / 4 trials / 40 min / 3 cosec epochs S1 or 1 epoch any other sleep stage	8 / 54±11 /	Before-Grp1: Constant CPAP Grp2: Auto CPAP After 3wks-Grp3: Constant CPAP Grp4: Auto CPAP	TST on PSG hours; Grp1: Auto CPAP = 5.7 hrs, ±1.2 Grp2: Post CPAP = 6.2 hrs ±1.1 Grp3: Constant CPAP baseline = 6.2 hrs ± 0.9 Grp4: Post CPAP = 6.6 hrs, ± 1.1	**Grp1: 19.0±13.9 Grp2: 18.2±11.2 Grp3: 26.1±14.6 Grp4: 26.9±12.0**	Diagnostic inclusion criteria unclear	Both constant & auto CPAP) showed MWT increased with 3 wks CPAP (p < 0.05)	
Morrison [117]/ C3	Clinical Series unknown / MSLT / 5 naps / 20 min / unknown/ interrupted at sleep onset or 20 min	14 (13M 1 F) 45.0+/-6.5	Grp1: before CPAP Grp2: 6 mos CPAP	Grp1: Normal = 419.9 ±53.4 Grp2: Pre-CPAP = 424.4 ±38.5 Grp3: Post CPAP = 408.7±40.5	**Grp1: 4.1±1.9 Grp2: 8.6±4.5**	AHI >10. Normal controls were selected for MSLT >10	MSL improved with CPAP	

Citation / Evidence Level	Study Design / Test Protocol / #naps-mins / SL definition	Sample Size (Completed Study) / Mean age ± SD (range) / Gender	Comparison Measures or Groups (Drug Regimen)	Prior Total Sleep Time (Minutes)	**Results or Mean sleep latency ± SD**	Internal Bias / External Bias	Study Conclusion (Significant findings p< .05)	Comments from Reviewer
Sangal [115]/ C3	Clinical Series consecutive / MSLT NS but done in sleep disorder center as part of Dx testing / unknown / unknown / unknown	40 / Grp1: 52.7±11.9 Grp2: 52.8±11.9 /	Grp1: baseline; Grp2: after CPAP	NS	**Grp1: 4.1±2.4 Grp2: 6.2±3.6**	Only pts with severe OA /	No significant change in MSLT with CPAP; after CPAP MSLT higher than before CPAP but not significantly	
Sforza [116]/ C3	Clinical Series unknown / MSLT / 5 naps / 20 min / 3 consecutive epochs of S1 or 1 epoch any other sleep stage	30 / 47.7±7 (19-66) / 28M 2F	Grp1: Baseline; Grp2: 1 N CPAP Grp3: 1yr on CPAP Grp4: 1 N off CPAP	Grp1: 409.9+10.5 Grp2: 426.6+13.8 Grp3: 425.6+8.1 Grp4: 386.7+11.4	**Grp1: 3.1±1.6; Grp2: 7.7+/13/8 Grp3: 9.8±5.5; Grp4: 5.3±3.3**	unclear criteria for OSA depression /	MSL after 1 N CPAP, 1 yr CPAP, & 1 N off CPCP (after 1 y on CPAP), all higher MSL than at baseline (p=0.001). 15 pts with MSL >10 had mean of 14.9+4/4after Rx, 15 pts w/ MLS <10min. had mean of 5.0+2.2	

Citation / Evidence Level	Study Design / Test Protocol / #naps-mins / SL definition	Sample Size (Completed Study) / Mean age ± SD (range) / Gender	Comparison Measures or Groups (Drug Regimen)	Prior Total Sleep Time (Minutes)	**Results or Mean sleep latency ± SD**	Internal Bias / External Bias	Study Conclusion (Significant findings p< .05)	Comments from Reviewer
Zorick [118]/ C3	Clinical Series consecutive / MSLT / 4 naps / 20min / first epoch of any sleep stage	46 / Grp1&2 51.67±10.3; Grp3&4 47.24±13.7 / Grp1&2 37M 9F; Grp3&4 39M 7F	CPAP-Grp1: Pre CPAP Grp2: With CPAP UPPP Grp3: Pre UPPP Grp4: Post UPPP	NS	**Grp1: 4.4±6.1 Grp2: 10.3±7.5 Grp3: 4.1±6.8 Grp4: 5.5±6.1**	Pts not randomly assigned to groups , but did not differ on several attributes / unclear diagnostic criteria for OSAs	MSL improvement in CPAP pts was significanlty higher than MSLT improvement in UPPP pts, p < 0.001	

Evidence Table V. SAFETY

Citation/Evidence level	Study design/Test Protocol/ # naps-mins/SL definition	Sample size (completed Study) / Mean age ± SD (range) Gender	Comparison Measures of Groups (Drug Regimen)	Prior total Sleep time (Minutes)	**Results or Mean sleep Latency ± SD**	Internal Bias/External Bias	Study conclusion (significant findings p < .05)
Casagrande [145] / C3	Repeated, longitudinal, volunteer / MSLT; MWT / 4 naps-20 min; 4 trials-20 min / after 3 consecutive epochs of S1 or 1 epoch of any other sleep stage ; first epoch of any sleep stage	6 / 30 (23-37) / M6	Placebo, Temazepam	Grp 1: 196, SD, 78; Grp 2,: Temazepam, 300, SD 109	**Placebo MSLT mean 8.46 ±6.37, Temazepam mean 5.98 ±4.18 ; Placebo MWT mean 18.29 ±3.15, Temazepam mean 19.19 ±1.39**	NS/only male military	MSLT: Placebo > Temazepam. MWT: No differences
Porcu [147]/ C3	Repeated-longitudinal, volunteer / MSLT, MWT / 4 naps,20 min; 4 trials, 20 min / first epoch of any sleep stage	8 / 33.7 ± 10.2 / M8	Temazepam and placebo	Not monitored	**Temazepam MSLT 7.2 ± 5.94; Placebo MSLT 5.76 ± 3.98; Temazepam MWT, 15.07 ± 7.39, Placebo MWT 16.81 ± 4.64**	Prior TST not monitored, questionnaire data only, daytime total sleep time in placebo group shorter than Temazapam	MSLT, no differences between placebo and temazepam; MWT longer MSL after temazepam compared to placebo

Citation/Evidence level	Study design/Test Protocol/ # naps-mins/SL definition	Sample size (completed Study) / Mean age ± SD (range) Gender	Comparison Measures of Groups (Drug Regimen)	Prior total Sleep time (Minutes)	**Results or Mean sleep Latency ± SD**	Internal Bias/External Bias	Study conclusion (significant findings p < .05)
Porcu [148]/ C3	Clinical series; volunteer / MSLT research / 4 naps-20 min / 2 consecutive epochs of any stage	5 / 29.7 ± 5.12 M5	NS "good data for night testing after ad lib daytime sleep"	NS	**MSLT mean 7.33 ± 5.93; MWT mean 17.95 ±3.53**	NS / population – young adult on night-time testing	MSLT: Significant decrease across the night. MWT: No differences.
Seidel [144] / C3	Repeated/longitudinal volunteer / MSLT research / 7 naps / 20 min / first epoch of any sleep stage	Grp1 24; Grp2 12; Grp3 12 / (21-330- /	Grp1 Placebo1-2; Grp 2 Triazolam .5mg; Grp3 Flurazepam 30mg		**/ Grp1 D wake 13.1±4.9, N wake 10.3±3.6; Grp2 D wake 12.6±5.2. N wake 12.1±4.8; Grp3 D wake 13.1±3.5, N wake 6.5±2.4 / /**	/ Number of M & F NS; Narrow age range	D wake: placebo, triazolam .5 > flurazepam 30; N wake: placebo > flurazepam 30 ; triazolam .5 > placebo; placebo > flurazepam 15
Thessing [149]/ Interventions B2	Randomized controlled trial volunteer / / 5 naps / 20 min / first epoch of any sleep stage; first epoch of Stage1— cited Carskadon et al. 1986 procedures	30 / 21 (18-29) / 11M, 19F	Grp1 Dim Light; Grp2 2-hr Bright-Light; Grp3 4-hr Bright Light		**/ Grp1 5.68/3; Grp2 5.75/3; Grp3 9.74/3 / /**	/ Patient selection: healthy volunteers willing to work nights,,narrow age range	4-h Bright Light > Dim light at 0500 and 0700 hrs

Citation/Evidence level	Study design/Test Protocol/ # naps-mins/SL definition	Sample size (completed Study) / Mean age ± SD (range) Gender	Comparison Measures of Groups (Drug Regimen)	Prior total Sleep time (Minutes)	**Results or Mean sleep Latency ± SD**	Internal Bias/External Bias	Study conclusion (significant findings p < .05)
Walsh [150]/ C3	Repeated,longitudinal, volunteer / MSLT research and other- naps during night shift ; MWT / 5 naps- unknown min ; 5 trials- unknown min/ first epoch of any sleep stage	15 / 41 (32-53) / F11, M4	Triazolam and Placebo	NS	**Triazolam MSLT mean 10.31 ± 4.82, Placebo MSLT mean 8.28 ± 4.28; Triazolam RTSW mean 13.91 ± 5.12, Placebo RTSW mean 12.24 ± 5.5**	Study tests nightime sleep latencies after daytime sleep. Not useful for norms. / NS	MSL longer with: Triazolam than placebo. RTSW: No differences between triazolam and placebo
Young [153] / C3	Cohort, consecutive/ MSLT / 4 naps- unknown min/ unknown	Entire sample 913; MSLT sample 453 (NS) / Entire sample – 45.1 ±7.8 (NS) (NS)/ Entire sample- M542, F371 ; MSLT sample (NS)	MSLT sample; Grp1, no accidents Grp2, one accident, Grp3, > 1 accident	NS	**Grp 1, 9.3 , SEM 0.4; Grp 2, 9.7, SEM 0.8; Grp 3, 9.1, SEM 1.6**	MSLT recording protocol not provided, / TST was monitored, but no values given / MSLT not recorded on all study participants. Data from only 50% of sample.	No differences among accident history groups

Evidence Table VI. DRUGS – VALIDITY

Drug	Citation / Evidence Level	Study Design / Test Protocol / #naps-mins / SL definition	Sample Size (Completed Study) / Mean age ± SD (range) / Gender	Comparison Measures or Groups (Drug Regimen)	Prior Total Sleep Time (minutes)	**Results or Mean sleep latency ± SD**	Internal Bias / External Bias	Study Conclusion (Significant findings p< .05)
flurazepam	Bliwise [70] / C3	Repeated longitudinal, volunteer / MSLT, unknown / 6 naps, unknown / unknown	23 / 36.8±12.48 / 10M, 13F repeated, all subjects in all conditionss	Insomniacs Grp1 base triazolam; Grp2 triozolam; Grp3 Base flurazepam; Grp4 flurozepam	Grp1: 399.3 Grp2: 420.3 Grp3: 433.4 Gr4 > Grp3	**Grp1: 12.83; Grp2: 14.41; Grp3: 12.97 Grp4: 8.55**	Pt selection insomniacs; 1 dropped out due to suicidal ideation &sleepiness /	Flurazepam decrease sleep latency of medians compared to baseline
flurazepam	Carskadon [49] / A1	randomized controlled trial volunteer / unknown / 6 naps / 20 min / first epoch of any sleep stage	13 / Grp1&2 67-72; Grp3&4 64-79 / Grp2 1M, 5F; Grp3 3 M, 4F	Grp1: placebo F Grp2 flurazepam 15 Grp3 triazolam .25 Grp4 placebo triazolam	all grps in bed 9.4 hrs. Grp 1, 387, SD 82 Grp 2 442, SD 86 Grp 3, 379, SD 85 Grp 4, 317, SD 84	**Grp1: 387±82; Grp2: 442±86; Grp3: 379±85; Grp4: 317±84 Grp1: 9.8±4.4; Grp2: 6.9±4.5: Grp3: 6.9±3.6; Grp4: 13.3±4.6**	Pt selection: 2 had PLMS /	

Drug	Citation / Evidence Level	Study Design / Test Protocol / #naps-mins / SL definition	Sample Size (Completed Study) / Mean age ± SD (range) / Gender	Comparison Measures or Groups (Drug Regimen)	Prior Total Sleep Time (minutes)	**Results or Mean sleep latency ± SD**	Internal Bias / External Bias	Study Conclusion (Significant findings p< .05)
flurazepam	Dement [162] / B2	randomized controlled trial random / MSLT research / 5 naps / 20 min / first epoch of any sleep stage	48-Grp1 16; Grp2; 17; Grp3 15 / (64-86) / 15M, 33F	Grp1: quazepam 15 Grp2: flurazepam 15 Grp3: placebo	NS	**Grp1: 11.6±7.6 Grp2: 12±6.3; Grp3: 12.8±6.9**	Pt selection: BMI higher in placebo group; 2 pts in placebo dropped out due to adverse reaction /	

Drug	Citation / Evidence Level	Study Design / Test Protocol / #naps-mins / SL definition	Sample Size (Completed Study) / Mean age ± SD (range) / Gender	Comparison Measures or Groups (Drug Regimen)	Prior Total Sleep Time (minutes)	**Results or Mean sleep latency ± SD**	Internal Bias / External Bias	Study Conclusion (Significant findings p< .05)
flurazepam	Johnson [72] / B2	randomized controlled trial volunteer / unknown / 6 naps / unknown / stage2	80 (10 diff Ss per 8 grps) / 20±2 / all M	Grp1: placebo am & pm Grp2: placebo pm caffeine am; Grp3: triazolam 0.25 pm placebo am; Grp4: triazolam 0.5 pm placebo am; Grp5: triazolam 0.5 pm caffeine am; Grp6: flurazepam 15 pm placebo am; Grp7: flurazepam 30 pm placebo am 8 flurazepam 30 pm caffeine am	NS	**Grp1: 6.32 ± 2.54** **Grp2: 10.73 ± 3.74** **Grp3: 9.92 ± 4.46** **Grp4: 7.61 ± 3.79** **Grp5: 12.60 ± 5.12** **Grp6: 5.92 ± 1.47** **Grp7: 5.47 ± 3.06** **Grp:8 9.6 + 4.7**	Pt selection, 2 prs replaced because of illness, 1 pt because of big breakfast; prior TST not evaluated; confounding factors; other is amt caffeine consumed / NS	

Drug	Citation / Evidence Level	Study Design / Test Protocol / #naps-mins / SL definition	Sample Size (Completed Study) / Mean age ± SD (range) / Gender	Comparison Measures or Groups (Drug Regimen)	Prior Total Sleep Time (minutes)	**Results or Mean sleep latency ± SD**	Internal Bias / External Bias	Study Conclusion (Significant findings p< .05)
Caffeine	Bonnet [63]; / C3	repeated/longitudinal volunteer / research / 5 naps / 20 min / first epoch of any sleep stage	12 / 21±1.5 (18-30) / 12M	Grp1: base; Grp2: caffeine (initial); Grp3: 400 tid	Grp1: base, 445; Grp 2 caffeine (initial) 367	**Grp1: 10.7±6.1; Grp2 17.8±5**	pts also had caffeine on the night preceding-however, this should have made means closer /	yes

Drug	Citation / Evidence Level	Study Design / Test Protocol / #naps-mins / SL definition	Sample Size (Completed Study) / Mean age ± SD (range) / Gender	Comparison Measures or Groups (Drug Regimen)	Prior Total Sleep Time (minutes)	**Results or Mean sleep latency ± SD**	Internal Bias / External Bias	Study Conclusion (Significant findings p< .05)
Caffeine	Johnson [72] / B2	randomized controlled trial volunteer / unknown / 6 naps / unknown / stage2	80 (10 diff Ss per 8 grps) / 20±2 / all M	Grp 1, placebo am & pm; Grp 2, placebo pm caffeine am Grp 3, triazolam 0.25 pm placebo am Grp 4, triazolam 0.5 pm placebo am Grp 5, triazolam 0.5 pm caffeine am Grp 6, flurazepam 15 pm placebo am Grp 7 flurazepam 30 pm placebo am 8 flurazepam 30 pm caffeine am	NS	**Grp1: 6.32 ± 2.54; Grp2: 10.73 ± 3.74 Grp3: 9.92 ± 4.46 Grp4: 7.61 ± 3.79 Grp5: 12.60 ± 5.12 Grp6: 5.92 ± 1.47 Grp7: 5.47 ± 3.06 Grp8: 9.6 ± 4.7**	Pt selection, 2 prs replaced because of illness, 1 pt because of big breakfast; prior TST not evaluated; confounding factors; other is amt caffeine consumed NS	

Drug	Citation / Evidence Level	Study Design / Test Protocol / #naps-mins / SL definition	Sample Size (Completed Study) / Mean age ± SD (range) / Gender	Comparison Measures or Groups (Drug Regimen)	Prior Total Sleep Time (minutes)	**Results or Mean sleep latency ± SD**	Internal Bias / External Bias	Study Conclusion (Significant findings p< .05)
Caffeine	Lumley [161] / C3	repeated/longitudinal volunteer / MSLT research / 4 naps / 20 min / 3 consecutive epochs of S1 or 1 epoch any other sleep stage	9 / 25.6 /	Grp1: baseline Grp2: caffeine Grp 3: baseline Grp4: ethanol .75g/kg	All grps matched, 438	**Grp1: 13.5±3.3 Grp2: 15.9; Grp3: 13.6±3.2 Grp4: 8.3**	pts r=preselected for MSLT >9 min /	
Caffeine	Muehlbach [160] / C3	Repeated longitudinal, volunteer/ unknown/ 5 naps / unknown/ unknown	30/(NS) / 19-30 / M, 16, F, 14	Grp1: Caffeine (n=15) Grp2: placebo (n=15) Study had normal PSG with daytime MSLT followed by day sleep with nocturnal MSLT Caffeine: 142 mg at night	Grp 1: 390.0 ±65.7 Grp 2: 414.1 ±45.9	**MSLT Grp 1: (daytime) 10.7 ± 4.6 Grp 2: (baseline) 9.3 + 4.9 SD** **After day sleep, MSLT at night was: Grp1: N1= 10.3±0.75; N2=10.6±0.75; N3= 11.8±.75 Grp 2: MSLT N1=7±.75; N2=8.5±.75, N3=8±.75**	NS/NS	

Drug	Citation / Evidence Level	Study Design / Test Protocol / #naps-mins / SL definition	Sample Size (Completed Study) / Mean age ± SD (range) / Gender	Comparison Measures or Groups (Drug Regimen)	Prior Total Sleep Time (minutes)	**Results or Mean sleep latency ± SD**	Internal Bias / External Bias	Study Conclusion (Significant findings p< .05)
Caffeine	Rosenthal [159] / A1	Randomized controlled trial random, volunteer / MSLT research / 4 naps / 20 min / first eopch of any sleep stage	36 / (19-35) / 36M	Grp1: placebo Grp2: caffeine 75 Grp3: caffeine 150	NS	**Grp1: 11±3.46/1; Grp2: 14.4±3.46/1; Grp3: 15±3.41/1**	Pt selection: Ss required to have MSLT > 8; Ss were given placebo /	
Modafinil	Broughton ([163] / C3	non-randomized controlled trial / MWT / 4 trials / 40 min / 3 consec epochs stage1 or 1 epoch any other sleep stage, and latency to 1st epoch stage 1 also reported	75 (71 complete), repeated measures for placebo, modafinil 200 and modafinil 400 / 43±16 / M=28, F=47	All grps, narcolepsy; Grp1: placebo Grp2: modafinil 200 Grp3: modafinil 400	Grp 1: 401±70 Grp 2: 394 ±70 Grp 3: 393 ±72 (differences NS)	**latency to 3 epoch Grp1: 11.2±9.8 Grp2: 15.7±12.6; Grp3: 17.2±13.0 / latency to stage 1 Grp1: 8.1±6.9 Grp2: 10.3±8.2 Grp3: 10.3±8.7**	Pt selection: 4 dropped for personal reasons, Dx required MSLT 2 or more SOREM& MSL 3.5±2.5; meds for cataplexy still taken by 28 /	modaf 200+400 increase MWT vs placebo, no diff w/in 200+400. 400mg signif > on all naps vs placebo. 200mg signif > on 1300+1500 afternoon naps

Drug	Citation / Evidence Level	Study Design / Test Protocol / #naps-mins / SL definition	Sample Size (Completed Study) / Mean age ± SD (range) / Gender	Comparison Measures or Groups (Drug Regimen)	Prior Total Sleep Time (minutes)	**Results or Mean sleep latency ± SD**	Internal Bias / External Bias	Study Conclusion (Significant findings p< .05)
Modafinil	US Modafinil in Narcolepsy Multicenter Study Group [158] / A1	Randomized controlled trial volunteer / MSLT clinical / 4 naps/4trials / 20 min/ " / unknown/ "	Grp1: 93; Grp2: 89; Grp3: 89 / Grp1: 41 (17-66); Grp2&3: 42 (18-67)(18-66) / Grp1: 43M, 50F; Grp2: 37M, 52F; Grp3: 44M, 45F	Grp1 placebo; Grp2 modafinil 200 Grp3 modafanil 400	NS	**Grp1 3.5±3.4 Grp2 4.9±4.3 Grp3 5.1±4 Grp1 5.5±4.5 Grp2 8.2±5.9 Grp3 7.8±5.3**	Pt selection: Subjects required to have dx of narcolepsy including MSLT < 8 and 2 REM /	400mg > pl 200=400 > pl
Modafinil	Damian [157]/ C3	Repeated longitudinal / unknown / unknown/ unknown	8 (NS) / 37 / 28-47 / 6 M, 3 F	Grp1: baseline, Grp2: provigil 200 or 400	NS	**Grp 1: 7.3 ±4.6 Grp 2: 22.7 ±6.3**	NS/NS	P <.05
Modafinil	Kingshott [71] /	Repeated longtitudinal, volunteer / MSLT research; MWT / 4 naps; 4 trials/ 20 min; 20 min/ first epoch of any sleep stage; first epoch any sleep stage	30 / (NS) /53 ± 7 / (41-68) / M, 27, F, 3	Grp1: placebo Grp2: Provigil	NS	**Grp 1: MSLT 9 ± 4.5 Grp 2: MSLT, 10.3 ± 4.4 Grp 1: MWT, 16.6 ± 5 Grp 2: MWT, 18.3 ± 3.9**	NS/NS	MWT p<.05

Evidence Table VII. NORMATIVE DATA

Citation / Evidence Level	Study Design / Test Protocol / #naps-mins / SL definition	Sample Size (Completed Study) / Mean age ± SD (range) / Gender	Comparison Measures or Groups (Drug Regimen)	Prior Night Total Sleep Time (minutes)	**Results or Mean sleep latency ± SD**	Internal Bias / External Bias	Study Conclusion (Significant findings p< .05)	Comments from Reviewer
Alloway [96] / C5 /	Case-control volunteer / MSLT clinical / 5 naps / 20 min / 3 cons. Epochs of any stage	10 / Grp1: 44.3±11.9 (29-62); Grp2: 42.7±10.6 (28-56) / 5M, 5F	Grp1: narcolepsy; Grp2: Normals	NS but same data in another paper indicates no difference b/w PSG in normals & narcolepsy	**Grp1: 3.5±3.2 Grp2: 10.3±6.4**	Latency to stage1 shorter in narcoleptics than normals		
Bishop [165] / C5 /	Case review Consecutive / MSLT clinical / 4 naps / 20 min / "per Carskadon et al"	139 / Grp1 27.9±9.5; Grp2 34.6±12.2 / Grp1 18M 6F; Grp2 54M 61F	Grp1 with ≥2 SOREMPS; Grp2 without SOREMPS		**Grp1: 6.2±2.9 Grp2: 10.8±4.5**	sleep study volunteers	24 or 139 (17%) had 2 or more SOREMPS	

Citation / Evidence Level	Study Design / Test Protocol / #naps-mins / SL definition	Sample Size (Completed Study) / Mean age ± SD (range) / Gender	Comparison Measures or Groups (Drug Regimen)	Prior Night Total Sleep Time (minutes)	**Results or Mean sleep latency ± SD**	Internal Bias / External Bias	Study Conclusion (Significant findings p< .05)	Comments from Reviewer
Bonnet [63] / C5 /	repeated/longitudinal volunteer / MSLT research / 5 naps – 4 used/ 20 min / first epoch of any sleep stage	12 / 21±1.5 (18-30) / 12M	Grp1: baseline Grp2: caffeine (initial);	Grp1 445; Grp2 367	**Grp1: 9.5+5.3 Grp2: 17.8±5**	pts also had caffeine on the night preceding- however, this should have made means closer /	Caffeine > baseline	
Bonnet [34] C5	repeated/longitudinal volunteer / MSLT research / 6 naps 4 used/ 20 min / first epoch of any sleep stage	Grp1: 10/ 38.8+6.8 Grp2: 10/38.3+7.1	Grp1: normals Grp2:insomniacs	N=442 + 23 I = 342 + 75	**N= 10.6+6.1**	I > N	I > N	
Bonnet [179] / C5	repeated/longitudinal volunteer / MSLT research / 4 naps / 2o min / first epoch of any sleep stage	14/29+6.3 / 9F	Repeated baseline	456	**11.1+ 6.9**	MSLT<MWT		
Bonnet[171]/ C5	repeated/longitudinal volunteer / MSLT research / 4 naps / 2o min / first epoch of any sleep stage	50/ 23+4.6 / 33F	Repeated baseline	437 + 31	**7.4 + 3**	No overall differences across baseline nights		

Citation / Evidence Level	Study Design / Test Protocol / #naps-mins / SL definition	Sample Size (Completed Study) / Mean age ± SD (range) / Gender	Comparison Measures or Groups (Drug Regimen)	Prior Night Total Sleep Time (minutes)	**Results or Mean sleep latency ± SD**	Internal Bias / External Bias	Study Conclusion (Significant findings p< .05)	Comments from Reviewer
Bonnet[172]/ C5	repeated/longitudinal volunteer / MSLT research / 6 naps / 20 min / first epoch of any sleep stage	Grp1:Normals 10/ 36 ± 8/ 5F Grp2:Insomniac 10/ 35 + 8/ 5F		**Grp1: 420** Grp2: 361 ± 49	**N = 15.5±5.4**		I > N	
Broughton [68] / C5	case-control volunteer / MSLT clinical / 5 naps / 20 min / 1 min stage1	11 / Grp1: 45.5±14.6 (22-63); Grp2: 45.2±13.9 (22-60) / 6M, 5F	Grp1: Narcolepsy; Grp2: Controls	N/S	**Grp1: 2.7±2.9 Grp2: 10.4±6.3. All narcoleptics except 1 had >= 2 SOREMPS (1 case had 1 SOREMP) / /**	Prior TST not evaluated; Confounding factors Some pts had previous MSLT	MSLT correctly classified narcoleptics & normals in 90% of cases. Each nap can distinguish narcolepsy from control	
Browman [111] / C5	Cohort/volunteer MWT / 5 trials/ 20 min / 3 consec epochs stage1 or 1 epoch any other stage	Grp1: 20 / 47.9 (19-67) / 14M, 6F Grp2: 15 / 42.5 (21-69) / 7M, 8F Grp3: 15 / 36.7 (24-59) / 8M. 7F	Grp1: sleep apnea Grp2: narcolepsy Grp3: controls	N/S	**Grp1: 10.98±5.62 Grp2: 10.54±5.54 Grp3: 18.76±3.27**	Selection procedure NS	Controls had higher MSL on MWT than apnea & narcolepsy patients / MWT did not differentiate between sleep apnea and narcolepsy	

Citation / Evidence Level	Study Design / Test Protocol / #naps-mins / SL definition	Sample Size (Completed Study) / Mean age ± SD (range) / Gender	Comparison Measures or Groups (Drug Regimen)	Prior Night Total Sleep Time (minutes)	**Results or Mean sleep latency ± SD**	Internal Bias / External Bias	Study Conclusion (Significant findings p< .05)	Comments from Reviewer
Carskadon [166] / C5	Cross-section; repeated/longitudinal volunteer / MSLT clinical / 4 naps / 20 min / unknown	/ 15±0.5 (14-16.2) / 15M 25F	Grp1: 9th graders Grp2: 10th graders	Grp1: 448 Grp2: 440	**Grp1: 11.4±4.6 Grp2: 8.5±4.5**	Pt selection: volunteers / school goers	10th graders sleep duration and MSL was lower	
Carskadon [22] / C5	repeated/longitudinal volunteer / MSLT research / 8 naps / 20 min / 1 min after S1	6 / (18-21) / 4M 2F		443.8±6	**2.6**	/ Population: Healthy controls had very low baseline MSLT values	MSL < BL after sleep deprivation	
Doghramji [88] / C5	Cross-Section Volunteer / MWT / 4 / 40 min, 20 min results calculated post hoc. / 3 consecutive epochs stage 1 or 1 epoch any other sleep stage	64 / 47.8±11.4 / 27 M, 37 F	Grp1: normals SL defined as 3 epochs stage 1 or one epoch any other stage. Grp2: normals SL defined as 10sec stage 1 or first epoch any stage	416.7±63.1	**Grp1: 35.2 ±7.9 Grp2: 32.6 +9.9*** ***reported as 30.4 +11.0 in raw dataset**	Ceiling effect for 40 min score for tests with no sleep onset. Some volunteers had sleep lab experience		Projected result if a 20 min trial had been used. MSL 18.7 ±2.6 and 18.1 +3.6 for sustained and first epoch defs, respective

Citation / Evidence Level	Study Design / Test Protocol / #naps-mins / SL definition	Sample Size (Completed Study) / Mean age ± SD (range) / Gender	Comparison Measures or Groups (Drug Regimen)	Prior Night Total Sleep Time (minutes)	**Results or Mean sleep latency ± SD**	Internal Bias / External Bias	Study Conclusion (Significant findings p< .05)	Comments from Reviewer
Edinger [167] / C5	case-control; repeated/longitudinal / MSLT Unknown / 4 naps / 20 min / 3 consec epochs of S1 or 1 epch any other sleep stage	64 / 67.7±4.8 / 32M, 32F	Grp1: Home Sleep normals Grp2: Lab Sleep Normals; Insomniacs- Grp3: Home Sleep, Grp4: Lab Sleep	Grp1: 470 Grp2: 348 Grp3: 348 Grp4: 335	**Grp1: 10.97±6.07 Grp2: 10.5±6.55 Grp3: 9.6±5.37 Grp4: 11.6±6.57**	/ Older subjects only	No difference among groups or conditions	
George [110] / C5	Case-control consecutiv, volunteer / MSLT "Standard"--no reference / unknown / 20 min / unknown	Grp1 16; Grp2&3 21 / Grp1 39.6±15.2; Grp2 49.3±12.7; Grp3 46.1±15.1 / Grp1 12M, 4F; Grp2&3 21M	Grp1: narcolepsy; Grp2: apnea; Grp3: Normal		**Grp1: 4.9±4.6 Grp2: 7.2±6 Grp3: 13.2±2.4**	some pts declined participation b/c study also looked driving; MSLT criteria not used //	narcolepsy < apnea < Normals	

Citation / Evidence Level	Study Design / Test Protocol / #naps-mins / SL definition	Sample Size (Completed Study) / Mean age ± SD (range) / Gender	Comparison Measures or Groups (Drug Regimen)	Prior Night Total Sleep Time (minutes)	**Results or Mean sleep latency ± SD**	Internal Bias / External Bias	Study Conclusion (Significant findings p< .05)	Comments from Reviewer
Hakkanen [76] / C5	Repeated longitudinal/volunteers/ MWT / 4 trials / 40 min / first epoch any stage	Grp1: 10 Grp 2: 10 Grp3: 10 Grp4: 10 //	Grp1: OSA Grp2: OSA 9 weeks after CPAP Grp3: controls Grp4: controls after 9 weeks	N/S	**Grp1: 23.2±10.2 Grp2:31.8±6.03 Grp3:35.4±6.8 Grp4: 34.1±5.5**	Prior TST not monitored / Bus drivers only /drug criteria for OSA pts unclear	MWT changed significantly in mild OSA group w/CPAP (p= 0.041); Normal controls had higher MWT at baseline but not after CPAP (p=0.023)	In normals, test retest reliability in MWT is very high
Hanly [133] / C5	Cross-section volunteer / MSLT unknown / 4 naps / uknown / 3 consec epochs of St1 or 1 epoch any other stage	Grp1&2 7; Grp3 9 / Grp1 68; grp2 62; Grp3 65 / Grp1&2 7M; Grp2 9M	Grp1:CSR Grp2: CHF Grp3: Control	336	**Grp1: 4±1.1 Grp2: 11.3±4.8 Grp3: 12.4±1.9**	unclear if SD or SEM reported seem like SD / CSR pts had AHI 33±9/hr sleep were thses time CSR pts or sleep apnea pts	CSR pts had shorter MSLT than controls & CHI pts (p < o.05)	
Hartse [168] / C5	Repeated/ volunteer / 4 / 30 min / MSLT/ 3 consecutive epoch stage 1 or 1 epoch any other sleep stage	20 / 24-70 / 9 M, 11 F	Grp1: normal MSLT protocol Grp2: MSLT with instruction to stay awake		**Grp1: 12.5±2.0 Grp2 16.95±2.0**		Instruction to stay awake increased sleep latency significantly	

Citation / Evidence Level	Study Design / Test Protocol / #naps-mins / SL definition	Sample Size (Completed Study) / Mean age ± SD (range) / Gender	Comparison Measures or Groups (Drug Regimen)	Prior Night Total Sleep Time (minutes)	**Results or Mean sleep latency ± SD**	Internal Bias / External Bias	Study Conclusion (Significant findings p< .05)	Comments from Reviewer
Levine [43] / C5 /	Cross-Section Volunteer / MSLT Research / 4 / 20 min / first signs of sleep (at least 2 30 sec epochs s1 or first epoch of any other stage).	Grp 1, 129; Grp 2, 76; Grp 3, 47 / Grp 1, 18-29; Grp 2, 18-29; Grp 3, 30-80 / Grp 1, 64 M, 65 F; Grp 2, 36 M, 40 F; Grp 3, 30 M, 17 F	Grp1: younger all Grp2: college subgroup Grp3: older	40's = 428+33 50's = 421+42 60's = 411+40 70's = 410+46	**Grp1: 10.73±1.14 Grp2: 9.58±1.11 Grp3: 12.67±1.14**	Patient selection: volunteer / no drug screening	Younger Ss, particularlyl college students were sleepier than older Ss. College Ss with higher sleep efficiencies were sleepier than those with lower sleep efficiencies	
Manni [173] / C5	Cross-section volunteer / MSLT unknown / 5 naps / unknown / uknown	18 / 23 (19-25) / 10M, 8F	Healthy students	405±53.8	**9.9±3.2, Nap1: 9±6 Nap2: 11±5 Nap3: 8±6 Nap4: 10±4 Nap5: 14±7**	Error of Measurement outcome very limited nocturnal(ambulatory) PSG could not R/O other than gross sleep fragmentation/only EEG, EOG, & clin EMG monitored / Population: university students	Descriptive study, no statistical findings	

Citation / Evidence Level	Study Design / Test Protocol / #naps-mins / SL definition	Sample Size (Completed Study) / Mean age ± SD (range) / Gender	Comparison Measures or Groups (Drug Regimen)	Prior Night Total Sleep Time (minutes)	**Results or Mean sleep latency ± SD**	Internal Bias / External Bias	Study Conclusion (Significant findings p< .05)	Comments from Reviewer
Martin [180] / C5	Repeated/longitudinal volunteer / MSLT / MWT / 4 naps / 4 trials / unknown / / after first epoch of any sleep stage / unknown	12 / 25±6 (22) / 7M 5F	Grp1: baseline; Grp2: Sleep fragmentation	Grp1: 419±27.4 Grp2: 414±32.2	**Grp1: 8±3.1 Grp2: 6.2±2.1 Grp1: 29±10 Grp2: 25.7±9.7**	Only young adult students studied	Baseline > Fragmentation Baseline > Fragmentation	
Martin [169] / C5	Repeated/longitudinal volunteer / MSLT / MWT / 4 naps / 4 trials / unknown / " / after first epoch of any sleep stage / unknown	16/ 24+3/ 8F	Grp1: baseline; Grp2: fragmented	Grp1: 400+20	**MSLT: Grp1: 11+3 Grp2: 7+2** **MWT Grp1: 34+8 Grp2: 24+10**	/	Baseline > Fragmentation Baseline > Fragmentation	
Mattmann [170] / C5	randomized/ longitudinal random; volunteer / MSLT / unknown / 4 naps / 20 min / 3 consec epochs of S1 or 1 epoch any other sleep stage	Grp1 12; Grp2 11; Grp3 6 / (20-30) /	Grp1: placebo Grp2: triazolam .5 Grp3: triazolam 1.0		**Grp1: 12.6±7.6 Grp2: 14.5±7.9 Grp3: 9.8±6.1**	/	groups did not differ on MSL	

Citation / Evidence Level	Study Design / Test Protocol / #naps-mins / SL definition	Sample Size (Completed Study) / Mean age ± SD (range) / Gender	Comparison Measures or Groups (Drug Regimen)	Prior Night Total Sleep Time (minutes)	**Results or Mean sleep latency ± SD**	Internal Bias / External Bias	Study Conclusion (Significant findings p< .05)	Comments from Reviewer
Mitler [181] / C5	Cross section, volunteer / MWT / 4 trials- 20,30,40 minutes without sleep all repeated / 3 epochs of Stage 1 or 1 epoch any stage	64 / 47.8 ± 11.4 / (NS) M=27, F=37	Normal age grps Grp1: 30-39 Grp2: 40-49 Grp3: 50-59 Grp4: 60-69	N/S	**Overall MWT 20 18.1 ± 3.6, MWT 40, 35.2 ± 7.9; Grp1: = MWT 20, 17.5 ± 3.0, MWT 40, 30.9 ± 8.9 Grp2: = MWT 20 18.9 ± 3.2, MWT 40, 36.5 ± 8.6 Grp3: MWT 20 19.2, ± 1.8 MWT 40, 36.7 ± 6.4 Grp4: MWT 20, 19.6, ± 1.0, MWT 40, 38.0 ± 3.7**	Prior TST not evaluated	MWT 30-39 y.o. have lower MSL p<.04	There was no significant overall relationship between age and MWT sleep latency so caution is advised on interpreting the single significant inter-age contrast
Mitler [174]/C5	5/20 MSLT clinical	17/ 34+10	Grp1: normals	NS	**13.4**			

Citation / Evidence Level	Study Design / Test Protocol / #naps-mins / SL definition	Sample Size (Completed Study) / Mean age ± SD (range) / Gender	Comparison Measures or Groups (Drug Regimen)	Prior Night Total Sleep Time (minutes)	**Results or Mean sleep latency ± SD**	Internal Bias / External Bias	Study Conclusion (Significant findings p< .05)	Comments from Reviewer
Newman [97] / C5	non-randomized controlled trial volunteer / MSLT clinical / 5 naps / 20 min / 3 cosec epochs of S1 or 1 epoch any other sleep stage	10 / 49±14 (21-70); (20-71) / Grp1 5M, 5F; Grp2 6M, 6F	Grp1: narcolepsy Grp2:normals	N/S	**Grp1: 3.4±1.5 Grp2: 10±2.1**	Pt selection not noted in narcolepsy; pts had been diagnosed with MSLT but all pts had cataplexy/	Narcoleptic MSL < normals; narcoleptics entered REM earlier.	SSS did not significantly correlate w/ MSL for narcoleptics or normals. No difference b/t narcoleptics & normals for latencis to stage 2 & 3 on MSLT.Baseline pupillary diameter, light reflex, orienting didn't differ narc from norm

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Reynolds [175] / C5 /	Cross-Section / MSLT Other / 5 / 20 min / three consecutive epochs of Stage 1 or 1 epoch any other stage	Grp 1, 22; Grp 2, 29 / Grp 1, 83.2±3; Grp 2, 24.2±5 / Grp 1, 10 M, 12 F; Grp 2, 18 M, 11 F	Grp 1: elderly Grp 2: younger		**Grp1: 15.2±8 Grp2: 12.4±8**	volunteer	Younger subjects were sleepier on MSLT than elderly. Younger subjects also had more REM on recovery MSLT's after a night of sleep deprivation than elderly.	
Richardson [23] / C5	non-randomized other / MSLT clinical, research / 5 naps, 6 naps / 20 min / first epoch of any sleep stage	Grp1 8; Grp 2 9 Grp3 19; Grp4 5 / Grp1 44.6±13.6; Grp2 44.1±5.8; Grp3 44.9±7.1; Grp4 30±7.2 / Grp1 4M, 4F;Grp 2 8M 1F; Grp3 12M, 7F; Grp4 2M, 3F	Study1 Grp1: narcolepsy Grp2: Controls Study2 Grp3: narcolepsy Grp4: Controls	Grp2: 469.8±33 .4	**Grp1: 417.2±42.7 Grp3&4 not measured Grp1: 2.4 Grp2: 11.7 Grp3: 2.8 Grp4: 9.9 Grp5: 2.7**	Prior TST not evaluated in study 2	Narcolepsy patients had shorter latencies than controls p<.01 (both studies)	Combined data from graph, SEM's reported.or individual nos. for mean. SD & SEM reported only for individual nap data, not for mean sleep latencies.

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Roth [176] / C5	randomized controlled trial volunteer / MSLT / 5 naps / 20 min / unknown	16 / 29 / 10M, 6F	Grp1: diphenhydramine 150 Grp2: placebo	Grp1: 449±21 Grp2: 449±20	**Grp1: 6.7±2.6 Grp2: 10.3±3.3**	/	diphenhydramine < placebo	
Seidel [178] / C5	volunteer / MSLT Research / 5 / 20 min / unknown	60 - Grp 1, 13; Grp 2, 13; Grp 3, 10; Grp 4, 12; Grp 5, 11 / 21-45 /	Grp1: Cetirizine 5 mg. Grp2: Cetirizine 10 mg Grp3: Cetirizine 20 mg Grp4: Hydroxyzine 25 mg Grp5: Placebo	Grp1: 463.1±23.1 Grp2: 464.4±28.7 Grp3: 470.5±18.9 Grp4: 471.1±19.8 Grp5: 480.8±18.0		all subjects given a drug or placebo	Hydroxyzine produced the shortest sleep latencies	
Seidel [177] / C5	volunteer / MSLT Research / 5 / 20 min / unknown	89 / 49M 26+5; 40F 27+6	Normals	449+35	**10.9 + 5**			

Citation / Evidence Level	Study Design / Test Protocol / #naps-mins / SL definition	Sample Size (Completed Study) / Mean age ± SD (range) / Gender	Comparison Measures or Groups (Drug Regimen)	Prior Night Total Sleep Time (minutes)	**Results or Mean sleep latency ± SD**	Internal Bias / External Bias	Study Conclusion (Significant findings p< .05)	Comments from Reviewer
Zwyghuizen [78] / C5	Repeated/longitudinal volunteer / MSLT Research / 4 / 20 min / at least 2 - 30 sec epochs of S1	Grp 1, 7; Grp 2, 7 / 21-40 / 14 M	1st MSLT's only. Grp1: 6 months; Grp2: 12 months	8 hr TIB w/ actigraphy /	**All, Night 1 13.35±3.90; Night 2 13.02±4.33 Grp1: 14.79±3.90 Grp2: 11.91±3.61**	health volunteers	The 2nd day of MSLT testing was not different from the 1st day after 0, 6 or 12 months. Mean latencies on 2 nights (separated by 4-14mo) were correlated r = 0.97 p<.001.	