Table S3. Summary of primary outcome measures

Author (date)	Technique	Findings
Armitage *et al.* (2009)	PSG	No significant differences in spectral power in any frequency band including REM latency, delta-wave, fast frequency beta or alpha power were found in the twin with ME/CFS compared to the healthy twin. There, however, were significant differences in sleep stage main effect ($p<0.001$), EEG frequency band main effect ($p < 0.001$) and sleep stage by frequency band interaction ($p< 0.0001$) in ME/CFS patients compared to the healthy twin.
Ball *et al.* (2004)	PSG	Significantly increased stage 3 ($p\leq0.05$) and REM sleep were found in ME/CFS patients compared to their healthy twin. ME/CFS patients also showed higher AHI ($p\leq0.05$) and apnoea hypopnea arousal index ($p\leq0.05$) values compared to the healthy twin. No significant differences were observed in sleep architecture including sleep latency, REM latency and total sleep time.
Bileviciute-Ljungar et al (2020).	PSG	All ME/CFS patients had reduced total sleep time. Higher sleep latency and number of awakenings was found in most patients (78% and 70% respectively). In ME/CFS patients, 61% of N1 stage was higher and 57% of REM was lower. Arousal index was impaired in 22% of patients.
Decker *et al.* (2009)	PSG MSLT	Alpha power in the ME/CFS cohort was diminished during stage 2, slow wave, and REM sleep ($p < 0.0001$) compared to HC. Delta power decreased during slow wave sleep ($p < 0.0001$) but was elevated during stage 1 ($p < 0.0001$) and REM ($p < 0.001$). Theta, sigma and beta spectral power during stage 2, slow wave sleep and REM were significantly reduced in patients compared to HCs ($p<0.0001$).
Gotts *et al.* *(*2016)	PSG	ME/CFS patients showed significantly increased wake after sleep onset ($p<0.05$), percentage wake ($p<0.01$) and REM latency ($p<0.05$) compared to HCs. ME/CFS patients showed more severe symptoms of insomnia compared to HCs ($p<0.001$). ME/CFS patients showed decreased percentage sleep efficiency index compared to HCs ($p<0.05$).
Kishi *et al.* (2008)	PSG	REM to non-REM sleep transitions have been detected in humans. The frequency of these transitions was found to be significantly reduced in ME/CFS patients compared to HC ($p<0.01$). Subsequent alteration of transition patterns also occurs resulting in significantly greater relative transition frequency of moving from both REM and stage I sleep to awake ($p<0.01$).
Le bon *et al.* (2007)	PSG	ME/CFS patients had significantly lower sleep period time ($p<0.017$), total sleep time ($p<0.009$), sleep efficiency index ($p<0.013$), movement time ($p<0.001$) and REM sleep latency ($p<0.055$) and higher sleep onset latency ($p<0.0001$) compared to ME/CFS patients.
Le Bon *et al.* (2012)	PSG	The ultra-slow delta power was approximately one fifth lower in ME/CFS patients compared to HCs in N3 sleep ($p=0.046$). Theta, alpha, sigma and beta did not differ significantly between the two groups. ME/CFS patients had significantly higher MAI ($p=0.031$) and N3 sleep % ($p=0.026$) compared to HCs.
Majer (2007)	PSG MSLT	There were no significant differences found in sleep pathology or architecture parameters measured using MSLT and PSG in ME/CFS patients compared to HCs.

Neu (2007)	PSG	Only two objective sleep parameters the MAI ($p<0.001$) and AHI per hour ($p<0.095$) were significantly higher in ME/CFS patients compared to HCs.
Neu (2008)	PSG MSLT	ME/CFS patients showed significantly increased sleep onset latency ($p=0.042$), AHI per hour of sleep ($p<0.0001$) and micro arousal index hour of sleep ($p<0.0001$) compared to HCs. ME/CFS patients showed significantly decreased scores on the MSLT ($p<0.005$) compared to HCs.
Neu (2014A)	PSG	ME/CFS patients showed significantly increased WASO ($p=0.033$), SWS ($p=0.015$), MAI ($p<0.0001$), AHI ($p <0.001$) and periodic limb movement ($p=0.035$) compared to HCs.
Neu (2014B)	PSG MSLT	ME/CFS patients had significantly longer SWS duration as well as higher periodic limb movements and AHI ($p < 0.001$). No significant difference between patient and HC groups were found in MSLT sleep latencies, sleep period time, total sleep time, non-REM stages N1 and N2, REM latency and duration, and sleep efficiency.
Neu (2015)	PSG	ME/CFS patients had significantly greater SWS ($p=0.024$) and MAI ($p<0.001$) scores compared to HC. There was a significant decrease in central ultra-slow power (0.3-0.79Hz) in the patient group ($p<0.001$).
Reeves (2006)	PSG MSLT	There were no differences of clinical significance in frequency of obstructive sleep apnoea per hour in ME/CFS patients. There were also no significant differences in sleep architecture characteristics in ME/CFS patients compared to HCs.
Sharpley (1997)	PSG	There were no significant differences found in sleep characteristics between ME/CFS patients and HC. There was, however, a significant decrease in sleep efficiency ($p<0.05$) and increase in time spent in bed ($p<0.05$) and total wake time after start of sleep ($p<0.05$) in ME/CFS patients compared to HC.
Togo (2008)	PSG	ME/CFS patients had significantly different PSG recordings and subjective experiences compared to HC ($p < 0.05$). Differences also include less total sleep time ($p < 0.05$), lower sleep efficiency ($p < 0.05$) and less rapid eye movement in the ME/CFS patient group ($p < 0.05$). ME/CFS patients were stratified into a.m. sleepier and a.m. less sleepy groups. ME/CFS patients that were in the a.m. sleepier group had reduced length of uninterrupted sleep ($p < 0.05$).
Togo (2013)	PSG	Although PSG results are not significantly different between ME/CFS patients and HC, patients reporting more sleepiness in the morning showed significantly higher ($p<0.05$) fractal scaling index alpha 1 during stages 1, 2 and 3 sleep. In patients, there was a correlation between self-reported sleepiness and fractal scaling index alpha 1 during non-REM sleep ($\sim r=0.51$, $p<0.05$) Fractal scaling index alpha 1 was significantly lower when asleep for HC and patients in the less sleepy group ($p< 0.05$), however, these values did not change in the sleepier group.
Watson (2003)	PSG	ME/CFS patients presented with eight subjective measures of insomnia and low-quality sleep ($p\leq0.05$). Percent stage REM sleep was higher in the ME/CFS twin compared to the healthy twin ($p\leq0.05$). Other objective measures including sleep latency, total sleep time, sleep efficiency, arousal number, arousal index, hypnogram awakenings, REM- sleep latency did not significantly differ between the two groups.
Watson (2004)	PSG MSLT	There were no significant differences found between the two groups in mean sleep latency on the MSLT.

Abbreviations: AHI, apnoea- hypopnea index; HC, healthy controls; ME/CFS, Myalgic Encephalomyelitis/ Chronic Fatigue Syndrome; MAI, Micro-arousal index; MSLT, Multiple Sleep Latency Testing; PSG, Polysomnography; REM, Rapid Eye Movement; SWS, Slow Wave Sleep