Part IV
Assessment of Sleep in Relation to Combat-Related PTSD

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The following ten chapters on sleep assessment in sleep- and combat-related PTSD provide a comprehensive resource of information on what is known clinically regarding sleep aspects of PTSD, approaches to their assessment in clinical and clinical-research settings, and select issues highly relevant to sleep and PTSD from clinical sleep medicine and the basic science of sleep. Highlights include a comprehensive guide to general PTSD assessment including segments that apply directly to sleep (Blevins et al. of Chapter 14) and discussion of the limitations of assessing sleep only through primary PTSD instruments and how they can be enhanced by instruments designed to directly assess sleep. Vasdev and Shapiro discuss sleep disturbances more appropriately being considered core than “secondary” symptoms of PTSD that prominently include insomnia, nightmare awakenings, as well as abrupt awakenings with anxiety absent recall of dreams. Germain et al. reminds us of a broader spectrum of disruptive nocturnal behaviors that are reported with PTSD and the advantages and limitations of various modalities that can be used for their assessment. Khawaja et al. provide a comprehensive review of the use of actigraphy, a modality that has the advantages of providing extended objective assessment in naturalistic environments, along with the limitations of measuring body movement and not direct activity of the brain. The current relevance of this discussion is heightened by the growing popular use of related commercial technology for self-monitoring.

From the aforementioned chapters, the reader can discern the status of the current state of knowledge regarding fundamental issues that the PTSD sleep field has addressed for several decades and has historically seemed to some to represent a conundrum [1]. The content, however, provides relative current consensus around such issues including the near ubiquity of subjective sleep disturbances with PTSD and their modest and variable manifestations with standard physiological assessments. One caveat to such observations is the possible effect of setting where the laboratory anecdotally can provide a feeling of safety and unusually good sleep for the subject with PTSD. In addition, as Germain et al. remind the reader, there are tools that can look beyond the surface electrode or movement sensor, and brain imaging and (less definitively) spectral EEG have indicated alterations of arousal states during sleep with PTSD.

Then there is the matter of rapid eye movement (REM) sleep, long implicated in PTSD due to the association of REM sleep with dreaming and the prominent abnormal dream experiences of many with PTSD. It now seems relatively clear that PTSD is not associated with characteristic abnormalities of the amount or timing of REM sleep (in contrast with major depression).
Positive findings do include fragmented patterns of REM sleep during the early development of PTSD [2] and with PTSD in association with early life trauma [3]. A meta-analysis supported elevated eye movement density during REM sleep with PTSD [4]. The chapter by Woodward et al. provides sorely needed information regarding polysomnographic correlates of nightmare awakenings, an issue that has previously been addressed by limited data and assumptions. In their substantial series, nightmare awakenings are preceded by both REM and non-REM sleep although the association with REM sleep far exceeds the proportion of total sleep represented by REM. In addition, there were associations of more elaborate dream content and trends associating nightmare distress with the amount of preceding REM sleep. While confirming that not all relevant dream mentation in PTSD is REM related, the findings clearly support the need to investigate the REM sleep state to better understand how emotional processing during sleep is altered in PTSD.

Three remaining chapters are noteworthy for addressing emerging issues in the sleep PTSD field. One addresses comorbidity with sleep apnea (Krakow et al. of Chapter 21) for which there are studies not indicating an increased association of sleep apnea and PTSD to studies (of the chapter’s authors) where the association is almost ubiquitous. Criticism of one of the studies not finding an increased association as utilizing inadequately sensitive methods raises an alternative consideration of whether the more sensitive methods employed by the authors identify alterations to breathing and arousal that are a consequence of pathological anxiety. The evidence for high rates for sleep breathing disorders in at least some PTSD populations, with independent replication among studies of Veterans, is compelling and, even more so, is the clinically important evidence that treatment of co-occurring sleep apnea will improve PTSD. Analysis of heart rate variability (HRV) as a tool for interrogating autonomic function is discussed in informative detail by van Boxtel et al. While the chapter reviews mixed data regarding daytime autonomic balance, our laboratory has recently found evidence for compromise of the normal shift toward parasympathetic dominance during sleep with PTSD [5]. If replicated, such patterns of nocturnal autonomic function may come to be considered important determinants of daytime function and health risk with PTSD. Finally, two chapters (Spoormaker of Chapter 19; Lipinska et al. of Chapter 23) address sleep and memory and learning. Recent interest in sleep’s impact on memory and learning in PTSD has been influenced by a burgeoning cognitive neuroscience literature linking learning, memory, and sleep. These chapters emphasize disruption of learning consolidation during sleep by increased arousal thereby affecting extinction learning and declarative memory. While both of these represent important impairments in PTSD, might there be potential modifications of emotional memory during sleep in addition to consolidation (particularly during REM sleep) that can serve to beneficially alter the perspective and emotional state of a well-rested person? Harnessing such capacities may provide important means for reducing the suffering and improving the lives of people with PTSD.

References