



# THE PHYSIOLOGY OF RESTORATIVE SLEEP

Recovery is not passive; it is a biological discipline governed by your Circadian Rhythm.

## Muscle Protein Synthesis (MPS) Muscle Repair

The "Golden Window" (22:00 – 02:00):

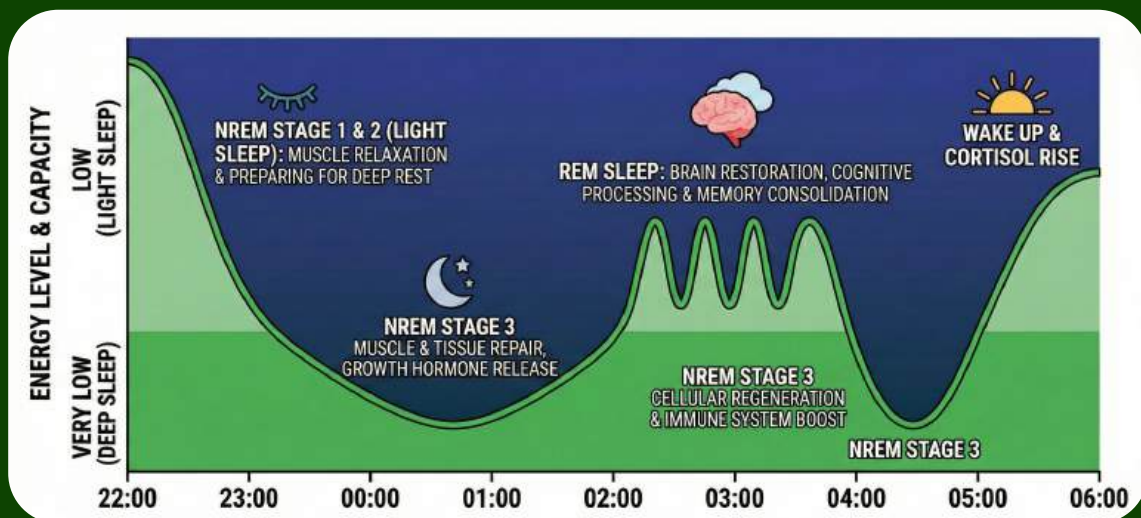
Peak secretion of Growth Hormone (HGH) occurs during deep Slow-Wave Sleep. This is the primary trigger for Muscle Protein Synthesis (MPS)—the biological process where your body repairs micro-tears and physically builds new muscle tissue.

The Bottom Line: Training breaks your muscles down; this specific sleep window is the only time they actually grow back bigger and stronger. If you miss the 22:00–02:00 window, you miss the bulk of this hormonal hardware repair.

## Central Nervous System (CNS) Restoration

Circadian Alignment & CNS Restoration:

While the early night focuses on muscle, the later sleep cycles (02:00 – 06:00) prioritize Rapid Eye Movement (REM). This is where the Central Nervous System (CNS) undergoes "glymphatic clearance," flushing out neurotoxins and metabolic waste. For the shift worker or athlete, aligning sleep as close to this natural Circadian Rhythm as possible is critical to prevent cognitive drag and maintain high neural drive.



You cannot out-train a sleep deficit. Protect the window.