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Reconditioning Plateaus in Post-Viral Fatigue Recovery for Previously Fit Individuals

Introduction

Recovery from Long COVID, myalgic encephalomyelitis/chronic fatigue syndrome (ME/CFS), or similar post-viral fatigue syndromes can be an especially challenging journey – even for individuals who were in excellent physical condition pre-illness. These formerly high-performing individuals (e.g. athletes or very active people) often experience **reconditioning plateaus**, periods during recovery where improvements in fitness and fatigue levels stall. Unlike a typical athletic training plateau that one might push through with more effort, post-viral plateaus are usually the body's way of enforcing limits. Pushing harder can lead to setbacks due to **post-exertional malaise** (PEM), a hallmark of Long COVID and ME/CFS in which even minor exertion triggers symptom flare-ups [1] [2]. This report explores why such plateaus occur, how they manifest in objective health metrics and subjective experience, and what rehabilitation strategies experts recommend for those who entered illness with a high fitness baseline.

High Fitness, Hard Fall: Unique Challenges for Previously Fit Patients

Being very fit prior to a viral illness unfortunately does not guarantee a quick recovery. Studies of athletes with COVID-19 found that their risk of developing Long COVID was roughly comparable to the general population, and about 25% of elite athletes were unable to fully resume training within a month of acute infection [3]. In other words, superior fitness *did not* protect them from prolonged symptoms.

Moreover, traits that make someone a great athlete – mental toughness, pain tolerance, a "never quit" attitude – can become liabilities in Long COVID recovery [4]. Sports respiratory specialists observe that previously fit people often struggle with the concept of rest and feel *guilty* or frustrated for being sidelined [4]. As one physiotherapist put it, if you had a broken foot you wouldn't try to run on it, but "somehow a lot of previously fit runners feel that [rest] doesn't apply in the context of Long COVID" [4] [5]. Patient advocates caution that the normal fitness "playbook does not work" in Long COVID – you have to throw out old training routines and completely rethink your approach [6]. In a Long COVID runners' group, a coach advised: *"Don't run; don't throw petrol on the fire... Stop means stop. We've seen that even gentle walking can do damage."* [6]. This dramatic change in mindset is often one of the first hurdles for an athletic person faced with post-viral fatigue.

The Phenomenon of Recovery Plateaus

Many Long COVID and ME/CFS patients experience an initial improvement in symptoms followed by a prolonged plateau. Doctors report that most people with ME/CFS *"feel worse at first, improve, and then plateau and remain at limited functionality."* [7]. Full recovery is rare and often slow; instead, it's common to hit a ceiling that falls far short of pre-illness ability. Large cohort studies of Long COVID have noted similar patterns. For example, an e-cohort study in France found that while symptom prevalence gradually declined in the first 6–8 months after COVID onset, it then **plateaued** through 12 months, with about 85% of patients still experiencing persistent symptoms at the one-year mark [8]. In other words, beyond the initial improvements, further gains often stalled for an extended period.

For previously high-performing individuals, these plateaus can be particularly disheartening. Physically, they may find themselves stuck at a fraction of their former endurance or strength. One competitive runner described that months into Long COVID, *"my endurance is shot and running at any pace is overly stressful. I can't simply work my way out of this… It's an incredible strain on every aspect of my life."* [9]. Such patients often report that activities which used to feel easy now feel arduous. A 21-year-old track athlete noted his heart rate became **"ridiculously high"** during short runs that used to be easy, and he would develop severe PEM after each attempt, forcing him to rest for weeks [10]. Despite being young and previously very fit, eleven months post-infection he had managed **only two high-intensity training sessions** in total, and could not run more than a few times per week without relapse [11]. This drastic reduction in tolerance exemplifies a plateau in reconditioning – his capacity had improved from bed-bound to some activity, but then got "stuck" at a low level for many months.

Subjectively, plateau periods are often accompanied by mental fatigue, anxiety, and even depression. Athletes used to continual progress may feel demoralized when effort doesn't translate into improvement. The runner above admitted *"I've gone through dark moments where I felt like everything was falling apart"* [12]. It requires significant mental adjustment to accept that **time and rest**, more than willpower, drive the recovery curve in post-viral illness.

What causes these plateaus? Research increasingly shows it's not just deconditioning. In Long COVID, pushing beyond one's limits can trigger **measurable physiological abnormalities** that temporarily set back progress. A 2024 study took muscle biopsies from Long COVID patients before and after a short exercise; it found that after exertion, patients' muscle cells showed *"widespread abnormalities"* – their cellular energy factories (mitochondria) were not working properly, muscles had signs of damage and inflammation, and tiny blood clots were present [13] [14]. Patients' baseline energy production was already impaired, and one hard workout made it markedly worse [15]. This provides a concrete biological explanation for why doing too much can lead to a long crash. In effect, the body's systems (muscular, nervous, immune) hit a wall – further training or activity doesn't build them up as it would in a healthy person, but instead *knocks them back*. Thus, a reconditioning plateau may reflect the body protecting itself from further harm. Until the underlying issues (mitochondrial function, autonomic regulation, etc.) improve, the safe exercise capacity remains capped. Some formerly elite athletes with Long COVID have even found that months of rest and rehab still haven't returned them to pre-illness form, and **some may never regain their pre-COVID fitness** [16]. This stark reality underscores how different post-viral recovery is from typical athletic recovery.

Objective Metrics: What Wearables Reveal About Recovery

One advantage many fitness-oriented patients have is lots of data – they often track their health metrics using wearables (fitness watches, chest straps, Oura rings, etc.). These devices can provide insight into the recovery process and plateaus:

- **Resting Heart Rate (RHR):** An elevated resting heart rate is a common objective sign of post-viral illness. Fit individuals normally have low RHR (e.g. 50s or even 40s bpm), but during Long COVID, RHR often runs much higher than baseline, indicating ongoing physiological stress or autonomic dysfunction. In one case-control study, Long COVID patients' mean heart rate was **significantly higher** than that of matched healthy controls [17]. Athletes are quick to notice this; as one article noted, most people might not even register a slight persistent tachycardia, but *"elite athletes…notice right away"* if their resting pulse is abnormally elevated [18]. Wearables allow tracking of RHR trends over time – a downward trend toward one's normal RHR can indicate improving fitness or reduced strain, whereas a plateau or upward creep in RHR might signal a setback or overexertion. In fact, clinicians often advise using RHR as a recovery gauge: if someone's average RHR jumps up by >5–10 bpm or is trending high, it can mean the patient did too much and needs extra rest [19]. Conversely, a stable or dropping RHR (back toward normal) over weeks or months may reflect progress. That said, many long-haulers find their RHR, after an initial acute spike, plateaus at a higher-than-desired level for a long time, mirroring their plateau in exercise tolerance.

- **Heart Rate Variability (HRV):** HRV – the variation in time between heartbeats – is another key metric. Higher HRV generally indicates a well-conditioned, resilient autonomic nervous system, whereas low HRV suggests stress or poor autonomic function. Long COVID patients typically have **reduced HRV** compared to healthy people [17]. For example, a 2023 study showed Long COVID patients had significantly lower HRV at rest and during deep breathing exercises, consistent with autonomic impairment [20]. This aligns with reports of **dysautonomia** (dysfunctional autonomic nervous system) in post-viral syndromes – symptoms like palpitations, dizziness on standing, and temperature dysregulation are common [21]. If one tracks HRV nightly with a wearable, a long-term plateau in HRV (or only slight improvements) might accompany a plateau in how one feels. Some rehabilitation programs are now integrating HRV monitoring to guide pacing, since lingering low HRV or a drop after activity can signal the need to scale back [22] [23]. On a positive note, gradual improvement in HRV over months could be an objective sign of recovery of autonomic balance, even before the patient subjectively feels "all better." But in practice, many high-fit individuals see that their HRV, which used to be excellent, stays depressed for a protracted period post-illness – underscoring that their nervous system is still not back to baseline.

- **Sleep Quality and Scores:** Wearable sleep trackers (in rings, watches, headbands) often show that post-viral patients have fragmented and non-restorative sleep. Long COVID commonly disrupts sleep – patients report insomnia, unusual awakenings, or unrefreshing sleep even after adequate hours. Objectively, devices like the Oura Ring or Fitbit might record low deep sleep and REM, or give poor sleep efficiency scores. This can both reflect and contribute to recovery plateaus: poor sleep drives fatigue and dampens the body's ability to restore itself. In fact, research has found that **post-COVID patients exhibit poor sleep quality** on objective measures, and addressing this is important for rehabilitation [24]. Tracking nightly sleep data can help correlate symptom flares with sleep disturbances (e.g. a bad night's sleep often precedes a higher-fatigue day). Many formerly fit individuals are accustomed to prioritizing sleep for performance, and in recovery this becomes even more critical – consistent sleep patterns, relaxation techniques, and sometimes medical sleep aids are employed to improve sleep metrics, which in turn may gradually improve energy. A sustained plateau in sleep quality (e.g. always low sleep score) might go hand-in-hand with plateaued daytime progress, indicating an area to work on.

- **Daily Activity (Step Count, etc.):** Fit people often monitor steps, calories, or training load. These metrics take a nosedive during serious post-viral fatigue. It's not uncommon for someone who used to log 15,000 steps a day to barely manage 1,500 steps during their illness nadir. As they recover, step count may slowly increase – but a plateau in daily steps or active minutes is a clue that the person has hit a ceiling of what they can tolerate. One longitudinal study of Long COVID patients found that even between 12 and 18 months post-illness, **daily step counts remained low** and in some cases even declined slightly, suggesting patients had not been able to increase activity over that period [25]. Wearables can set gentle step goals (far below previous goals) to help patients stay active but within limits. For example, an athlete might set a **step limit** to avoid overexertion – if they hit 5,000 steps and their heart rate is climbing, that's the cap for the day. An important insight from wearables is that progress isn't linear: a patient might increase steps or exercise minutes for a few weeks, then see the numbers plateau or drop when a setback occurs. Graphing this data can validate the plateau experience and also show the effect of interventions (e.g. a month of strict pacing may stop the decline and hold steps steady, which is a win). Ultimately, objective activity data must be interpreted in context; quality of movement and symptom response matter more than just hitting a numeric target.

In summary, wearable metrics provide concrete evidence of the body's status during recovery. **High RHR, low HRV, poor sleep, and stagnant activity levels** often correlate with the subjective feeling of being "stuck." Encouragingly, even small improvements in these metrics over time – for instance, a trend toward a lower morning heart rate or better sleep duration – can signal that the plateau may be lifting. They also enforce accountability: one cannot ignore a high heart rate or terrible sleep and expect to safely push harder the next day. For formerly high-performing individuals used to finely tuning training based on metrics, this biofeedback can be both a motivator and a restraint (e.g. *"My readiness score is low and HRV is down today, so I* have *to honor that and rest, just as I would heed a bad recovery score after hard training."*).

Pacing and Reconditioning Protocols: Cautious Approach vs. Athletic Instincts

Standard post-viral fatigue management revolves around **pacing** – balancing activity with rest to avoid triggering PEM. There are formal protocols that try to quantify safe activity levels. A widely cited rule is to keep exercise heart rate below the **anaerobic threshold** (the point at which the body shifts to less efficient energy production). In ME/CFS and Long COVID patients, this threshold is often dramatically lower than normal. The Workwell Foundation's research, for example, suggests the threshold typically occurs at roughly *15 beats per minute above resting heart rate* [26]. In practice, they recommend using "**RHR + 15 bpm**" as a conservative ceiling for heart rate during any activity [27] [28]. So if a patient's resting pulse is 60, they initially try to keep exertion under ~75 bpm. This is far below what a healthy person (or especially a trained athlete) would consider exercise – it might equate to slow walking or light household chores. But the reason for this low limit is that most of these patients have a blunted chronotropic response (their heart doesn't pump normally during exercise) [28], and **exceeding that low threshold can provoke symptoms**. The usual formulas for target heart rate (like "220-age") don't apply, because those would overshoot these patients' capacity [29].

Under such pacing protocols, patients often use alarms on their heart rate monitors to alert them when they approach the limit, and then immediately stop and rest [30]. The goal is to *never* go anaerobic, thereby staying within the "energy envelope" that the body can handle. A small study found that rigorously staying under the ventilatory threshold prevented many PEM episodes in Long COVID patients [22] [23]. In essence, this approach aims to interrupt the "boom-bust" cycle that leads to plateaus or crashes [31] [32]. Over time, if the patient's condition improves, the safe heart rate zone may broaden – but protocols urge **starting ultra-conservative** and only expanding limits very gradually [33].

For previously high-functioning individuals, these pacing guidelines can feel *exceedingly* (even excruciatingly) conservative. An athlete who used to train at 160 bpm heart rates now being told to stay below 75 bpm will likely find it hard to even break a sweat. There is often a mental battle between the patient's instincts ("I know I could push a bit more") and the protocol's warnings. Some sports clinicians have wondered if *too* much caution could slow recovery in certain cases – for instance, if an athlete is kept completely inactive for fear of symptoms, might that prolong deconditioning unnecessarily? Early in the pandemic, many teams benched athletes for weeks after COVID-19 out of cardiac precautions. Retrospective analysis later showed the cardiac risk was lower than feared, and some experts questioned whether the prolonged rest may have itself contributed to slow recoveries [34] [35]. This led to updated return-to-play guidelines that shortened mandatory rest (from 10+ days down to about 5 days for mild cases) [36]. The nuance here is that **optimal pacing is highly individual** – it's a moving target between doing too little and too much [37].

However, the predominant view in Long COVID and ME/CFS care is that it's safer to err on the side of "too conservative." The cost of overexertion can be a multi-week setback, whereas the cost of under-exertion is just slower progress. Patient anecdotes abound of previously fit people who tried to resume training too quickly and ended up in a worse state. For example, one runner continued running *during* his COVID infection out of fear of losing fitness; months later he was still suffering, with sky-high heart rates for minimal effort and severe relapses that forced complete rest for weeks [38]. His biggest regret was not resting early on. As he put it, *"I didn't want to lose all those 70-mile weeks of training I'd banked… [but] my health was declining"* [38]. Stories like this illustrate that **pacing isn't about weakness or lack of will – it's a survival strategy**. Even gentle exercise can be "throwing fuel on the fire" of ongoing inflammation, as the earlier quote warned [5].

From a reconditioning standpoint, standard graded exercise therapy (the typical progressive exercise rehab used for deconditioned patients) has largely been set aside for Long COVID. Instead of a rigid "increase exercise by 10% each week" plan, rehabilitation for post-viral fatigue is **symptom-guided** and titrated to the individual [39]. A multidisciplinary consensus advises **"an individually titrated, symptom-guided program of return to activity"** for post-COVID fatigue [39]. In practice, this means there is no fixed timetable – if a patient can only walk 5 minutes a day without symptoms, they might stick at 5 minutes for a month before trying 6 minutes. Traditional rehab milestones (like "jog for 10 minutes by week 4") are thrown out if the patient is not tolerating increases. Clinicians sometimes use the *15-beat rule* or a Borg exertion scale rating as a ceiling, and emphasize **energy conservation**: prioritize essential activities and cut out or modify others to stay within the body's limited energy budget [40]. Pacing also extends to cognitive and emotional exertion – for instance, an elite athlete who now works a desk job might find a full workday mentally fatiguing, which counts toward the day's "load" just like physical exercise.

One question is whether these same pacing rules should apply identically to those who were **highly conditioned pre-illness**. On one hand, such individuals have more physiological reserve; some rehab specialists note that once the acute post-viral phase passes, an athlete might be able to handle slightly more stimuli (e.g. gentle strength training) without crashing, compared to a sedentary person who gets Long COVID. On the other hand, the **pathophysiology of Long COVID/ME/CFS seems to level the playing field** in a grim way – even top athletes have seen their aerobic capacity and endurance slashed by the illness [41] [42]. A British sports medicine study found that after COVID, athletes' *VO_2 max* (a key endurance metric) was significantly reduced, despite retained strength [43]. Another study in Nature showed that Long COVID patients (some of whom were athletic) had not just lower VO_2 max but also lower maximal ventilation and power output; tellingly, the longer an exercise bout went on, the more these measures dropped, suggesting a time-dependent fatigue mechanism [44] [42]. These findings support keeping aerobic reconditioning very gradual. The **15-bpm HR limit** may feel like a straitjacket to a marathoner, but physiologically it might be exactly what their body needs to avoid those latent abnormalities from flaring up. Over time, if they respond well, they might increase the limit – for instance, some patients start at RHR+15 (~75 bpm), then later test RHR+20 (~80 bpm) and find they can handle it *if and only if* they've had a long stable period with no PEM. Workwell experts note that some patients can "tolerate a higher threshold" eventually, but **they insist on starting low and being patient** [33]. This cautious calibration is intended to prevent the very plateaus we're discussing – paradoxically, trying to progress too fast can cause a crash that *solidifies* a plateau or even worsens baseline function.

In summary, pacing and reconditioning protocols for post-viral syndromes prioritize *sustainability over speed*. For a high-performing individual, this can be a humbling adjustment. It may feel **overly conservative**, but given the stakes (potential relapse), most experts and veteran patients advocate following these protocols closely. As one Long COVID runner quipped, *"just like in racing, pacing is key to [Long COVID] recovery"* [45] – except in this "race," the goal is not to finish fastest, but to avoid dropping out.

Adaptive Strategies for Formerly Fit Patients

Despite the challenges, there are strategies and emerging best practices to help previously fit individuals navigate recovery plateaus. These approaches blend clinical guidelines with lessons learned from patient communities and sports medicine insights:

- **Phased Rehabilitation and Gradual Progression:** Recovery should be approached in **stages**. In early stages (often supervised by a rehabilitation specialist or physiotherapist), the focus is on rest and gentle movement just enough to prevent issues like blood clots or severe deconditioning. This might include breathing exercises, light stretching, or basic activities of daily living. Only once a patient can handle daily self-care and slow walking without symptom spikes would they advance to a moderate stage – e.g. short walks or low-impact exercise broken into chunks with rest. A former athlete might chafe at starting with 5-minute walks, but that may be necessary. A common rule is to **increase activity no more than 5–10% per week** – and only if no PEM occurs. If symptoms worsen, the patient is advised to revert to the last tolerable level. This paced, stepwise approach ensures that each "phase" of reconditioning (such as moving from walking to light jogging, or from one to two gym sessions per week) is solidified before moving on [39]. Some occupational therapy guides suggest a **phased return to work or exercise** schedule – for example, start with half-days at work or alternating active/rest days, then gradually increase frequency or intensity as endurance improves [46]. The guiding principle is *stabilize, then progress*. Skipping phases or jumping ahead when feeling "OK" one day often backfires in these conditions.

- **Monitoring and Biofeedback:** Harnessing wearable tech and self-monitoring can make pacing more precise. By tracking real-time heart rate, a patient can stay within their safe zone (using alerts as needed) [30]. Heart rate variability and sleep data can be reviewed daily to inform adjustments – for instance, if **nighttime HRV drops and resting HR is up**, it's a sign the body is under stress and the patient should scale back activity or at least not increase it [19]. Many formerly fit individuals find that treating recovery like training – *with data* – gives them a sense of control. They might keep a detailed log of symptoms vs. activities to identify patterns. One recent study demonstrated that continuous HRV monitoring can effectively flag **overexertion** in Long COVID patients, and suggested that sports physicians incorporate HRV biofeedback into pacing advice [22] [47]. For example, if a patient's **HRV drops for 2 nights in a row after a certain exercise duration**, that duration might be above their threshold and should be reduced to avoid a PEM episode. Some patients also use **pulse oximeters** or blood pressure monitors if they have related issues (like oxygen desaturation or orthostatic intolerance), pausing activity when those readings stray from normal. In essence, objective monitoring takes the guesswork out of pacing – it can confirm when you're doing okay and give early warning when you're not.

- **Strict Pacing and "Energy Envelope" Management: Pacing** is more than just slowing down – it's a proactive strategy to distribute limited energy. Former athletes can apply their training discipline here: they schedule rest **as deliberately as they once scheduled workouts**. One effective tool is the **"energy envelope"** concept: imagine you have a certain amount of energy currency to spend each day, and you must budget it across all activities (physical, cognitive, emotional). Previously fit folks often have an edge in body awareness, so they can learn to sense when they're nearing their limit. They are encouraged to *stop activity before they feel completely exhausted*, rather than after. As the Long COVID coach said, *"stop means stop"* – the moment signs of fatigue or brain fog appear, you should cease your effort and recover [6]. This is the opposite of athletic "no pain, no gain" mentality. **Translating endurance sports skills to illness:** Interestingly, some endurance strategies *do* carry over: listening to one's body, staying hydrated and fueled, and pacing oneself are crucial in Long COVID [48]. The difference is you are pacing for *survival*, not for a faster finish. Patients are taught to **prioritize** tasks (maybe choose one "high-energy" activity per day, whether it's a work meeting or a short bike ride, and defer others). They also practice **activity switching** – alternating mental and physical tasks with breaks in between, since even mental exertion can contribute to fatigue load [49]. For someone used to full training schedules, this constrained pacing can be psychologically tough, but framing it as an *active intervention* (like a training plan, but for recovery) sometimes helps. The goal is to avoid the "boom-bust" cycle: no big booms of activity that lead to busts. By staying within a self-enforced envelope, the patient gives their body the best chance to slowly heal and eventually expand that envelope.

- **Mental and Emotional Resilience:** Recovery plateaus test one's patience and mental health. High achievers might struggle with the loss of their routines and identity tied to fitness or competition. Psychological support is therefore a key component of rehabilitation. Strategies include **goal adjustment** – setting new, realistic goals that focus on health (e.g. consistent sleep schedule, gradual increase in walk duration) rather than performance. Celebrating small victories (like being able to walk an extra 5 minutes, or a day with better concentration) is important to maintain morale. Some patients find mindfulness, meditation, or visualization techniques helpful, akin to how an athlete mentally prepares for challenges. Others benefit from **cognitive behavioral therapy (CBT)** or counseling focused on coping strategies, not because the illness is "in their head" (it's very real physically), but to manage the understandable anxiety and depression that can accompany prolonged illness. The peer community can also be invaluable: connecting with other athletic individuals who have Long COVID or ME/CFS often provides solace and tips. For instance, hearing from a fellow marathoner that *they* took a full year to be able to run 2 miles can temper one's own expectations. This community wisdom reinforces that the person is not alone and that plateaus are common, not personal failures. Many patients eventually reach a place of reframing their self-worth independent of athletic output, which aids emotional recovery. As one support group member advised, *"know that the normal playbook does not work... put it away and rethink everything"* [6] – essentially, give yourself permission to be a "recovering person" first and an athlete second.

- **Targeted Therapies and Medical Support:** Some issues that contribute to plateaus can be addressed with specific interventions. For example, if **autonomic dysfunction** (dysautonomia) is prominent – symptoms like racing heart, dizziness on standing, blood pressure swings – doctors might recommend interventions such as low-dose **beta blockers** (to prevent heart rate spikes), increased salt and fluid intake or medications like fludrocortisone (to improve blood volume and orthostatic tolerance), and compression garments for the legs [50] [51]. There is also growing interest in **HRV biofeedback** training: teaching patients to do slow, paced breathing exercises that can boost vagal tone and potentially improve HRV over time [52]. This, in turn, might reduce sympathetic overactivation and help fatigue. For respiratory issues (some fit people develop dysfunctional breathing patterns post-COVID, such as hyperventilating with minimal exertion [53]), working with a respiratory physiotherapist on breathing techniques or using devices to strengthen respiratory muscles can yield improvements. **Sleep therapies** are crucial if sleep is impaired – treating underlying sleep apnea, using melatonin or other sleep aids, and rigorously practicing sleep hygiene can slowly restore more normal sleep architecture. Each specific symptom domain (pain, cognitive issues, etc.) may need its own management plan (pain medication or fibromyalgia therapies, memory aids and cognitive rehabilitation, etc.). The idea is to **remove as many barriers to recovery as possible** – e.g., if migraines or insomnia are dragging a patient down, aggressively treating those can free up more energy for physical reconditioning. Some previously fit patients also explore novel or even experimental therapies in hopes of breaking through a plateau: for instance, **hyperbaric oxygen therapy (HBOT)** to improve tissue oxygenation (an Olympian with Long COVID reported some benefit from HBOT) [54], or neuromodulation techniques to reset autonomic function. While no definitive cure exists yet, a comprehensive rehab program often combines *symptomatic treatments* with pacing to give the best chance of improvement.

- **Adjusting Exercise Modality:** One adaptive tactic for athletic individuals is to modify *how* they attempt reconditioning. If endurance exercise (prolonged cardio) reliably triggers PEM, but they still crave activity, shifting the focus to gentle **strength training or interval-like short efforts** might be considered. Notably, a study of COVID-recovered athletes found their **strength and sprint performance were less affected** than their endurance – they could lift weights or do short sprints at roughly pre-illness levels, even though their aerobic capacity was much lower [55]. This implies that *fast-twitch* muscle activities that are brief might be better tolerated than sustained aerobic work. Some rehab specialists cautiously introduce light resistance training (with very low weight and few repetitions) before aerobic training, to rebuild muscle without overwhelming the energy system. For example, a former weightlifter with Long COVID might start with bodyweight exercises or resistance bands, doing just 1–2 sets and long rest periods. If that's well-tolerated over weeks, it can be slowly increased. The key is still avoiding any exercise to the point of strain or form breakdown (which would raise heart rate and blood pressure). Short **intervals** of activity with ample rest can sometimes be easier on the system than continuous activity. Each patient is different, though – some may find even light weights cause fatigue. The guiding rule is **listen to your body's response**: if trying a modified exercise modality doesn't cause symptom exacerbation over the next 24–48 hours, it might be incorporated in the routine. This can help maintain some strength and give a psychological boost of "doing something," which, for an athlete, can feel more satisfying than endless rest. Still, any such regimen should be developed with a knowledgeable physio or physician, as there's a fine line between helpful activity and harmful overexertion.

- **Reevaluating Limits Periodically:** A plateau is not necessarily permanent. Experts advise periodically (perhaps every few weeks or months) *re-testing the waters* in a controlled way to see if one's capacity has improved. For instance, if an individual has spent 4 weeks staying strictly below a heart rate of 90 and has been stable, they might attempt a slightly higher heart rate activity for a brief time under observation. If it goes well (no symptom flare-up in the next day or two), that new level might become the starting point of a *new* gradual progression. Some clinicians use **cardiopulmonary exercise testing (CPET)** in a laboratory setting to identify an updated anaerobic threshold or to document improvements in VO_2 max, giving a green light for more activity. For athletic patients, seeing objective proof of improved capacity can be motivating. On the flip side, if no improvement is seen, it reinforces the need for continued pacing. It's also important to **recognize other contributors** to plateaus: Long COVID often waxes and wanes due to internal factors (e.g. inflammation levels) or external ones (new infections, stress, etc.). If a patient feels stuck, doctors will check for any *treatable issues* – for example, reactivation of other viruses (like EBV) or new conditions like blood clots, anemia, thyroid disturbances, etc., which can all occur post-COVID and may hinder progress. Treating such issues can sometimes break a plateau. In essence, recovery is a dynamic process; a plateau might last months, but then improvement can resume. Continuous communication with healthcare providers, and adjusting the rehab plan accordingly, is vital. Patience is perhaps the hardest "skill" to exercise for an athlete in recovery, but it is repeatedly emphasized by experts as a cornerstone of eventual success [45].

Conclusion

Reconditioning after a severe post-viral syndrome is a marathon, not a sprint – and it's a marathon with an uncertain course and multiple hills (plateaus) along the way. Previously high-fit individuals often find their recovery timeline stretched much longer than expected, with objective signs like heart rate, HRV, and exercise capacity lagging far behind their pre-illness norms. These plateaus in recovery are not due to lack of effort or "mental block"; rather, they reflect the underlying physiological upheaval caused by the virus, which fundamentally changes how the body responds to stress and exercise [56] [14]. Standard pacing protocols – such as staying within 15 beats of resting heart rate – may seem overly cautious to an athlete, but they are grounded in clinical observations that **overstepping limits can reset progress** [28] [6]. The evidence to date suggests that these guidelines are appropriate starting points, and they can be calibrated upward if an individual proves able to handle more.

The experiences of formerly fit long-haulers underscore that **recovery must be approached on the body's terms, not the mind's**. Those who eventually improve often say the turning point was when they accepted slowing down and adopted diligent pacing, rather than trying to "power through" (which invariably backfired). As one runner put it, you can't train your way out of Long COVID the way you'd train through a bad patch in a race – the illness demands a fundamentally different strategy [57]. With that said, being fit is not a curse in this situation – prior fitness may offer some advantages in body awareness and perhaps a quicker rebound once the illness mechanisms resolve. The key is channeling the positive aspects (discipline, knowledge of recovery principles) and suppressing the detrimental ones (over-training drive, impatience).

Moving forward, researchers and clinicians are actively seeking more tailored rehabilitation approaches: for example, trials are underway for vagus nerve stimulation to improve autonomic function, structured exercise programs that adjust in real-time to a patient's physiology, and medications to enhance energy metabolism. Until those become evidenced and widely available, the consensus is to **pace wisely, use objective data to guide activity, manage symptoms aggressively, and hold on to hope**. Recovery often comes in **increments** – a month with no crashes where previously there were weekly crashes, or being able to do 15 minutes of activity where once 5 minutes was the max. For a high-performing person used to big gains, these increments may seem small, but they are significant steps forward. Over time, they add up.

Finally, it's worth remembering that plateaus can also be periods of consolidation. Much like an athlete whose performance plateaus while their body adapts to a new training load, a Long COVID patient's plateau might be their body *quietly healing behind the scenes*. Maintaining a stable plateau (even if it's at a lower level than desired) without relapses is actually a positive foundation on which further recovery can build [7]. With continued research, peer support, and adaptive strategies, many previously athletic individuals *do* inch towards better health. They may or may not return fully to their former athletic feats, but they often reach a new normal where quality of life is restored and physical activity is enjoyable again, even if at a different scale. The road is undoubtedly long and unpredictable – but as in any endurance endeavor, pacing, patience, and perseverance are the companions that will carry them through [45].

Sources:

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3. Like the Wind Magazine (2021) – Advice from Long COVID athletes: traditional training "playbook" fails; even gentle exercise can worsen symptoms [6]. Endurance skills (pacing, hydration) should be repurposed for recovery [48].
4. Health Rising (ME/CFS resource) – Typical ME/CFS trajectory: initial worsening, some improvement, then plateau at a limited level of function [7]. Complete recovery is rare, especially in adults [61].
5. ComPaRe Long COVID Study – Symptom prevalence declines over ~6–8 months then plateaus, with ~85% of patients still symptomatic at 12 months [8]. Illustrates prolonged plateau in recovery for many.
6. NPR (Jan 2024) – Long COVID exercise study: muscle biopsies show mitochondrial dysfunction, inflammation, and **muscle damage** after exertion, explaining severe PEM [13] [14]. Long COVID patients' exercise capacity dropped further post-exertion, unlike in normal deconditioning [15].
7. Workwell Foundation – **Pacing with HR monitor**: recommends threshold ~RHR+15 bpm due to chronotropic incompetence in 85% of ME/CFS and Long COVID patients [28]. Stay below this HR to avoid anaerobic switch and PEM; use HR alarms and rest when 10 beats above RHR [30] [32]. Threshold can be raised cautiously over time if no PEM at current level [33].
8. Soucheray, CIDRAP (Sept 2023) – **HRV findings**: Long COVID patients have significantly reduced HRV at rest (and during deep breathing) and higher resting heart rates than controls [62] [17]. Points to persistent autonomic nervous system dysfunction (dysautonomia) in Long COVID [63].
9. Jo et al., *medRxiv* (2025) – Continuous wearable monitoring in 127 Long COVID patients: HRV was consistently lower than in controls during daily activities and sleep. Notably, **HRV remained suppressed for >24 hours after even moderate exercise** in Long COVID patients, indicating delayed autonomic recovery [64] [22]. Night-time HRV dropped after intense or long exercise, correlating with PEM [65]. Supports using wearables to guide pacing and identify each patient's PEM threshold [23].
10. Physio Society Long COVID Session (Hull, 2022) – Athletes with Long COVID showed: **fatigue and quick exhaustion** at even low training intensities, **inappropriately rapid heart rate** responses to

exercise, and dysfunctional breathing on exertion [66] [53]. No difference seen by sport type; autonomic nervous system likely involved [67]. Emphasizes cautious return-to-play and investigating autonomic rehabilitation.

11. Like the Wind Magazine – First-person accounts from fit athletes: e.g. an ultramarathoner remained extremely fatigued for 7+ months ("like drowning" in exhaustion) [68]; a collegiate runner who tried to resume training saw sky-high HR for easy runs and **PEM after each run**, forcing a 6-week stop [10]; a top-10% runner struggled to accept that he *"can't work my way out"* of Long COVID with training – endurance "shot" and even easy runs are overly stressful [57]. These stories illustrate the need for radical pacing and the mental toll of hitting a performance plateau.
12. Thompson, *The Sick Times* (Aug 2024) – "Grappling with Long COVID as an elite athlete": Highlights lack of clear rehab guidelines and frustration among athletes [69]. Emerging evidence shows Long COVID especially hurts endurance (lower VO_2 max, weaker lung function, muscle fiber issues) [70] [42]. Notes some athletes use therapies like HBOT out of desperation [54]. Even mild Long COVID can significantly impede athletic performance, and some athletes may never get back to 100% [16].
13. BMC Sports Sci & Med Rehab (2023) – Post-COVID patients exhibit sustained **poor sleep quality** and high sedentary time; calls for addressing sleep and inactivity in rehab [24]. Good sleep is linked to better recovery outcomes, so interventions like sleep hygiene and, if needed, medical therapy are recommended.
14. AAPM&R Consensus Guidance (2021) – For post-acute COVID fatigue, recommends an individualized, titrated return-to-activity program with **energy conservation** and symptom monitoring [39]. Emphasizes that pacing should be personalized and that patients may need to **pause increases** during plateaus or setbacks.
15. Cortinez-O'Ryan et al., *Nature Commun.* (2022) – Studied long-term recovery trajectories: most Long COVID symptoms improve slowly then hit a plateau by 6–8 months [8]. Provides a realistic timeline for patients and suggests many will have persistent symptoms for at least a year, informing the need for prolonged pacing and support.

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