Supporting return to study and return to work in the patient with persistent post-concussion symptoms: A biopsychosocial approach

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Background
Concussion, or mild uncomplicated traumatic brain injury (mTBI), is a common condition that can occur in sports, motor vehicle accidents, falls, assaults/violence and occupational settings. While symptom resolution is usually expected within 2–4 weeks, a minority of patients (up to 30%) experience persistent post-concussion symptoms (PPCS) that impact cognitive, physical and emotional functioning. These prolonged symptoms can interfere with a patient's ability to return to school or work, creating uncertainty for patients, employers and treating practitioners.

Objective
This article provides an evidence-based clinical approach to supporting return to learning and return to work in patients with PPCS, with a focus on the general practice setting.

Discussion
The general practitioner (GP) has a key role in recognising PPCS, educating patients/families, facilitating a stepwise return to cognitive and vocational activity and coordinating multidisciplinary care. This article outlines current return-to-study and return-to-work recommendations, age- and context-specific considerations, guidance on certification, communication with schools and employers and criteria for specialist referral. A biopsychosocial model is emphasised, recognising the interplay between physical symptoms, psychological responses and environmental demands in recovery from concussion.

Return to study in patients with persistent post-concussion symptoms

Return to study in patients with persistent post-concussion symptoms (PPCS) is an integral part of graded return to functional tasks. This needs to be coordinated with their respective institute.

Cognitive fatigue, headaches, sleep disturbance and mood changes can all significantly interfere with academic demands. There are age specific considerations for return to study, and these will be discussed below.

A systematic review of athletes who suffered concussion revealed that most athletes (93%) of all ages have a full return to learning with no additional academic support by 10 days. The process of quickly returning to learning may be more challenging for students with specific considerations (eg high acute symptom severity or a prior learning disability) that may affect recovery.[1]

The implications of delayed return to study depends on individual year level, academic expectations, parental expectations and pre-existing learning needs. For university and senior secondary students, delayed return to study has implications for achievement, self-identity/purpose and future career goals. General practitioners (GPs) are often the first point of contact and are well placed to provide structured, supportive guidance.

Principles of return to study

A biopsychosocial approach is essential to all the care we provide. Return to study should be:

- **Symptom-guided:** Activity should not worsen symptoms more than mildly or transiently. Reassuring patients that persisting symptoms are not an indicator of persisting damage is essential to promoting recovery. Avoidance behaviours can be difficult to treat, and patients can benefit from guidance around pacing. Many protocols define this as no more than a 2-point increase on a 10-point symptom severity scale, which should settle within an hour of activity.[2] It is important for them to understand that some symptom exacerbation is needed to ensure progression/functional improvement.

- **Graded:** Gradual escalation of academic demands is safer than abrupt return.
- **Individualised:** Plans should reflect the student's course requirements, assessment schedules and pre-existing vulnerabilities (eg attention-deficit/hyperactivity disorder [ADHD], migraine, anxiety).
- **Collaborative:** GPs should encourage the student/parents to liaise with schools, universities and student support services to enable reasonable adjustments. Parents should encourage regular reviews with their school liaison services regarding their child's progress.

Practical guidance for GPs

1. Initial 'relative rest' and stabilisation (24–48 hours) followed by graded cognitive reintegration: Cognitive and physical rest is appropriate only in the acute phase. Beyond this, prolonged rest may worsen outcomes. Light reading or screen time can be reintroduced as tolerated.
2. A stepwise return to study (Table 1):[3,4] Each stage generally requires 24–48 hours without symptom exacerbation before progression. Regression to the previous stage is recommended if symptoms worsen significantly.
3. Age specific considerations (Table 2).
4. Symptom management:
   - **Headache:** optimised hydration/nutrition, sleep hygiene, simple analgesia, physiotherapy (for cervical involvement).
   - **Sleep disturbance:** limit caffeine, regular sleep–wake routine, short-term melatonin if indicated.
   - **Mood/anxiety:** supportive counselling, cognitive behavioural strategies, referral to psychologist if persistent.
   - **Vestibular or visual disturbance:** consider early referral to physiotherapy or optometry.
   - **Symptom exacerbation:** avoidance of drugs, alcohol and high-risk activities (high risk for further injury) as they can exacerbate symptoms/impact recovery.
5. Certification and communication: GPs may provide medical certificates to support reduced study load, deferred assessments or disability services registration. Clear communication between student support offices, family, medical team/s involved and student ensures consistent expectations and reduces treatment ambiguity for the student.

Key points for return to study

- Anxiety can negatively impact on recovery and prolong symptoms, therefore encourage early psychology support and consider medications where appropriate.
- Consultation of other guidelines (eg return to sports, return to study as appropriate).
- Image issues/peer pressure/parental pressure can hinder progress. It is important to ensure student/parental/school expectations/goals for recovery are addressed (eg parental pressure to perform exams may cause additional stress and anxiety for the student).
- Individualised treatment plans should be developed and regularly reviewed.
- Collaboration and sharing guidelines with parents and schools improves outcomes and ensures expectations are clear for all parties.

Table 1. Stepwise return to study[3,4]

Step	Goal	Suggested approach
Step 1: Daily activities at home	A gradual return to typical activities	Start on typical daily activities such as reading or gentle walking. Begin with 5–15 minutes at a time and gradually build up: • Consider return to school in the first 0–4 days
Step 2: School activities at home	To increase tolerance to cognitive work	Complete light cognitive activities such as homework, school reading or other educational activities at home.
Step 3: Return to school part time	To increase academic activities	Consult school and gradually introduce schoolwork and busy school environment. Start with shorter days and/or increased breaks. Discuss options for quiet break spaces at lunch or break time: • Recommend 3 non-consecutive half days per week • Rest periods during recess (no sport) • Rest days in between with minimal screen time • Provide study material to ease multi-tasking • Exemption from exams/tests
Step 4: Return to school full time	Return to usual school activities and catch up on missed work	Gradually increase school activities until they tolerate full days: • Regular, full cognitive activity • Children should return to sport after they have successfully returned to school

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Return to work in patients with persistent post-concussion symptoms

Return to work (RTW) in patients with PPCS is an integral part of assisting patients to return to normal functional activity.

Principles of return to work

RTW is therapeutic and should not be delayed until all symptoms resolve. RTW in PPCS requires a biopsychosocial approach. National and state guidelines provide practical staging thresholds and workplace strategies. The Australian and New Zealand (ANZ) Concussion Guidelines (2023/24) recommend early graded activity once daily tasks are tolerated.[5] Western Australia (WA) Health adds useful reference thresholds: readiness can be considered when patients can sustain ~2 hours of concentration or ~45 minutes of screen time, progressing initially via short, non-consecutive shifts, and to support this with GP reviews every 1–2 weeks.[6]

Table 2. Age-specific considerations

Age group	Return to study strategy	Considerations
Primary school (5–12 years)	Start with short periods of low stimulation tasks	• Limited ability to self-monitor/regulate • Parent/teacher need to supervise • Minimal screen time • Awareness of activities/play that are likely to worsen symptoms/risk further concussions • Frequent breaks
Adolescents (13–18 years)	May require temporary exemptions or accommodations	• Better insight but higher pressure to return to academic performance • Parental, peer and academic stress • Sporting/work/extra-curricular activity • Drug/alcohol use
University/TAFE	Academic accommodations via academic support services	• Often self-directed • May not disclose symptoms • Industry-specific requirements for apprenticeships may need consideration

TAFE, Technical and Further Education.

Return to work barriers in patients with persistent post-concussion symptoms

PPCS typically presents with headache, fatigue, dizziness, slowed cognition and mood disturbance. These impair productivity and safety. A 2024 survey found that while 74% of affected employees returned to work, only 30–36% resumed pre-injury capacity, average hours were halved and around 20% relapsed into sick leave.[7] Misaligned expectations is likely the reason employees tended to overestimate readiness, while managers underestimated capability.

The GP role in patients returning to work

We recommend providing patients with functional goals rather than symptom-focused goals. For example: 'Work 4 hours per day, on non-consecutive days initially, limit screen use to 30-minute blocks, allow 10-minute breaks per hour.' Specific modification of activities creates clarity, reduces conflict and provides a defensible framework for graded RTW. Regular reviews then support progressive adjustment.

However, since most concussions occur outside of an occupational setting (hence not compensable/insured), the RTW plans often require a careful and considered approach. This often requires a negotiation between the employee and the type of work they can do, and the employer's willingness to support the plan. Unless WorkSafe or transport insurances are involved (where certain employer obligations must be met), workplaces can decline graduated RTWs and only accept

Table 3. Practical return to work framework

Stage	Example duties	Timing/scheduling
1. Initial rest	ADLs only	Days 1–3
2. Early activity	≤30 min cognitive tasks, ≤2 h/day	Days 4–7 at home (explore work from home options throughout the following stages)
3. Non-consecutive partial work	2–4 h shifts, simple duties	Week 2: alternate days only (eg Mon/Wed/Fri)
4. Consecutive partial work	2–4 h shifts, modified duties	Weeks 3–4: short shifts on consecutive days to test stamina
5. Graduated hours	4–6 h shifts, still modified	Weeks 5–6: extend hours once consecutive days tolerated
6. Near full return	6–8 h days, with restrictions (screen breaks, no safety-critical tasks)	Weeks 7–8
7. Full duties	Pre-injury role	>8 weeks, once consecutive full days are tolerated

ADL, activities of daily living.

employees when they have capacity for full hours and full duties. Table 3 provides an example of how to stage a return to work program.

Evidence-based interventions for persistent post-concussion symptoms in return to work

A 2025 systematic review demonstrated benefit from psychological therapy, vestibular/vision therapy, aerobic exercise and interdisciplinary programs.[8] Effective behaviour change strategies include action planning, graded task exposure and problem solving. The New South Wales (NSW) Agency for Clinical Innovation (ACI) employer toolkit[9] complements this with practical strategies: task simplification, structured routines, quiet spaces, buddy systems and clear communication pathways. Table 4 provides details on how PPCS impact work and suggested modifications.

Key points for return to work

- Return to work is part of concussion rehabilitation and should begin early, with graded activity.
- Certificates should specify functional restrictions, including shift duration and whether days are consecutive or non-consecutive.
- Build frequency before duration. Tolerance of consecutive short shifts should be demonstrated before progressing to longer days.
- For patients who are not compensable, negotiation with the employer will be essential to develop a realistic return to work framework and to keep within industry-specific regulations.
- Relapse is common, manage by stepping back one stage rather than ceasing work.

Table 4. Persistent post-concussion symptoms, how they impact work and suggested modifications

Symptom/Issue	Work impact	GP-guided modification
Headache/ photophobia/ phonophobia	Screen/light noise intolerance	• Screen ≤30 min blocks • Screen monitor filters • Reduce sensory stimulation to tolerable levels • Consider cervicogenic cause of headaches and refer to physiotherapist early
Fatigue/reduced stamina	Post-exertional 'crashes'	• Reduced/alternate hours • Rest breaks • Schedule demanding tasks earlier
Slowed processing	Multi-tasking errors	• Written/stepwise instructions • Structured routines • Feedback loops
Reading/visual strain	Difficulty with computer/fine tasks	• Larger font • Print alternatives • Vision therapy/lenses
Reduced work speed	Missed deadlines	• Adjust workload/KPIs • Flexible deadlines • Task breakdown
Memory/communication issues	Forgetting instructions, miscommunication	• Written instructions • Reminders/planners • Supernumerary support
Noise sensitivity/dizziness	Unsafe in noisy/open-plan environments	• Quiet workspace • Headphones/earplugs – if intolerable to noise sensitivity • Avoid safety-critical duties
Mood disturbance	Conflict, presenteeism	• EAP referral • Psychology input • Supportive supervision
Sleep disturbance	Fatigue, reduced alertness	• Later start times • Avoid night shifts • Flexible rostering

EAP, Employee Assistance Program; GP, general practitioner; KPI, key performance indicator.

The complex patient

Around 10–20% of patients develop persistent symptoms beyond 3 months.[10] Relapse is common when workload advances too quickly. This should be normalised. We would recommend returning to the previous functional stage (of the return to work/study plan) if symptom exacerbation is severe and causing the patient distress.

Complex cases often involve vestibular dysfunction, chronic headaches, psychiatric comorbidity, or significant workplace/insurance stress. Additional considerations include ensuring other co-morbidities are corrected (eg iron deficiency in patients presenting with fatigue).

Complex cases require multidisciplinary care early. Referral is appropriate when yellow/red flags are identified, for example if symptoms persist >6–12 weeks, relapses prevent sustainable RTW, or duties are safety-critical. These referrals may include but are not limited to psychologists/neuropsychologists, neurological physiotherapists, occupational therapists, neurological/behavioural optometrists, medical specialists such as rehabilitation physicians/sports physicians/neurologists and coordinated multi-disciplinary care within a tertiary facility.

Yellow and red flags in return to study and return to work

Yellow flags

- Prolonged absence (>4 weeks)
- Catastrophising or fear of re-injury
- Unsupportive environment or communication breakdown
- Insurance/compensation-related stress or repeated assessments
- Pre-existing mental health disorders

Red flags (need for urgent escalation/referral)

- Suicidality or severe psychiatric deterioration
- Escalating substance misuse
- Persistent functional decline/failure to progress
- Unsafe expectations to return to safety-critical tasks (eg driving, operating heavy machinery, emergency services)
- Worsening neurological signs (eg focal deficit, recurrent vomiting, seizures)

Conclusion

Complex management of PPCS can be difficult in primary care, including time pressures, access to appropriate renumeration, complex care coordination, coordinating Transport Accident Commission (TAC)/Workcover and access to appropriate tertiary supports. A biopsychosocial, stepwise approach ensures that both return to study and return to work are safe, therapeutic and sustainable. Recovery is best guided by a stepwise, individualised plan that balances rest with gradual reintroduction of cognitive and physical activity.

GPs are integral in providing medical certificates for schools, universities or workplaces to coordinate functional and graded return to activities. We recommend specifying functional activity modifications and functional restrictions (eg shift length, screen tolerance, rest breaks, non-consecutive scheduling) rather than blanket absence, to provide clarity for schools, universities and employers. Early communication with educators, workplaces and families helps align expectations, reduce stress and promote reasonable accommodations.

Most patients will recover with GP-led management, supported by allied health (eg physiotherapy, psychology, occupational therapy) as needed. Referral to rehabilitation or occupational physicians is appropriate for complex cases, safety-critical roles or persistent symptoms beyond 3 months.

Awareness of state-based supports is also important—for example, school return-to-learn programs, vocational rehabilitation services and compensation schemes. With proactive GP involvement, most patients can successfully reintegrate into study or work. GP involvement can also support resilience and minimise long-term disability in patients with PPCS.

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