



Role of Pediatric Psychology in Concussion Recovery

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Objectives

- Discuss the current status of Return-to-Learn (RTL) process
- Explain the common symptoms experienced by concussed patients
- Describe the role of pediatric psychology in concussion clinic

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Current Status on Return-to-Learn (RTL)

- RTL laws exist in 8 states currently (Thompson et al., 2016)
 - IL, MA, MD, ME, NE, NY, VA, VT
- Most states delegates the RTL responsibilities to school/district, yet many states don't require proper education on RTL of school personnel
- Specified standards for RTL?
 - 50/50
 - **IL:** Protocol must be based on peer-reviewed scientific evidence consistent with CDC guidelines
 - **MA:** Protocol must include physical and cognitive rest "as appropriate." Must also include plan for communication between school, health care providers, and family
 - **NE:** Protocol must recognize that injured students may need informal or formal accommodations, and monitoring by medical or academic staff
 - **VA:** Protocol must require schools to accommodate a gradual re-entry on the basis of the primary health care provider's recommendation

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Current Status on RTL

- Qualitative study by Romm et al. 2018
 - Interviewed 16 teachers and 6 school admin at public schools in VA
 - Asked about:
 - Knowledge & understanding about concussion management
 - Experiences with RTL implementation
 - Communication among the concussion management team

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Current Status on RTL (Cont'd)

- Results:
 - Personal experience with concussion played a large role in their knowledge & perception of concussion
 - Some teachers don't fully understand the student needs/how to assist (esp. non-athletes)
 - Teachers have difficulty making appropriate adjustments due to high demand
 - School administrators were unaware of teachers' concerns/challenges
 - Teachers find written RTL instructions from health care providers helpful sometimes

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Current Status on RTL (Cont'd)

- Recommendations:
 - Provide more frequent education for teachers
 - Grade level and subject-specific examples of RTL strategies
 - Engage in communication within the team regarding the challenges of implementing the RTL process
 - Provide accessible RTL resources for teachers & concussion management team

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Current Status on RTL in CO

- No statewide regulations in Colorado
- CDE Concussion Management Guidelines:
<http://www.cde.state.co.us/healthandwellness/concussionguidelines-11-6-14>
- CDC HEADS UP:
<https://www.cdc.gov/headsup/schools/nurses.html>
- Get Schooled on Concussions (Dr. McAvoy)
<http://www.getschooledonconcussions.com/home.html>

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Areas Impacted by Concussion

- Physical functioning
 - HA, dizziness, vision issues, light/noise sensitivity, balance issue, neck/back pain, fatigue
- Cognitive functioning
 - Inattention/concentration, poor memory, learning difficulty, slow processing speed, mental foginess
- Emotional/Behavior functioning
 - Insomnia, hypersomnia, daytime napping; Impulsivity, inappropriate behaviors; Irritability, anxiety, coping difficulty, sadness, suicidality
- Academic functioning
 - Attendance, class participation, grades

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Cognitive, Psychological & Behavioral issues Impacted by Concussion

- Cognitive Dysfunction
- Depression/Anxiety
- PTSD
- Sleep disturbance

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Cognitive issues & Concussion

✦ Cognitive Issues Among Concussed Patients

- Very common symptom post injury
- 5–15% experience persistent cognitive issues >90 days post injury (Sohlberg & Ledbetter, 2016)
- ~55% complain long-term cognitive impairment (McInnes et al., 2017)

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Mood issues & Concussion

✦ Overview

- 13% adolescents report depression (NIMH, 2016)
- Girls vs. Boys 3:1 ratio (NIMH, 2016)
- 32% adolescents report depression (NIMH, 2004)

✦ Mood Issues Among Concussed Patients

- ~30% youth new onset psychiatric d/o (Brent, 2017)
- 3.3 times higher risk of depression w/ hx of concussion (Brent, 2017)
- Risk of SI 2- to 3-fold w/ comorbid psychiatric d/o (Brent, 2017)
- Correlation between depression, length of hospital stay, and post concussive symptoms (Stazyk, 2017)

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PTSD & Concussion

✦ Overview

- 6-11% PTSD among teens with injury (Kassaman-Adams, 2014)
- ~5% adolescents in their lifetime (<http://www.pisd.va.gov>)
- More girls vs. boys (8% vs. 2.3%)

✦ PTSD Among Concussed Patients

- ~6% PTSD 3+ mo post injury w/ comorbid depression/anxiety (Brent, 2017)
- More common among non-sport-related injuries (35% vs. 3%)

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Sleep Disturbance & Concussion

Overview (Kostyun, 2015)

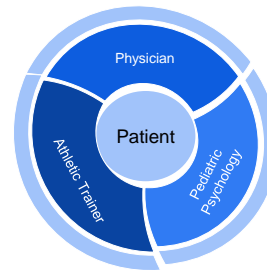
- 10-38% teens report sleep disturbance
- ~70% adolescents report inadequate sleep (<9 hrs)

Sleep Disturbance Among Concussed Patients

- 34% patients report sleep disturbance (Bramley, 2017)
- 3- to 4-fold increase in recovery time (~29 days vs. ~111 days)
- Non-sport-related concussions are likely associated with sleep disturbance (45% vs. 29%)
- Reported cognitive dysfunction & migraine symptoms (Murdaugh, 2018)

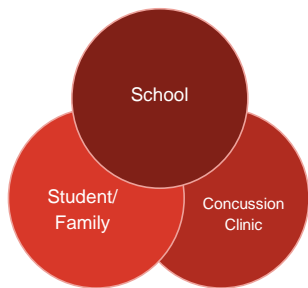
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RMPO Center for Concussion Model



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RMPO Care Coordination Model



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Role of Pediatric Psychology in Concussion Clinic

- Consultation/Liaison approach
 - Assessment
 - Brief intervention
 - Care coordination
- A biopsychosocial model
 - Biological: injury to the brain
 - Psychological: emotional reactions to injury
 - Social: family, peer, resources
- Multidisciplinary treatment approach (McCarty et al., 2016)

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Multidisciplinary Approach (McCarty 2016)

- A Randomized Trial to assess collaborative care model for patients with persistent post concussive symptoms
- N=49 (25 tx vs. 24 control), ages 11-17 (~15 yo) >1 month post injury
- Assessment at baseline, 1, 3, and 6 months post tx.
 - Post concussive sx, depression, anxiety, & QoL

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Multidisciplinary Approach (McCarty 2016)

- Cognitive Behavioral Therapy (CBT)
 - Behavior activation, coping skills, cognitive restructuring, sleep hygiene, relaxation
- Care Coordination
 - Coordinating with providers and school
- Physician
 - Medical management
- Psychiatry
 - Medication management as needed

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Multidisciplinary Approach (McCarty 2016)

- ✱ Cognitive Behavioral Therapy (CBT)
 - ✱ ~88% patients received >4 sessions
- ✱ Psychiatry
 - ✱ ~1/3 patients received medication
- ✱ Significant reduction in post concussive sx's among tx group (13% vs. 47%)
- ✱ Significant improvement in QOL (28 vs. 18)
- ✱ 78.3% tx group report >50% reduction in depression (vs. 45.8%)

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Comprehensive Assessment

- ImPACT (cognitive functioning)
- BDI/CDI and GAD7 (emotional functioning)
- Clinical Interview to assess sleep and academic functioning

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Cognitive Assessment

- ImPACT
 - Computerized test assessing attention, memory, & processing speed
 - Baseline for athletes in some districts
 - Monitor patients' progress

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Mood Assessment

- BDI Fast Screen for medical patients (ages 13+)
- CDI self report (ages 11-12)
- CDI parent report (ages 7-10)
- GAD 7 (ages 12+)

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Sleep Assessment

- Clinical interview:
 - Sleep latency
 - Duration/schedule
 - Quality of sleep
 - Daily functioning
 - Distress level
 - Pre-existing condition vs. new onset?

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Academic Functioning Assessment

- Higher levels of concern for school performance and academic dysfunction (Ransom et al., 2015; Wasserman et al., 2016)
- Clinical interview:
 - Communication
 - Attendance
 - Presence of academic adjustments
 - Areas of unmet needs

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Treatment Approach

- Psychoeducation
 - Symptom management
 - Handout (sleep hygiene, suggestions for academic adjustments and home support)
- Supportive therapy/CBT
 - Risk assessment
 - Mood/anxiety management
 - Sleep hygiene
 - Pain management
 - Self-advocacy
 - Family support
- Biofeedback (coming soon)

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Biofeedback

- “A psychophysiological mirror by which patients monitor and learn from physiological signals produced by their bodies” (Peper et al., 2009)
- Methods:
 - Electromyography (EMG)
 - Heart rate variability (HRV)
 - Temperature
 - Blood-volume pulse (BVP)
 - Skin conductance
- Goals:
 - Regulate autonomic nervous system
 - Increase heart rate variability
 - Improve self-efficacy

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Biofeedback

- Widely used to manage various conditions
 - Headache
 - Anxiety
 - Sleep disturbance
 - Urinary incontinence
 - ADHD
 - IBS
 - Hypertension
 - Asthma
 - TMJ
 - Performance enhancement

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Biofeedback

- Association for Applied Psychophysiology and Biofeedback (AAPB) efficacy level (Yucha & Montgomery, 2008)
 - Level 5: Urinary incontinence in female
 - Level 4: **Anxiety**, ADHD, **Headache**, Hypertension, TMJ, Urinary incontinence in male
 - Level 3: Arthritis, **Chronic Pain**, **Insomnia**, **Pediatric Migraines**, Traumatic Brain Injury, Alcoholism/substance abuse

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Care Coordination

- School communication
 - RTL
 - Behavioral health issues
 - Prescription exercise with ATC
- Referrals
 - Psychotherapy
 - Neuropsychological evaluation
 - Cognitive rehabilitation

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Questions??



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