

# IDENTIFYING QEEG EVOKED POTENTIAL VOLTAGE PATTERNS IN PEDIATRIC CASES WITH PERSISTENT POST-CONCUSSION SYMPTOMS (PPCS): A RETROSPECTIVE STUDY

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## BACKGROUND

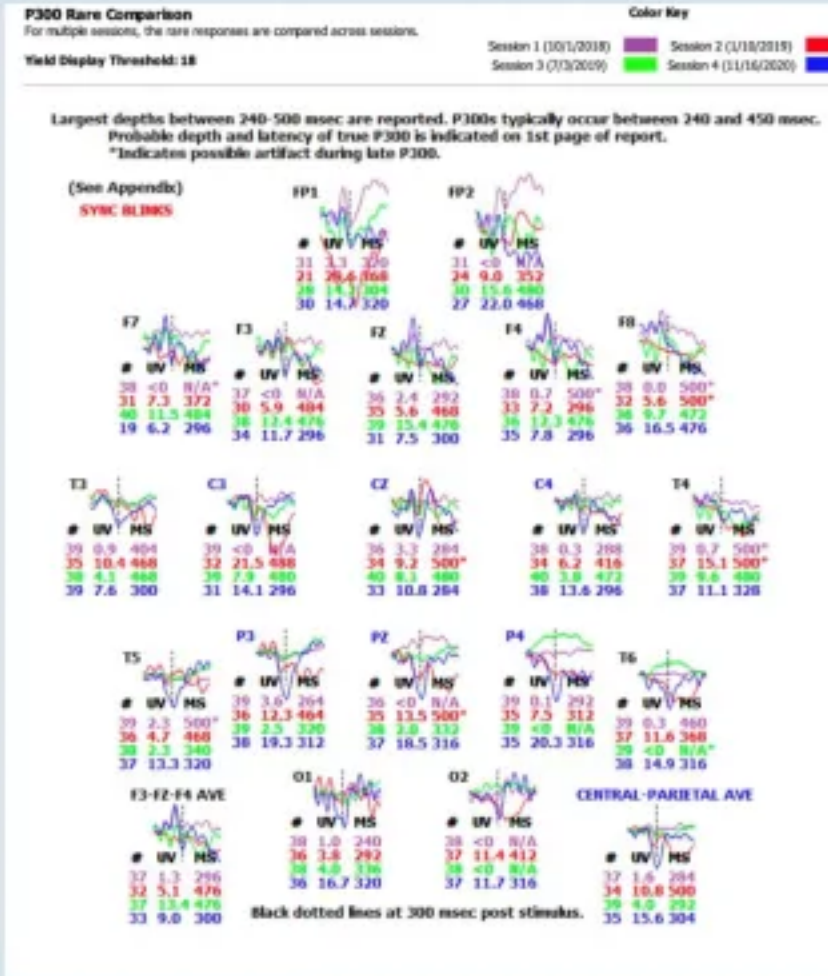
Persistent post-concussion symptoms (PPCS) encompasses a broad spectrum of mood and cognitive impairments related to traumatic brain injury from sport activities. There has been limited studies determining the significance of quantitative EEG (qEEG) testing for disease progression, prognosis, and management in the pediatric population.

## PURPOSE

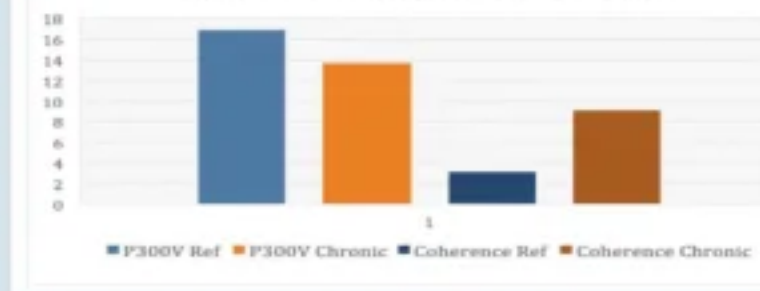
To identify possible P300 evoked potential voltage trends in PPCS pediatric patients.

## METHODS

- Chart review of pediatric patients with PPCS with symptoms lasting longer than one month from 7/2018 to 12/2019
- Exclusion criteria: known history of learning disorders, seizure disorder, or complex concussions with a skull fracture or intracranial hemorrhage, or no qEEG data.
- Patients were tested between 6-12 weeks post injury using the standard oddball audio P300 EEG protocol.
- Patients were classified into PPCS substages
  - 1: 1-3 months
  - 2: 3-6 months
  - 3: 6-12 months
  - 4: 12-36 months



EEG Metric Comparisons (13-16 yrs)



## RESULTS

- 33 pediatric patients (age 8-21) were identified with available qEEG data.
- Stage 1 group (n=10) had an average P300 voltage of 17.4µV.
- Stage 2 group (n=12) had an average P300 of 10.9µV.
- Stage 3 group (n=8) consisted with an average of 13µV.
- Stage 4 group (n=3) had an average of 10.3µV.
- Significant difference in the average P300 voltage seen in PPCS symptoms duration less than 3 months compared to 3 months or longer (p=0.018).

## CONCLUSIONS

- There is a potential declining trend in P300 voltage with progressive PPCS stage.
- Chronic cognitive dysfunction represented by reduced P300 voltage may be most common in PPCS lasting beyond 3 months.

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