

# Changes in Functional Brain Parameters in Post-concussion Syndrome

## History.

The patient, a 25 year old male, presented five weeks after an athletic competition in which he received two blows to the head in a relatively short time. The initial blow was to the forehead and the second blow was to the base of the nose. He denies losing consciousness at the time of the injury but does admit that he had trouble concentrating for several hours following the second blow. He also reported becoming severely uncoordinated and highly emotional immediately following the second injury. He estimated that he has experienced concussions 3-4 times over the last 12 years. At presentation the patient complained of drowsiness and fatigue through-out the day but sleep disturbances at night, bilateral frontal headaches, dizziness, balance problems, poor memory and concentration, feelings of irritability and frustration, blurred vision and unexplained bursts of emotion. The diagnosis of post concussion syndrome was made and subsequently independently confirmed by specialist neurological consultation.

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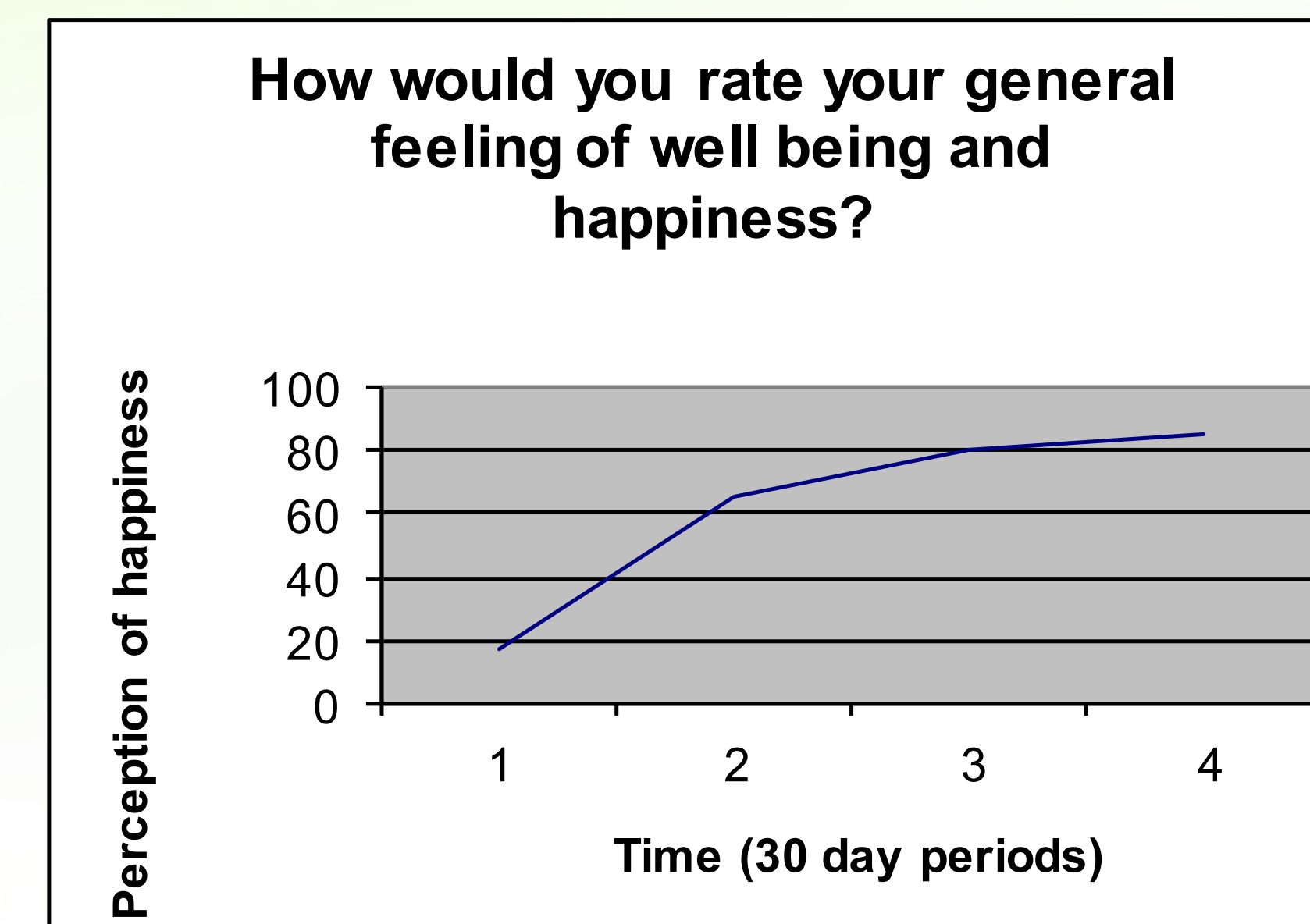
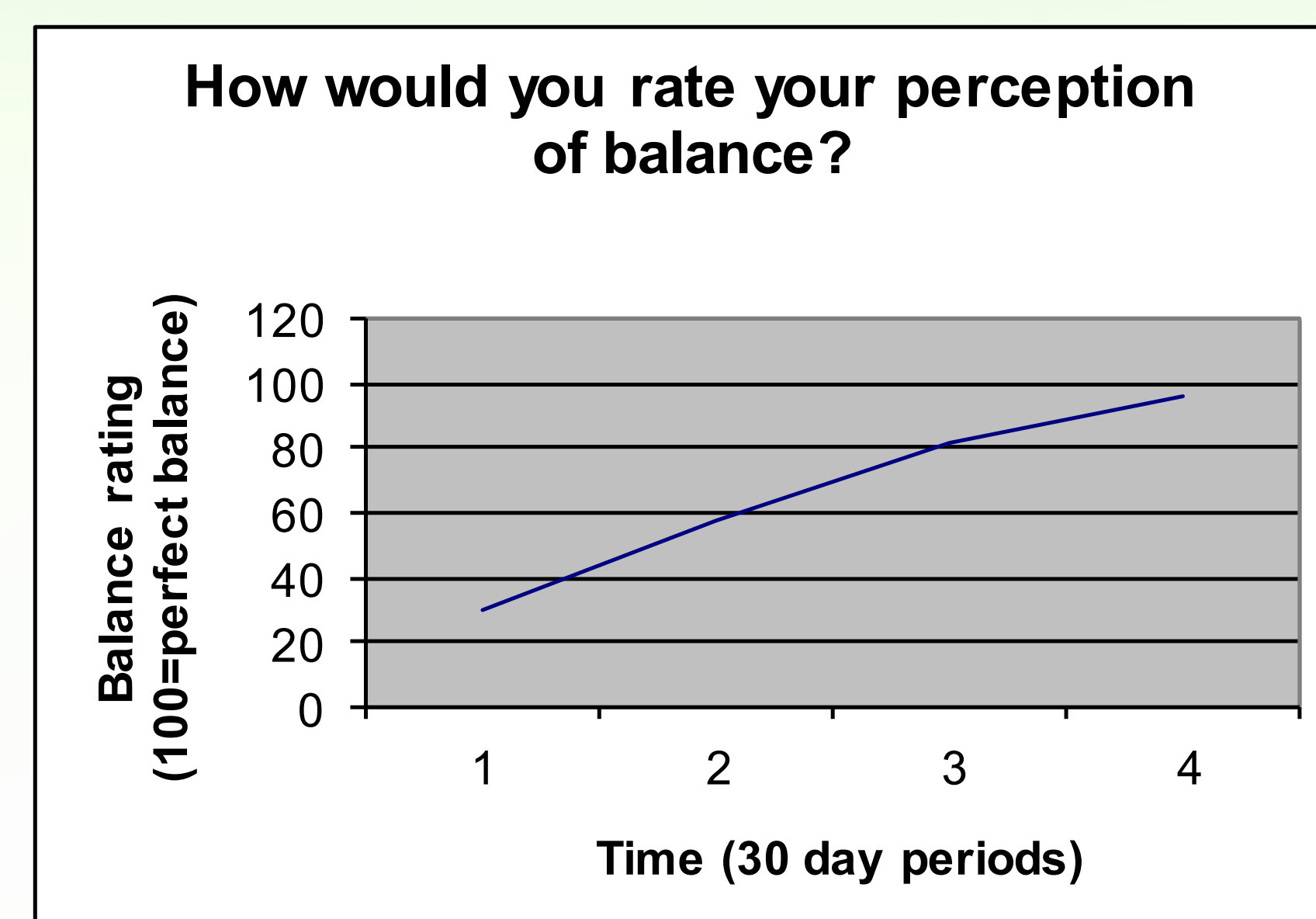
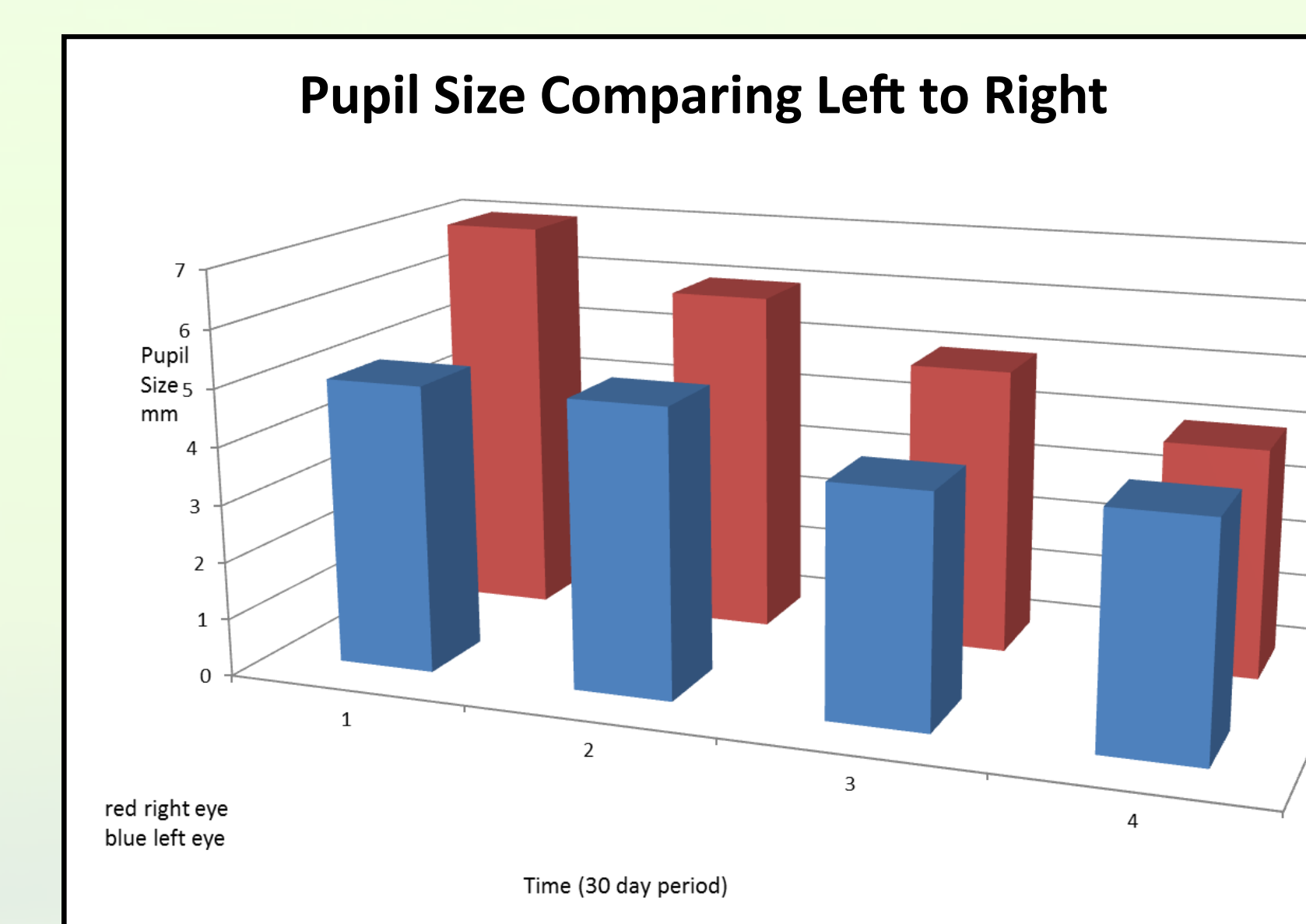
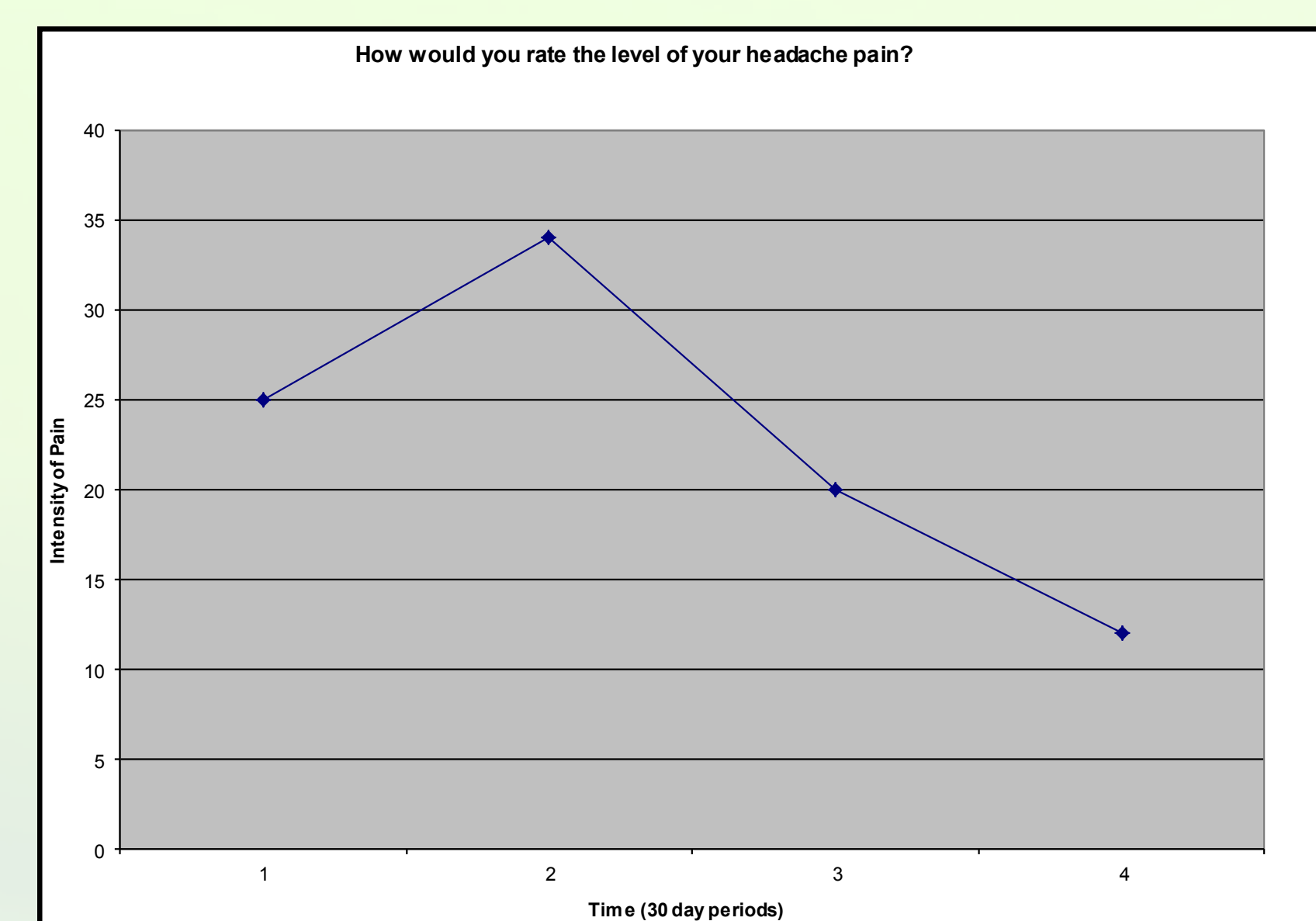
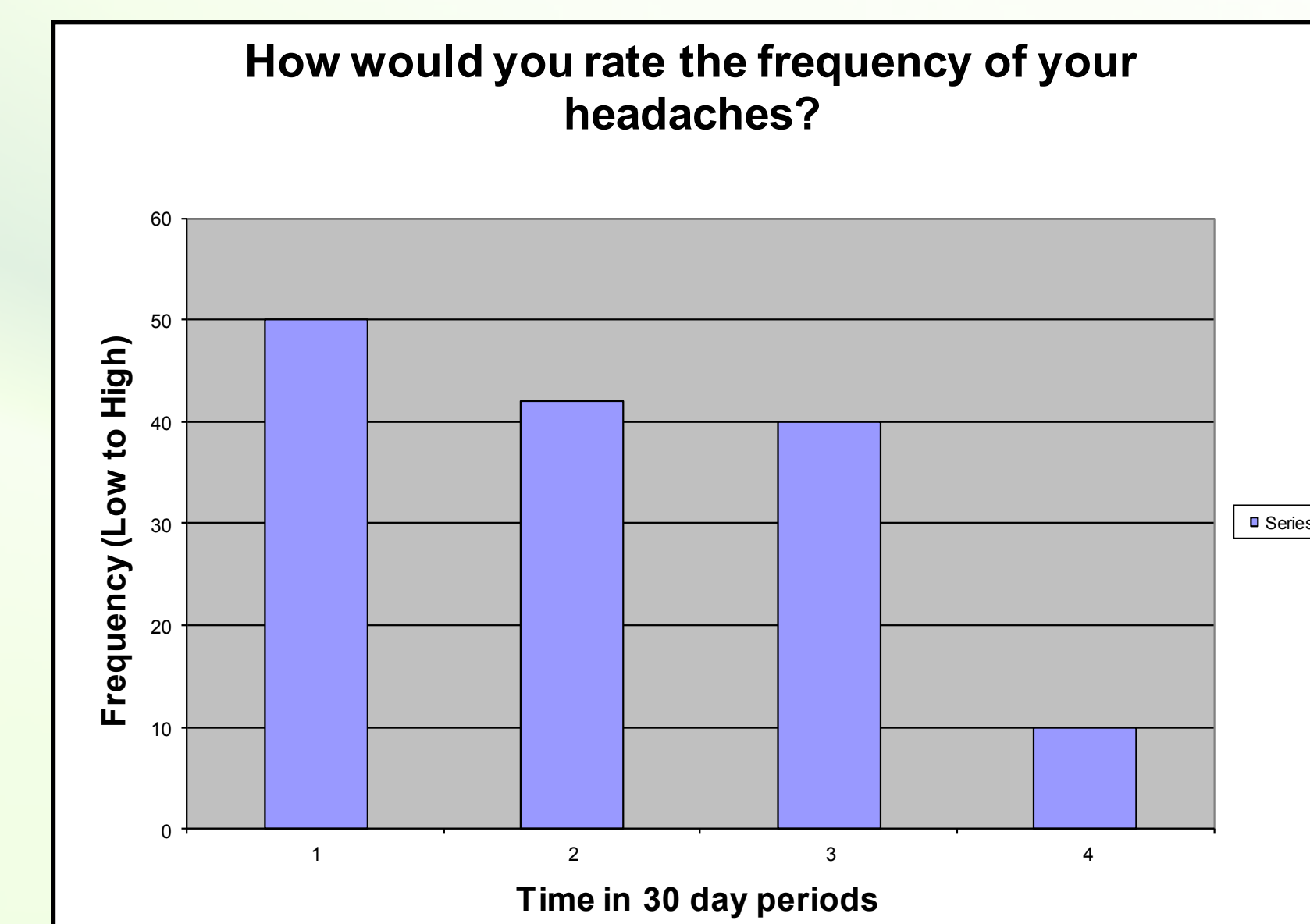
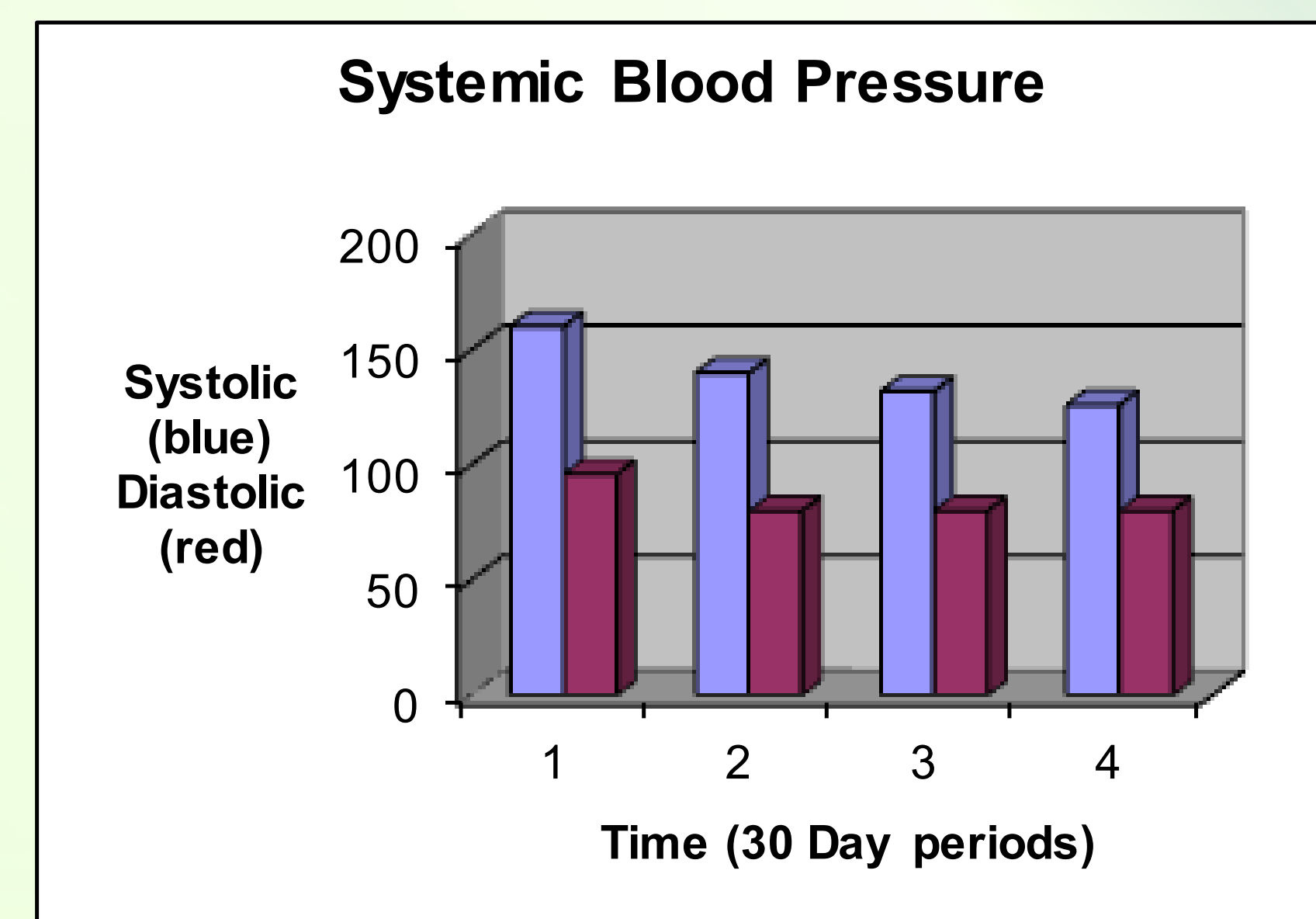
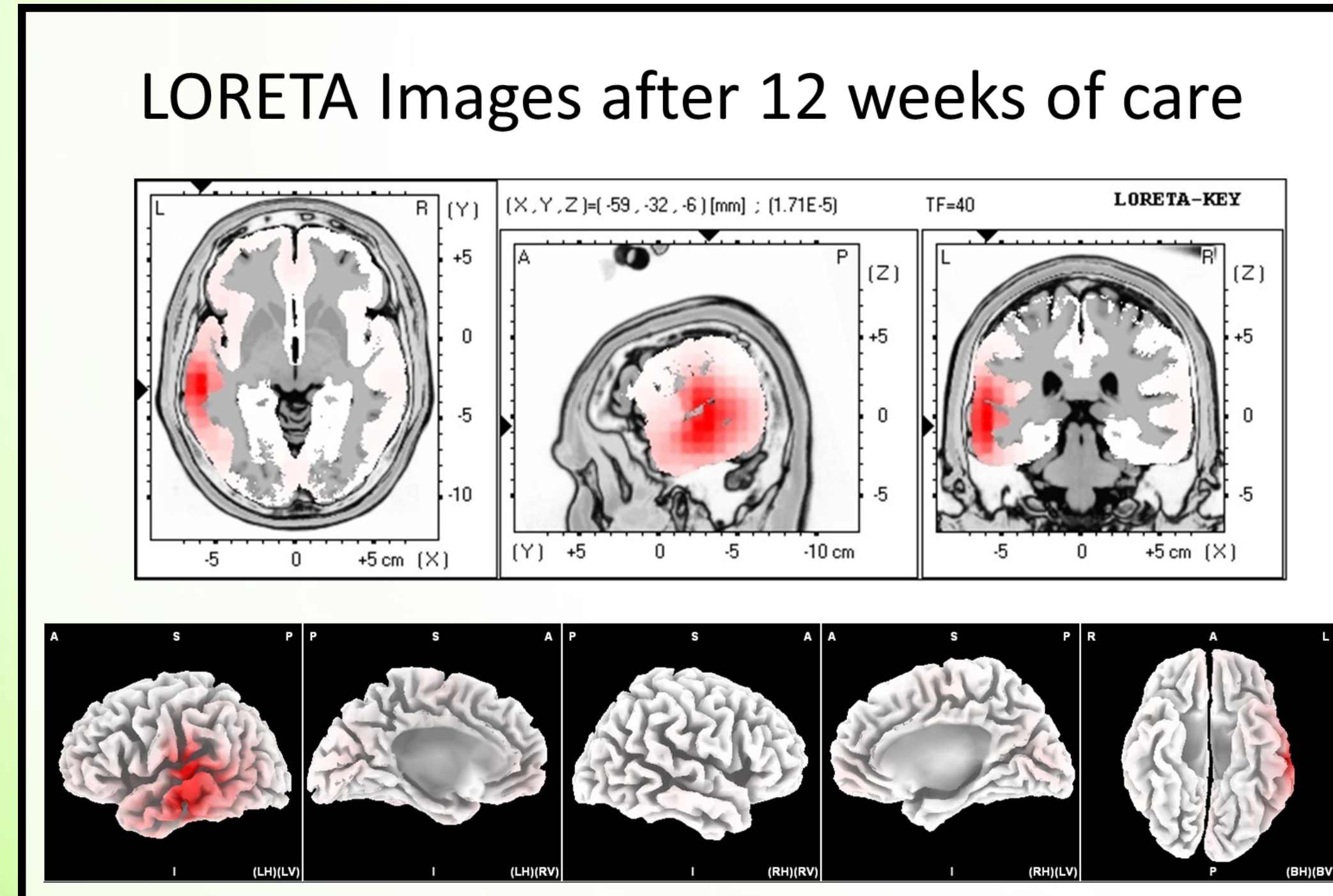
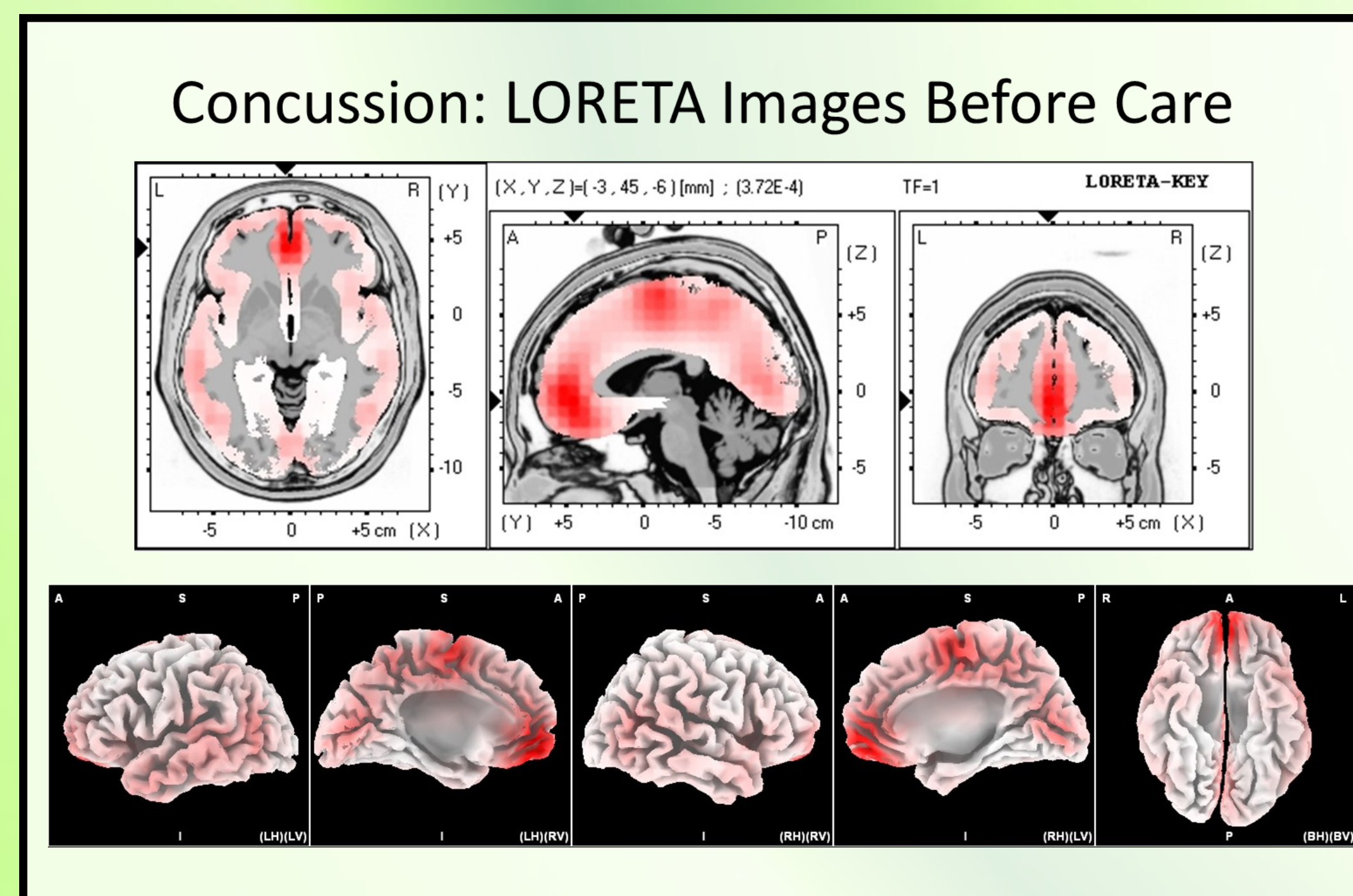
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## Conclusion

People who regularly take part in contact sports or recreational activities are at a significantly increased risk of suffering a concussion. Sports and recreational activities frequently register in the top five causes of traumatic brain injury (TBI) or concussion (Brazarian and Atabaki, 2001). In addition to the suffering and debilitation resulting from concussion and uncomplicated traumatic brain injury an even more compelling reason to increase our understanding of the damage occurring in this type of injury is the concern over the development of protracted sequelae of traumatically induced chronic encephalopathy and even death due to second impact syndrome. The most problematic aspects of diagnosis and management of concussion include the difficulty in reliably identifying pathological or functional changes in brain following trauma; the fact that contemporary imaging techniques regularly fail to reveal any abnormalities in cases of concussion and perhaps the most concerning aspect, that diagnostic criteria and return to play guidelines rely almost exclusively on clinical impression instead of consistent evidence based evaluation. This study has demonstrated that the parameters most commonly used to determine return to play or work status may appear to normalize before neurophysiological stabilization has occurred in the cortical pathways damaged in the injury. Given the possible serious outcomes associated with re-injury, especially in younger age groups, premature resumption of play or return to work should be avoided. In this regard further research aimed at developing a consistent, objective, evidenced based return to play/work guidelines is of paramount importance.



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