Concussion Symptoms Related to Mechanism of Injury

Background/Objectives: Concussions result from impact forces to the head or whiplash. Concussions cause physical, cognitive, emotional, and sleeping behavioral symptoms affecting people's activities of daily living. The following question guided the study: is there a difference in the severity of concussion symptoms for mechanisms of injury due to head collisions in motor vehicle accidents, assault, or sport related accidents?

Methods: The researchers drew a sample of 758 concussed individuals from a medical database who were administered a self-report questionnaire to diagnose their concussion symptoms. The sample included 154 concussed individuals in motor vehicle accidents, 566 concussed individuals in sport accidents and 38 concussed individuals in assault incidents. The researchers used an analysis of variance (ANOVA) to address the research question guiding this study.

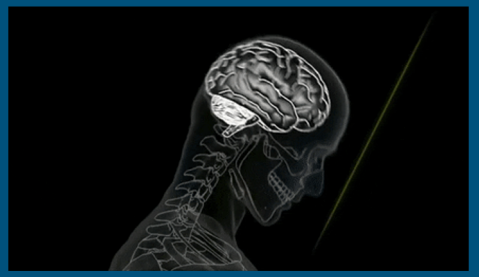
Results: A one-way ANOVA for independent samples revealed significant differences on the severity of the concussion symptoms among the three groups of concussed individuals, $F(2, 755) = 93.275$, $\eta 2=0.198$, $p< 0.001$. Dunnett's C post hoc analysis for mean comparisons revealed significant differences between sport related incidents ($M=25.97$ $SD=23.026$) and motor vehicle accidents ($M=54.01$, $SD=29.493$), as well as, sport related ($M=25.97$ $SD=23.026$) and assault incidents ($M=56.18$, $SD=32.087$).

Conclusion: This study revealed that the severity of concussion symptoms differs based on the mechanism of injury. Individuals who suffered a concussion due to a motor vehicle accident, however, seemed to experience similar symptoms as those who experienced assault. This information may benefit clinicians with the implementation of treatment protocols to help concussed individuals return to activities of daily living.

Lakehead UNIVERSITY | School of Kinesiology

Nicholas Renyard, Lakehead University
Dr. Carlos Zerpa , Lakehead University
Dr. Dave Mckee, Lakehead University

Background/Objectives



Concussions:

- Are biomechanically induced brain injuries with the absence of visible internal brain damage.
- They result from impact direct forces to the head or indirect forces causing whiplash.
- Each concussion can present with a range of symptom outcomes depending on the parameters in which the injury occurred.
- Concussions cause physical, cognitive, emotional, and sleeping behavioral symptoms affecting people's activities of daily living.

Research Question: Is there a difference in the severity of concussion symptoms for mechanisms of injury due to head collisions in motor vehicle accidents, assault, or sport related accidents?

Methods

- Lakehead Concussion Clinic intake form for individuals seeking treatment and assessment for concussion symptoms included:
  - Demographic information
  - Symptoms
  - Mechanism of injury

Type of Injury	Number of Individuals
Sport Related	566
Motor Vehicle Accidents	154
Assault Incidents	38
Total	758

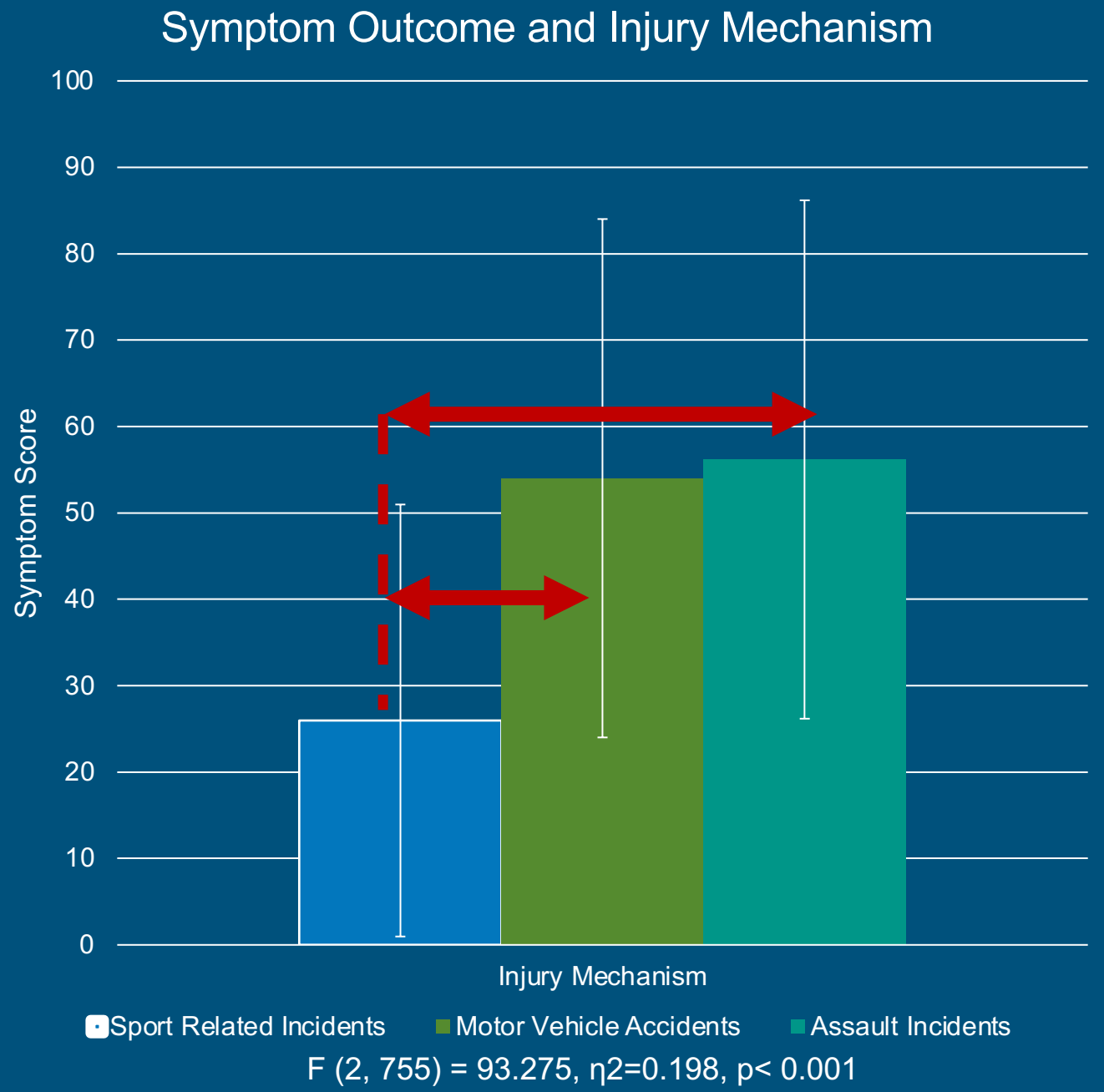
- Preliminary analysis:
  - A script was created to clean and organize the data into a usable format
  - This included, removing or correcting missing data, removing duplicate forms, and checking for internal consistency and reliability
- The researchers used an analysis of variance (ANOVA) to address the research question guiding this study. In the instance of the ANOVA finding a significant difference between the groups a Dunnett's C post hoc analysis for mean comparisons was conducted.

Results

A one-way ANOVA for independent samples revealed significant differences on the severity of the concussion symptoms among the three groups of concussed individuals

Dunnett's C post hoc analysis revealed significant differences between:

1. Sport-related incidents and motor vehicle accidents
2. Sport-related and assault incidents



Limitations

Self report questionnaires may suffer from validity problems as patients may not be honest about their symptoms.

It is not ideal to compare groups when the size of the groups are vastly different. (Sport related n= 566, MVA n= 154, and Assault n=38)

Conclusion

This study revealed that the severity of concussion symptoms differs based on the mechanism of injury.

Individuals who suffered a concussion due to a motor vehicle accident, however, seemed to experience similar symptoms as those who experienced assault.

This information may benefit clinicians with the implementation of treatment protocols to help concussed individuals return to activities of daily living.