

# #nctalks concussion

With the expanding interest in mild traumatic brain injuries, and more specifically concussions, we set out to gather thoughts on key topics in the field from mTBI experts in our most recent #nctalks. We were joined by Bert Vargas, Jeffrey Kutcher & Willie Stewart for an engaging discussion.



Neurology  
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@Neuro\_Central

Hello! Welcome to today's Twitter chat on [#concussion](#) with [@BertVargas](#) [@JeffKutcherMD](#) [@WillStewNeuro](#)



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@Neuro\_Central

We're looking forward to an interesting discussion! [#nctalks](#)



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Jeffrey Kutcher

@JeffKutcherMD

[@Neuro\\_Central](#) Happy and honored to be here! [#nctalks](#)



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We started off asking where we're at with concussion research



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Let's get going! Q1 What are the key questions in [#concussion](#) [#research](#) currently? [#nctalks](#)



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**Jeffrey Kutcher**  
@JeffKutcherMD

- A1 @Neuro\_Central What is the best way to treat the injury itself and not just the symptoms?  
#nctalks

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**Bert Vargas**  
@BertVargas

Q1 Pathophysiology, causes, consequences of #CTE still require more insight/research.  
#Concussion #NCTALKS @Neuro\_Central

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Sparking some interesting discussions...



**Bert Vargas**  
@BertVargas

Q1 More research necessary to address unique #concussion questions/issues/needs in female athletes #NCTALKS @Neuro\_Central

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**Concussion**  
@fsgconcussion

@Neuro\_Central how good is understanding of differences in #concussion recovery between genders? Should this better inform RTP guidelines?

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**Dr Willie Stewart**  
@WillStewNeuro

@fsgconcussion @Neuro\_Central so little research in this it's hard to say, but might well be consideration in future

  @fsgconcussion · 2 DAYS  
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**Bert Vargas**

@BertVargas

Completely agree, [@WillStewNeuro](#) this issue deserves more attention. [#concussion](#) [#NCTALKS](#) [twitter.com/WillStewNeuro/...](https://twitter.com/WillStewNeuro/)



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...and quickly getting on to a key topic of contention in the field - defining 'concussion'



**Dr Willie Stewart**

@WillStewNeuro

A1 [@Neuro\\_Central](#) too many to list. But before starting, unified + robust definition [#concussion](#) required [#nctalks](#)



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**Dr Willie Stewart**

@WillStewNeuro

A2 [@Neuro\\_Central](#) elephant in the room using term [#concussion](#). Much prefer brain injury [#nctalks](#)



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**Dr Willie Stewart**

@WillStewNeuro

A1 [@Neuro\\_Central](#) without standardised, robust definition of [#concussion](#) informative research into mgmt challenging [#nctalks](#)



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**Bert Vargas**

@BertVargas

Agree [@WillStewNeuro](#) - Hard to do good research unless the disease state well-defined. [#NCTALKS](#) [@Neuro\\_Central](#)



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**Jeffrey Kutcher**  
@JeffKutcherMD

- A1 [@Neuro\\_Central](#) Agree with Dr. Stewart, we need clear definitions and language for concussion/CTE/etc. [#nctalks](#)

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**Neurology  
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@Neuro\_Central

Q2 How close are we to a definition of concussion? [#nctalks](#) [@WillStewNeuro](#) [@JeffKutcherMD](#) [@BertVargas](#)

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**Bert Vargas**  
@BertVargas

A2 - Hard to say how "close" we are since the science/understanding of [#concussion](#) is continuously evolving [#NCTALKS](#) [@Neuro\\_Central](#)

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**Jeffrey Kutcher**  
@JeffKutcherMD

- A2 [@Neuro\\_Central](#) Depends on perspective, clinical syndrome vs. injury itself. [#nctalks](#)

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**Jeffrey Kutcher**  
@JeffKutcherMD

- A2 [@Neuro\\_Central](#) Need to include in clinical definition, a sense of certainty (possible, probable, definite) [#nctalks](#)

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**Jeffrey Kutcher**  
@JeffKutcherMD

- A2 @Neuro\_Central Need to insist that people do not described the hit itself as a "concussion".  
Hit = mechanism #nctalks

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**Dr Willie Stewart**  
@WillStewNeuro

A2 @Neuro\_Central at present, based on subjective testing - some way off. Need objective test or  
we stay w #concussion an opinion #nctalks

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**Concussion**  
@fsgconcussion

@WillStewNeuro @Neuro\_Central Do you expect this year's update to the Zurich #concussion  
guidelines will bring us any closer? #nctalks

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**Dr Willie Stewart**  
@WillStewNeuro

@fsgconcussion @Neuro\_Central in a word 'no', not if previous reports are any judge of what's to  
come #nctalks

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Despite debate over definition, effective diagnosis of concussion is still key



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@Neuro\_Central

Q3 What are the current diagnostic options for #concussion? #nctalks @WillStewNeuro  
@BertVargas @JeffKutcherMD

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But emerging diagnostic tools are not the golden answer some may think



**Jeffrey Kutcher**  
@JeffKutcherMD

A3 [@Neuro\\_Central](#) BEWARE of claims about tools that document a physical effect of the injury. These CANNOT diagnose by themselves. [#nctalks](#)

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**Jeffrey Kutcher**  
@JeffKutcherMD

A3 [@Neuro\\_Central](#) The only diagnostic option is via a comprehensive evaluation by an experienced clinician [#nctalks](#)

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**Bert Vargas**  
@BertVargas

A3 Tests to ID concussion are frequently performed or interpreted incorrectly. Proper training of examiner a must! [#NCTALKS](#) [@Neuro\\_Central](#)

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**Bert Vargas**  
@BertVargas

Best diagnosis comes when injury is clear, athlete is forthcoming, & "concussion" expert is available. Not happening very often. [#NCTALKS](#)

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**Dr Willie Stewart**  
@WillStewNeuro

A3 [@Neuro\\_Central](#) On the whole, [#concussion](#) dx overly subjective + open to (mis)interpretation. And then there's A1 issue [#nctalks](#)

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What does this mean for rapid pitch side assessment?



**Dr Willie Stewart**  
@WillStewNeuro

@JeffKutcherMD @Neuro\_Central which seems to rule out rapid pitchside assessment as reliable for #concussion exclusion #nctalks

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**Bert Vargas**  
@BertVargas

True. Must be recognized that pitch-side tools supportive for "remove from play" not clearance to go back #NCTALKS [twitter.com/WillStewNeuro/...](https://twitter.com/WillStewNeuro/)

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**Dr Willie Stewart**  
@WillStewNeuro

Well said @BertVargas. Too many read pitchside #concussion testing as means to send back @Neuro\_Central #nctalks [twitter.com/BertVargas/sta...](https://twitter.com/BertVargas/status/)

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We had some great audience submitted questions as well



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@Neuro\_Central

@DaraBree1 Q Is there yet any scientific or imperial evidence on when it is safe to return to play after a sports concussion? #NCTALKS

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**Dr Willie Stewart**  
@WillStewNeuro

@Neuro\_Central @DaraBree1 Good Q. There's plenty opinion, but very little science. And as data emerge, longer intervals favoured #nctalks

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**Bert Vargas**  
@BertVargas

@DaraBree1: No consensus on mismatch between symptom resolution and imaging findings. Much research needed. #NCTALKS [twitter.com/Neuro\\_Central/...](https://twitter.com/Neuro_Central/)

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So how does concussion (single or repeated) affect our brains?



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@Neuro\_Central

Q4 What are the pathological effects of #concussion? @WillStewNeuro @JeffKutcherMD @BertVargas

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**Dr Willie Stewart**  
@WillStewNeuro

A4 @Neuro\_Central in 140 characters?? Many. It's brain injury. Emerging as most relevant is axonal injury [bit.ly/1QVA0NB](https://bit.ly/1QVA0NB) #nctalks

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**Bert Vargas**  
@BertVargas

A4 #concussion is both a structural and metabolic crisis for the brain. Recovery time is a must. #NCTALKS @Neuro\_Central

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**Jeffrey Kutcher**  
@JeffKutcherMD

A4 @Neuro\_Central Brain network disruption causes many of the symptoms. #nctalks

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**Bert Vargas**  
@BertVargas

A4 [#concussion](#) also represents a mismatch between energy supply and demand due to decreased cerebral blood flow. [#NCTALKS @Neuro\\_Central](#)

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**Bert Vargas**  
@BertVargas

A4 Decreased cerebral blood flow on MR perfusion persists in children with chronic [#TBI](#) [#NCTALKS @Neuro\\_Central europepmc.org/articles/pmc43...](#)

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**Jeffrey Kutcher**  
@JeffKutcherMD

A4 [@Neuro\\_Central](#) There are also cellular level physical changes. [#nctalks](#)

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**Bert Vargas**  
@BertVargas

Well said [@WillStewNeuro](#)! The nuance of [#concussion](#) exceeds the 140 character boundaries of twitter! [#NCTALKS twitter.com/WillStewNeuro/...](#)

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**Bert Vargas**  
@BertVargas

A4 Repeat injury during period of vulnerability while brain recovers from [#concussion](#) can lead to dire consequences. [#NCTALKS @Neuro\\_Central](#)

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So what are these long-term consequences?



**Jeffrey Kutcher**  
@JeffKutcherMD

A5 @Neuro\_Central If ID'd and treated correctly, most concussions don't produce long-term effects. #nctalks

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**Jeffrey Kutcher**  
@JeffKutcherMD

A5 @Neuro\_Central Repeated hits over time, however, can have many negative effects. #nctalks

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**Jeffrey Kutcher**  
@JeffKutcherMD

A5 @Neuro\_Central The key to safe play is active, ongoing, serial neurological evaluations over the course of athletic career. #nctalks

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**Dr Willie Stewart**  
@WillStewNeuro

A5 @Neuro\_Central A field with rapidly expanding understanding. But #concussion no longer regarded as trivial #nctalks

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**Bert Vargas**  
@BertVargas

A5 Need better understanding on who is at risk for long-term consequences to make informed decisions and provide better care. #NCTALKS

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And how can they be reduced?



**Vet Scientist**  
@vetscientist

@Neuro\_Central #NCTALKS: What specific therapies improve outcome post-TBI?



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**Bert Vargas**  
@BertVargas

.@vetscientist no clear therapeutic option, but some early evidence for NAC in #TBI blast injuries. #NCTALKS [journals.plos.org/plosone/articl...](https://journals.plos.org/plosone/article/)



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Perhaps the most significant long-term consequence potentially linked to concussion is neurodegeneration



**Neurology  
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@Neuro\_Central

Q6 Can we link concussion to neurodegenerative disease? #nctalks



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**Jeffrey Kutcher**  
@JeffKutcherMD

A6 @Neuro\_Central link is unclear with the clinic syndrome concussion. However, physical trauma to the brain may be a risk factor. #nctalks



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**Bert Vargas**  
@BertVargas

A6 Recent studies suggest it is # of years of exposure to contact sports more worrisome than # of concussions #NCTALKS @Neuro\_Central



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**Concussion**  
@fsgconcussion

.@BertVargas @Neuro\_Central And age at first exposure? #nctalks

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**Bert Vargas**  
@BertVargas

A6 Study suggests tackle football before 12yo=incr risk of cog impairment. More data needed.  
#NCTALKS @Neuro\_Central [neurology.org/content/84/11/...](http://neurology.org/content/84/11/...)

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**Jeffrey Kutcher**  
@JeffKutcherMD

Not enough known about age at first exposure. Recent paper by Solomon, et al, in AJSM looks at this in Amer football [twitter.com/fsgconcussion/...](https://twitter.com/fsgconcussion/...)

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**Bert Vargas**  
@BertVargas

Agree! Much conflicting evidence yields no clear directives. More data needed on this. #NCTALKS  
[twitter.com/JeffKutcherMD/...](https://twitter.com/JeffKutcherMD/...)

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**Dr Willie Stewart**  
@WillStewNeuro

@JeffKutcherMD @fsgconcussion @BertVargas @Neuro\_Central I think the honest answer is 'we can't say'. But why risk it?

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**Dr Willie Stewart**  
@WillStewNeuro

A6 @Neuro\_Central In all cases #CTE so far diagnosed, one common link = exposure to #TBI as rpt #concussion or single mod/severe. #nctalks

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**Dr Willie Stewart**  
@WillStewNeuro

A6 @Neuro\_Central accepting answer is 'yes', then 'how' is next. No answer, but observations and hypotheses [bit.ly/20suE1p](http://bit.ly/20suE1p) #nctalks

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How about diagnosing CTE?



**Concussion**  
@fsgconcussion

#nctalks Will we soon be able to diagnose CTE in living patients? Some claim great promise in PET findings. @Neuro\_Central

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**Dr Willie Stewart**  
@WillStewNeuro

@fsgconcussion @Neuro\_Central don't believe all you read in papers, or PET. There's discord between binding + tau distribution in path #CTE

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To finish, we looked forward



**Neurology  
Central**  
@Neuro\_Central

Q7 To finish, what current research are you most excited about? #nctalks

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**Jeffrey Kutcher**  
@JeffKutcherMD

A7 @Neuro\_Central Following populations of athletes over time with solid research protocols. Will provide clarity. #nctalks

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**Jeffrey Kutcher**  
@JeffKutcherMD

- A13 @Neuro\_Central Understanding the link between pathological findings of CTE and clinical correlation. #nctalks

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**Bert Vargas**  
@BertVargas

A7 Hard to answer as most research contributes to putting the #concussion puzzle together. #NCTALKS

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**Bert Vargas**  
@BertVargas

A7 Agree. Clarity on CTE (who/why/how) will likely help mitigate fears & direct future treatment/prevention #NCTALKS [twitter.com/JeffKutcherMD/...](https://twitter.com/JeffKutcherMD/)

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**Dr Willie Stewart**  
@WillStewNeuro

A7 @Neuro\_Central Oooh, I'd love to say, but you'll just have to wait for the papers to come out. ;-)  
V exciting #nctalks

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Ending up back, however, at the big question in concussion...



**Bert Vargas**

@BertVargas

A7 Agree w [@JeffKutcherMD](#) & [@WillStewNeuro](#) thoughts that excitement about future research hard without clear [#concussion](#) definition [#NCTALKS](#)



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**Neurology**

**Central**

@Neuro\_Central

Seems like a good place to end [@BertVargas](#) Thanks everyone for taking part [@JeffKutcherMD](#) [@WillStewNeuro](#) [#nctalks](#)



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**Bert Vargas**

@BertVargas

Thank you all for joining us! Thanks [@Neuro\\_Central](#) - honored to be a part of this discussion! [#Concussion](#) [#NCTALKS](#)



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