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# Assessment of Parental, Coach, and Athlete Knowledge of Sport Related Concussions in Children Participating in a Youth Football League

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# Assessment of Parental, Coach, and Athlete Knowledge of Sport Related Concussions in Children Participating in a Youth Football League.

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**Baptist Health  
South Florida**

# Introduction

- ◆ Recent attention placed on athletes who have experienced concussions and the long term effects of concussions in the NFL has put the issue in the national spotlight.
- ◆ According to the NFL Health and Safety Press Conference Report (2015) there was an average of 155.3 concussions reported for the 2011-2014 football season.



# Introduction cont.

- ◆ Athletes experiencing a concussion extend beyond professional players to those playing in youth leagues.
- ◆ In 2011, the Centers for Disease Control & Prevention (CDC) reported an estimated 2,651,581 children aged  $\leq 19$  years were treated annually for sports and recreation-related injuries between the years of 2001-2009, with 173,285 (6.5%) of the injuries resulting from a traumatic brain injury.



# Introduction cont.

- ◆ In 2012 the state of Florida passed House Bill (HB) 291 (2012) known as “The Concussion Bill”. The purpose of HB-291 is to mandate protections for youth athletes who are exhibiting concussion like symptoms. Additionally, provisions were made requiring concussion education for athletes, parents, and coaches.
- ◆ In response to community needs Baptist Health South Florida is participating in a prevention program for the South Miami Grey Ghost youth football league; the program provides specialized helmets, impact testing on players, and concussion awareness through education.



# Purpose

- ◆ The purpose of this study was to evaluate the effectiveness of a concussion education program, developed and presented by Dr. Richard Hamilton and Caroline Godinez to the Grey Ghost athletes, coaches, and parents.



# Aims

- ◆ To describe and compare pre/post education scores on a concussion knowledge survey among parents and coaches who attended the educational program.
- ◆ To describe and compare pre/post education scores on a concussion knowledge survey among youth who attended the educational program.
- ◆ To describe participants' satisfaction with the educational program.



# Study Design

- ◆ A pre/post test comparison study of concussion knowledge among a convenience sample of parents, coaches, and athletes, participating in the Grey Ghost Youth Football league concussion education program.



# Survey Tool

- ◆ Created by Nurse Scientists, based on content of the educational program.
- ◆ For each group, pre/post test knowledge questions were identical
- ◆ The maximum possible number of correct responses was 23
- ◆ Post-surveys for each group contained 3 additional questions to assess participants' satisfaction with the educational program.
- ◆ Parent/Coach survey consisted of 2 demographic questions and 16 questions
  - 2-questions required multiple responses
- ◆ Youth survey consisted of 2 demographic questions and 12 questions
  - 1-question required multiple responses



# Procedures

- ◆ Prior to commencement of the concussion education program, parents and coaches were informed of the study.
- ◆ All attendees who agreed to participate were given a packet that included a cover letter, pre-survey and note card with a random code.
- ◆ Participants were asked to write the random code on the top of the survey.
- ◆ Research personnel stepped out of room after the instructions were given. Participants had approximately 10 minutes to complete the survey.
- ◆ At the end of the one hour educational program, research personnel returned to the classroom to repeat the same procedures as in the pre-survey.



# Procedures cont.

- ◆ After the post-survey was completed, research personnel retrieved both pre and post-surveys from the collection envelope.
- ◆ Data from paper surveys were transferred by research personnel to an electronic database using SurveyMonkey via the BHSF SSL secure server.
- ◆ Data files were double password protected on the Baptist Hospital computer system and are only accessible by research personnel.
- ◆ No identifying information was collected on the surveys.



# Analysis

- ◆ Descriptive statistics
  - Mean pre/post survey scores
  - Pre/post survey proportion of correct answers returned for each question
- ◆ Analytical statistics
  - Tests of association between pre/post survey scores - Pearson correlation, Kendall tau
  - Comparison of pre/post survey scores - Paired t-test or Wilcoxon signed ranks test



# Parent and Coach Results

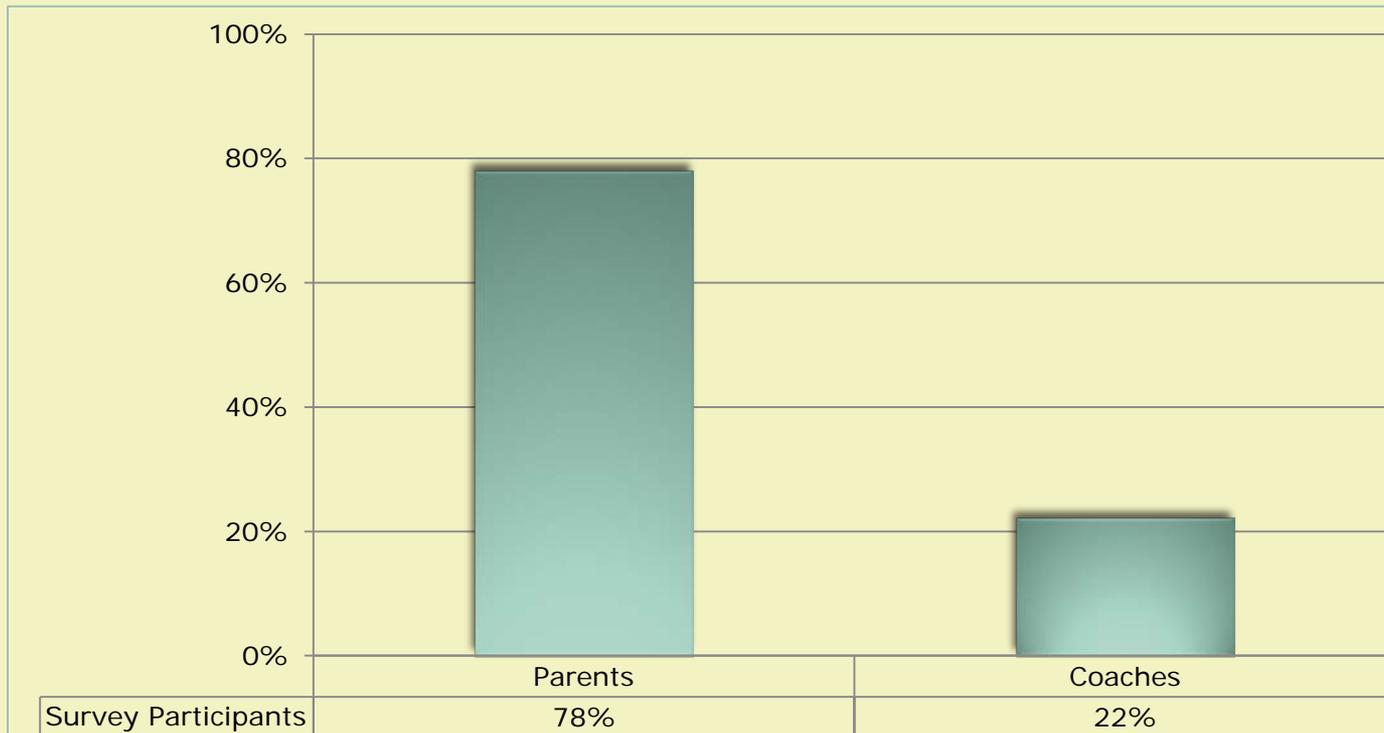


# Results

## Parent/Coach Data

(N=20)

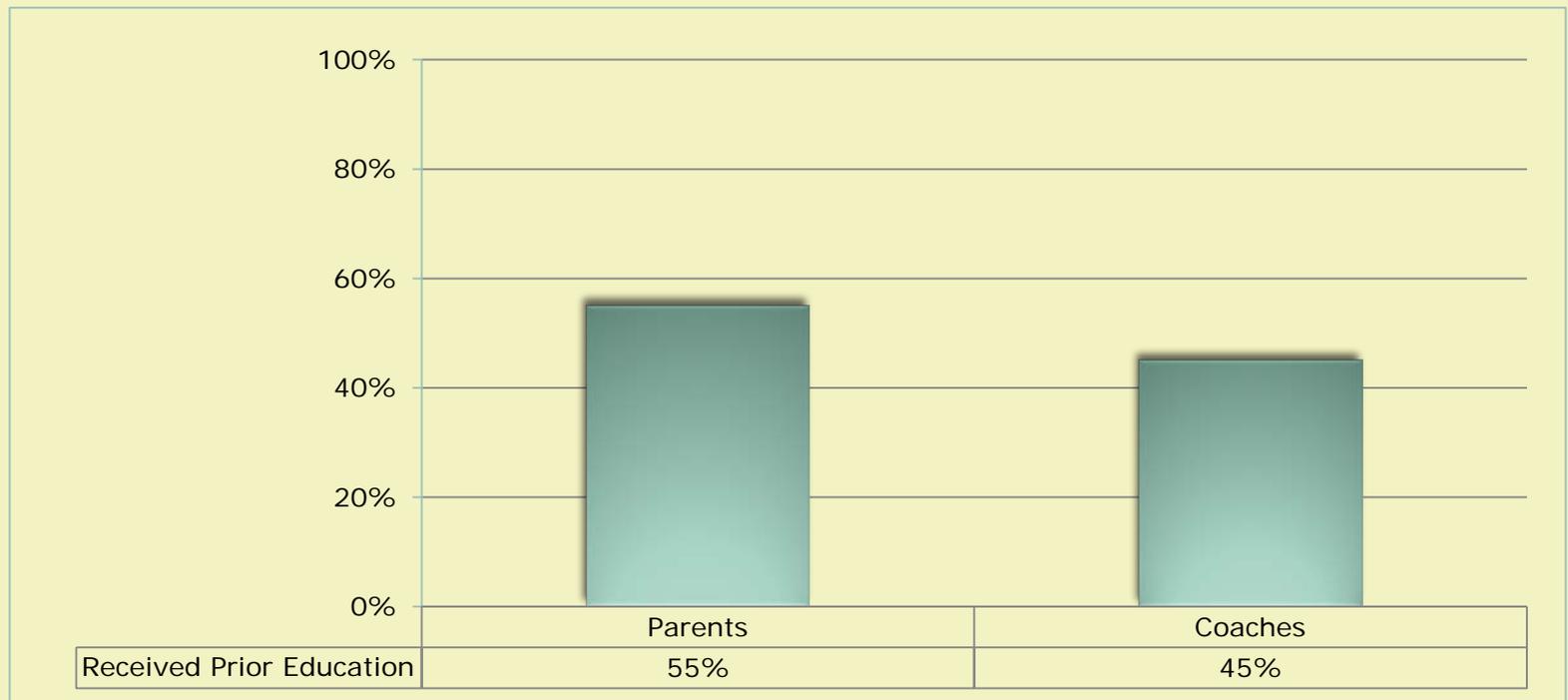
- ◆ Percent of parents vs. coaches who participated in the survey (n=18)\*.



# Results

## Parent/Coach Data

- ◆ Percent of parents and coaches who received prior concussion education (N=20).



# Survey Responses

- ◆ \*All responses for parent/coach and youth surveys were recoded as correct, incorrect, or missing. Percentiles represent the total number of correct valid responses, rounded to the nearest 1%.
- ◆ † Indicates that score decreased post-education



# Proportion of Correct Responses Pre/Post Parent/Coach Survey

Question	Pre	Post
A blood test can detect if someone has a concussion.	75	95
In boys, the sport with the highest risk for a concussion is football.	53	90
Athletes frequently under-report symptoms of a concussion.	75	90
After experiencing a concussion, the athlete should rest and avoid video games.	84	95
† Most people with concussions know they have one.	100	90
A sign of a potentially severe concussion is loss of consciousness for any length of time (even a few seconds).	100	100
† A concussion is only caused by a direct blow to the person's head.	90	85
Most concussions resolve in 7 to 10 days but in children and teenagers they can last longer.	60	85
Which of the following is a good reason to remove an athlete from play and obtain medical attention immediately...	100	100



# Proportion of Correct Responses Pre/Post Parent/Coach Survey

Question	Pre	Post
† The severity of a concussion depends on...	100	<b>95</b>
After an injury event (minutes and hours), early symptoms of a concussion may include <i>nausea and vomiting</i>	80	<b>90</b>
After an injury event (minutes and hours), early symptoms of a concussion may include <i>lack of awareness of surroundings</i>	85	<b>90</b>
After an injury event (minutes and hours), early symptoms of a concussion may include <i>visual problems</i>	95	<b>95</b>
After an injury event (minutes and hours), early symptoms of a concussion may include <i>dizziness</i>	95	<b>95</b>
After an injury event (minutes and hours), early symptoms of a concussion may include <i>headache</i>	90	<b>100</b>
† After an injury event (minutes and hours), early symptoms of a concussion may include <i>emotional problems</i>	50	<b>25</b>



# Proportion of Correct Responses Pre/Post Parent/Coach Survey

Question	Pre	Post
If a coach or trainer suspect that an athlete has a concussion, the coach/trainer should <i>inform the athlete's parent or guardian</i>	65	<b>90</b>
If a coach or trainer suspect that an athlete has a concussion, the coach/trainer should <i>seek immediate medical attention for the athlete</i>	65	<b>75</b>
If a coach or trainer suspect that an athlete has a concussion, the coach/trainer should <i>remove the athlete from play</i>	80	<b>85</b>
If a coach or trainer suspect that an athlete has a concussion, the coach/trainer should <i>allow the athlete to return to play with medical permission</i>	90	<b>100</b>
I feel <b>very</b> confident that I could recognize the signs and symptoms of a concussion	40	<b>65</b>



# Results

## Parent/Coach Data

- ◆ Shapiro-Wilk tests were used to determine the shape of the distribution of the pre- and post data.
  - Both pre-survey ( $W=.929$ ,  $df=20$ ,  $p=.148$ ) and post-survey scores ( $W=.913$ ,  $df=20$ ,  $p=.072$ ) were Normally distributed.
- ◆ Parametric statistics were used to examine the association between pre-survey and post-survey scores, as well as changes in total scores between pre- and post-survey responses.



# Results

## Parent/Coach Data

- ◆ Pre-survey  $M= 18.85$ ,  $SD=2.35$ .
- ◆ Post-survey  $M= 20.4$ ,  $SD=1.73$ .
- ◆ Pre- and post-survey scores were correlated (Pearson's  $r=.561$ ,  $n=20$ ,  $p=.01$ ).
- ◆ Paired t-test indicated that there was a significant increase in post-survey scores when compared to pre-survey scores on knowledge of concussions among parents and coaches (Paired  $t$ -test= $-3.491$ ,  $df=19$ ,  $p=.002$ ).



# Results

## Parent/Coach Data

- ◆ When asked about their confidence in recognizing the signs and symptoms of a concussion, 40% of respondents on the pre-survey responded “very confident”, compared with 65% of respondents on the post-survey.
- ◆ On post-survey
  - 100% of participants either agreed or strongly agreed that the class was helpful to them in understanding the seriousness and potential consequences of concussions.
  - 90% of participants would strongly recommend this class to other parents of athletes or other coaches.



# Parent/Coach Comments

- ◆ *“Great information”*
- ◆ *“Great info”*
- ◆ *“Video to show on YouTube”*
- ◆ *“Excellent class; Great Job Baptist”*
- ◆ *“Thank you for this class”*
- ◆ *“Great class”*



# Youth Results

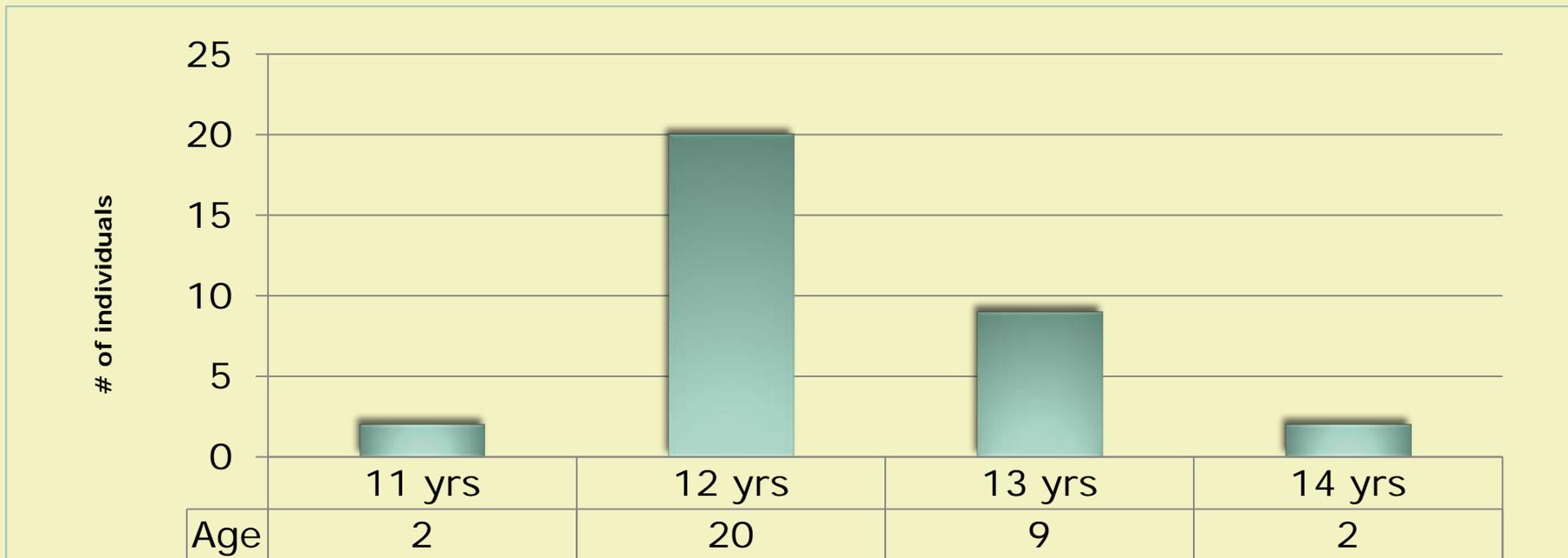


# Results

## Youth Data

(N=35)

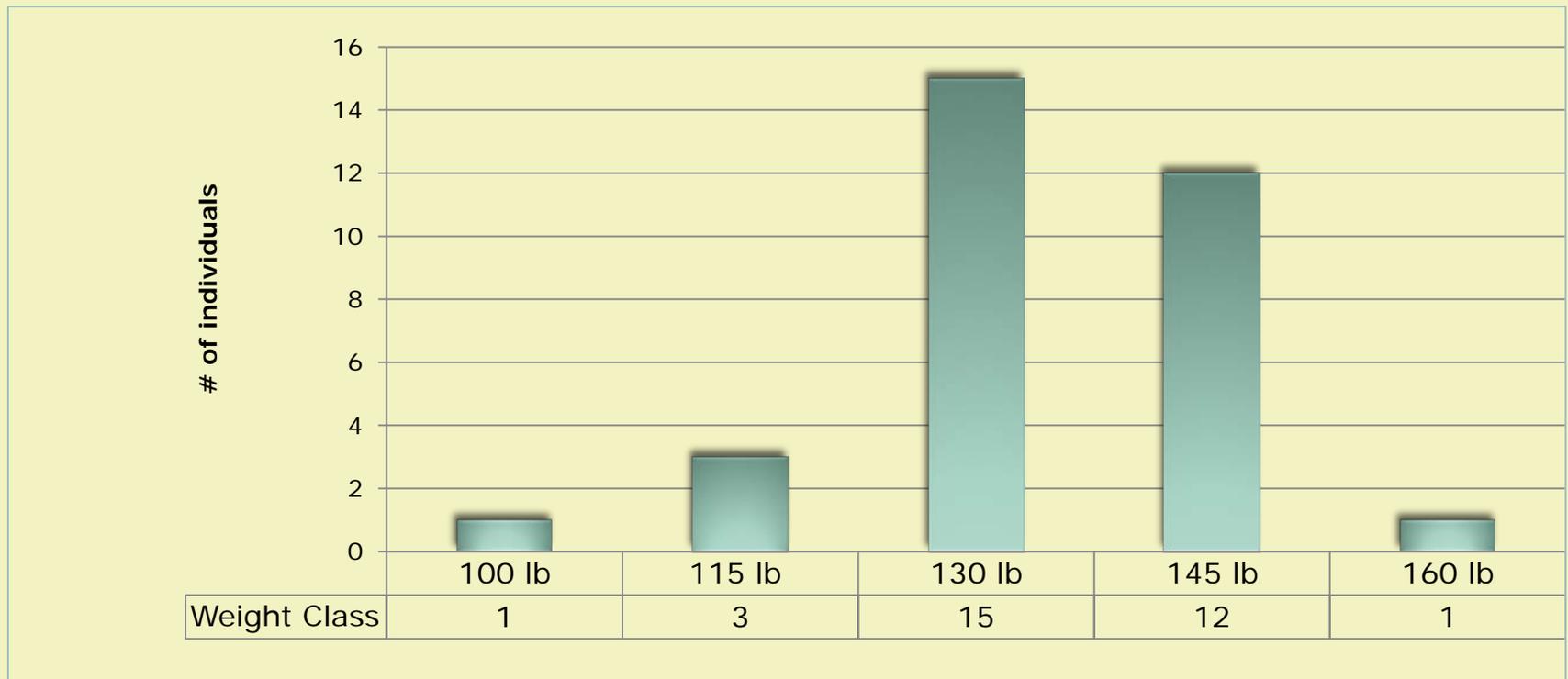
- ◆ Age of Participants



# Results

## Youth Data

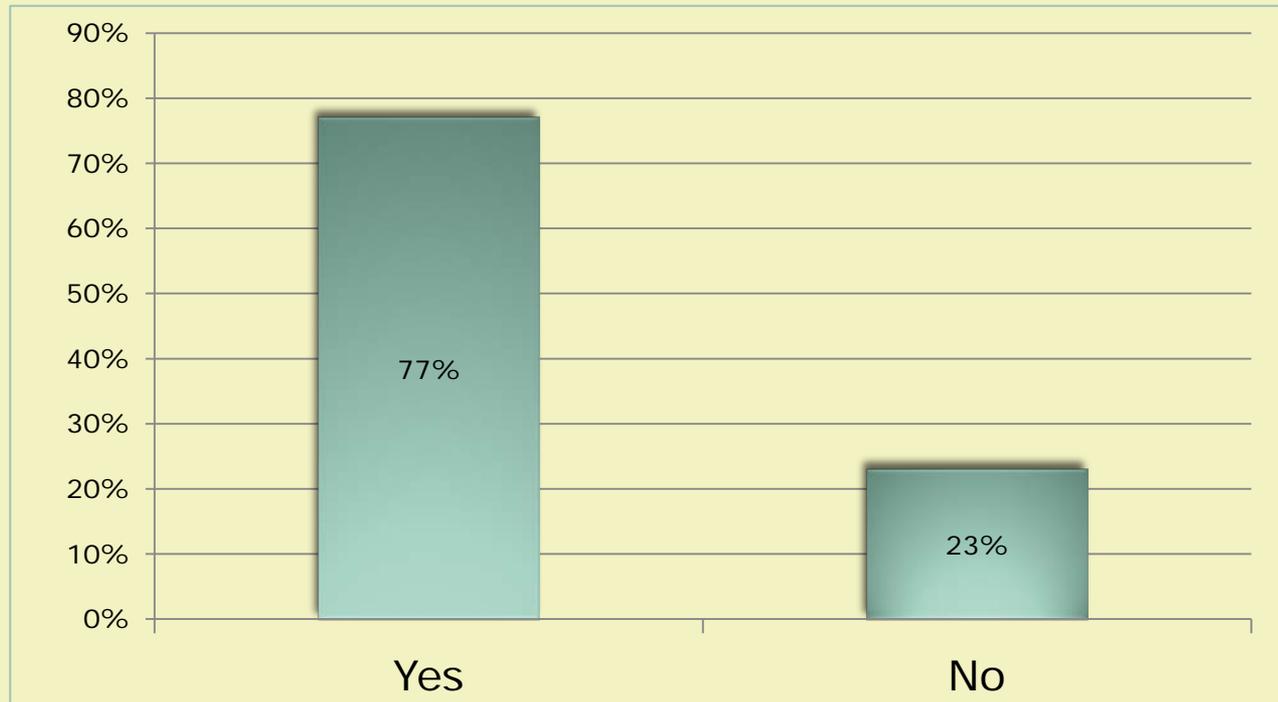
- ◆ Weight Class



# Results

## Youth Data

- ◆ Response to survey question
  - *Is this the first time that you have received training on concussions?*



# Proportion of Correct Responses Pre/Post Youth Survey

Question	Pre	Post
A concussion is a type of injury that changes the way the brain normally works.	91	<b>97</b>
In order to get a concussion, you have to be directly hit on the head.	32	<b>77</b>
You can always tell if someone has a concussion because you will see a bump on their head.	77	<b>85</b>
S/S of a concussion: Loss of consciousness, being "knocked-out" or "passing-out"	80.0	<b>97</b>
S/S of a concussion: Headache or "pressure" in the head.	94	<b>100</b>
S/S of a concussion: Nausea or vomiting	43	<b>86</b>
S/S of a concussion: Dizziness or balance problems	100	<b>100</b>
<b>†</b> S/S of a concussion: Talking fast	91	<b>83</b>
S/S of a concussion: Blurry or double vision	83	<b>97</b>
S/S of a concussion: Sensitivity to light or noise	40.0	<b>89</b>



# Proportion of Correct Responses Pre/Post Youth Survey

Question	Pre	Post
S/S of a concussion: Numbness or tingling	29	<b>63</b>
S/S of a concussion: Diarrhea	94	<b>94</b>
S/S of a concussion: Not feeling "right"	77	<b>94</b>
S/S of a concussion: Drowsy or sleeping more than usual	49	<b>94</b>
S/S of a concussion: Sleeping less than usual or having trouble falling asleep	23	<b>74</b>
S/S of a concussion: Difficulty thinking clearly, concentrating or remembering	86	<b>91</b>
<b>†</b> S/S of a concussion: Increased activity	94	<b>89</b>
If you have a concussion, it is very important to rest and to stay away from activities that might cause further injury and from anything that requires a lot of concentration (i.e, video games, etc.).	89	<b>97</b>
During a game, you were tackled and received a sudden jolt that you were not expecting. About 5 minutes later, you felt "funny". What should you do next? (Choose the best answer.)	83	<b>94</b>



# Proportion of Correct Responses Pre/Post Youth Survey

Question	Pre	Post
Concussions are less likely to happen if you make sure that you wear the right protective equipment (helmets, padding, shin guards, and eye and mouth guards) and that it fits properly.	86	<b>94</b>
If you think you might have a concussion it is important that you see a doctor as soon as possible.	91	<b>91</b>
You should tell your parent or guardian if you have any of the signs or symptoms of a concussion, even if it is days, weeks, or months after the event (jolt/bump/injury...etc.).	86	<b>100</b>
<b>†</b> If you show any signs or symptoms of a concussion, your coach/trainer must remove you from play immediately and you will not be allowed to return to play until you have been checked and cleared to return by a doctor.	97	<b>91</b>
I can recognize the signs and symptoms of a concussion.	51	<b>77</b>
<b>†</b> I will tell my coach/trainer, parent/guardian if I have signs or symptoms of a concussion at any time.	100	<b>94</b>



# Results

## Youth Data

- ◆ Shapiro-Wilk tests were used to determine the shape of the distribution of the pre- and post data.
  - ◆ Both pre-survey ( $W=.934$ ,  $df=35$ ,  $p=.036$ ) and post-survey scores ( $W=.861$ ,  $df=35$ ,  $p=.000$ ) were not Normally distributed.
- ◆ Nonparametric statistics were used to examine the association between pre-survey and post-survey scores, as well as changes in total scores between pre- and post-survey responses.



# Results

## Youth Data

- ◆ Pre-survey  $M= 17.17$ ,  $SD=2.57$
- ◆ Post-survey  $M= 20.8$ ,  $SD=2.15$
- ◆ Pre- and post-survey scores were associated (Kendall's  $\tau=.450$ ,  $n=35$ ,  $p=.001$ ).
- ◆ Wilcoxon signed ranks test indicated that there was a significant increase in post-survey scores when compared to pre-survey scores on knowledge of concussions among participating youth ( $Z=5.059$ ,  $p<.000$ ).



# Youth Comments

- ◆ 100 % felt the class helped them understand that a concussion can be a very serious injury.
- ◆ 94% would recommend this class to other athletes.
- ◆ Most had no suggestions for improvement, some comments were...
  - Tell more people about it
  - Use models of head/brain
  - Some wanted
    - ◆ More time to talk about it
    - ◆ Fewer people in the class
  - Some complained about *“people talking”*
  - *“Bring candy”* 😊



# Conclusion

- ◆ Comparison of pre- and post-survey results indicated that the 1-hour educational program was effective at increasing parent, coach and youth knowledge of concussions (*definition, signs and symptoms and interventions*).



# Acknowledgments

- ◆ Special thank you to...
  - Priscilla Rivera, key personnel, for her role in consenting participants, data collection & entry.
  - Don Parris, PhD, CCRC, Director of Outcomes Research for extending the Nurse Scientists the opportunity to collaborate with them on this very important study.
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