

An Update on Pre-participation Physical Evaluation: *You are cleared to participate*

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Neither I, Shelley Street Callender, nor any family member(s), have any relevant financial relationships to be discussed, directly or indirectly, referred to or illustrated with or without recognition within the presentation.

Objectives

- Know where to find the appropriate reference(s) for screening sports physical evaluations
- Know the goals of the pre-participation sports physical evaluation
- Provide patient guidance on participation in organized sports
- Identify findings that warrant follow-up, restrictions, pediatric consultation and/or referral
- Understand it is helpful to optimize well care visits to include pre-participation sports physical evaluations

Goals of the PPE

- Evaluate for conditions that may be life threatening or disabling
- Evaluate for conditions that predispose one to injury or illness
- Determine general physical and psychological health
- Serve as an entry point into healthcare for adolescents without a medical home
- Provide opportunity to initiate discussions of health and lifestyle issues

When to do more?

- Prior injury in the previous season
- Continued or intermittent pain with activity
- Abnormality on history or physical examination
- Parental concerns or Athlete concerns

PPE

PREPARTICIPATION
PHYSICAL
EVALUATION

Fourth Edition



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PPE

PREPARTICIPATION PHYSICAL EVALUATION

5th Edition

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PPE

PREPARTICIPATION PHYSICAL EVALUATION

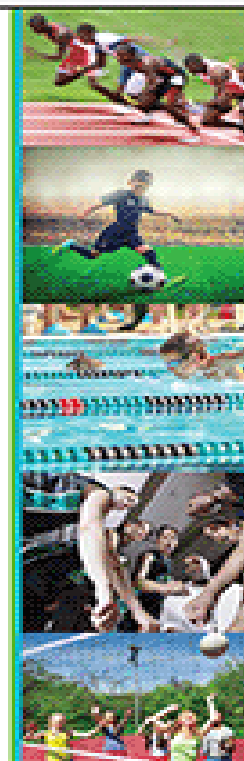
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Medical History

- Has a doctor ever denied or restricted your participation in sports for any reason?
- Do you have allergies to medicines, pollens, foods or stinging insects?
- Are you currently taking any prescription or over the counter medicines or pills?
- Do you have an ongoing medical condition?
- Cough, wheezing, DIB?
- Groin pain or bulge or hernia?
- Head injuries, seizures or concussions?
- Problems with vision, eyes, glasses?
- Concerns about your weight?
- Muscle cramps, **heat injuries**, sickle cell?

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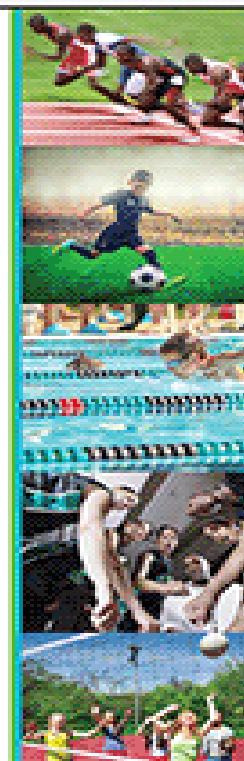
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Georgia High School Association

Preparticipation Physical History and Evaluation -
Current Fillable.pdf (ghsa.net)

Classification on Contact

- **Contact/Collision**

- Boxing, Basketball, Diving, Field/Ice Hockey, FB, Lacrosse, Martial arts, Soccer, Ski Jumping, Water polo, Wrestling

- **Limited Contact**

- Baseball/Softball, Bicycling, Canoeing, Fencing, Field events, flag FB, Horseback riding, Gymnastics, Skiing, Handball, Racquetball, Snowboarding

- **Noncontact**

- Archery, Badminton, Body building, Canoeing (flat water), Crew, Dancing, Field events (discus, javelin, shot put), Golf, Race walking, Power lifting, Rope jumping, Swimming, Running, Tennis, Track, Scuba diving, Sailing, Curling

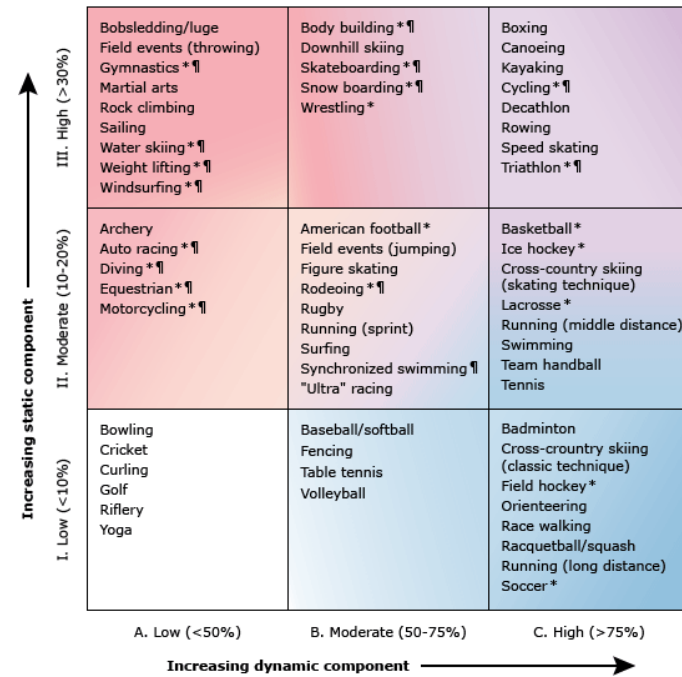
Classification by Strenuousness

- **High to Moderate Dynamic and High to Moderate Static**
 - Boxing, Crew, Cross-country Skiing, Downhill Skiing, FB, Ice Hockey, Sprinting, Wrestling, Speed Skating, Rugby
- **Low Dynamic (isotonic) and Low Static (isometric)**
 - Bowling, Cricket, Curling, Golf, Riflery

Classification by Strenuousness

- **High to Moderate Dynamic (isotonic) with Low Static**
 - Badminton, BB, Baseball, Field Hockey, Lacrosse, Soccer, Swimming, Tennis, Volleyball, Race Walking
- **High to Moderate Static (isometric) and Low Dynamic**
 - Archery, Auto Racing, Diving, Horseback Jumping, Throwing Field Events, Gymnastics, Motorcycling, Rodeo, Sailing, Ski Jumping, Water-skiing, Weight Lifting

Classification of sports based on peak static and dynamic components during competition



This classification is based on peak static and dynamic components achieved during competition; however, higher values may be reached during training. The increasing dynamic component is defined in terms of the estimated percentage of maximal oxygen uptake (VO_{2max}) achieved and results in an increasing cardiac output. The increasing static component is related to the estimated percentage of maximal voluntary contraction reached and results in an increasing blood pressure load. The lowest total cardiovascular demands (cardiac output and blood pressure) are shown in the palest color, with increasing dynamic load depicted by increasing blue intensity and increasing static load by increasing red intensity. Note the graded transition between categories, which should be individualized on the basis of player position and style of play.

* Danger of bodily collision (see UpToDate content regarding sports according to risk of impact and educational background).

¶ Increased risk if syncope occurs.^[1]

Reference:

1. Mitchell JH, Haskell W, Snell P, Van Camp SP. Task force 8: Classification of sports. *J Am Coll Cardiol* 2005; 45:1364.

Reproduced from: Levine BD, Baggish AL, Kovacs RJ. Eligibility and disqualification recommendations for competitive athletes with cardiovascular abnormalities: Task force 1: Classification of sports: Dynamic, static, and impact: A scientific statement from the American Heart Association and American College of Cardiology. *J Am Coll Cardiol* 2015; 66:2350.

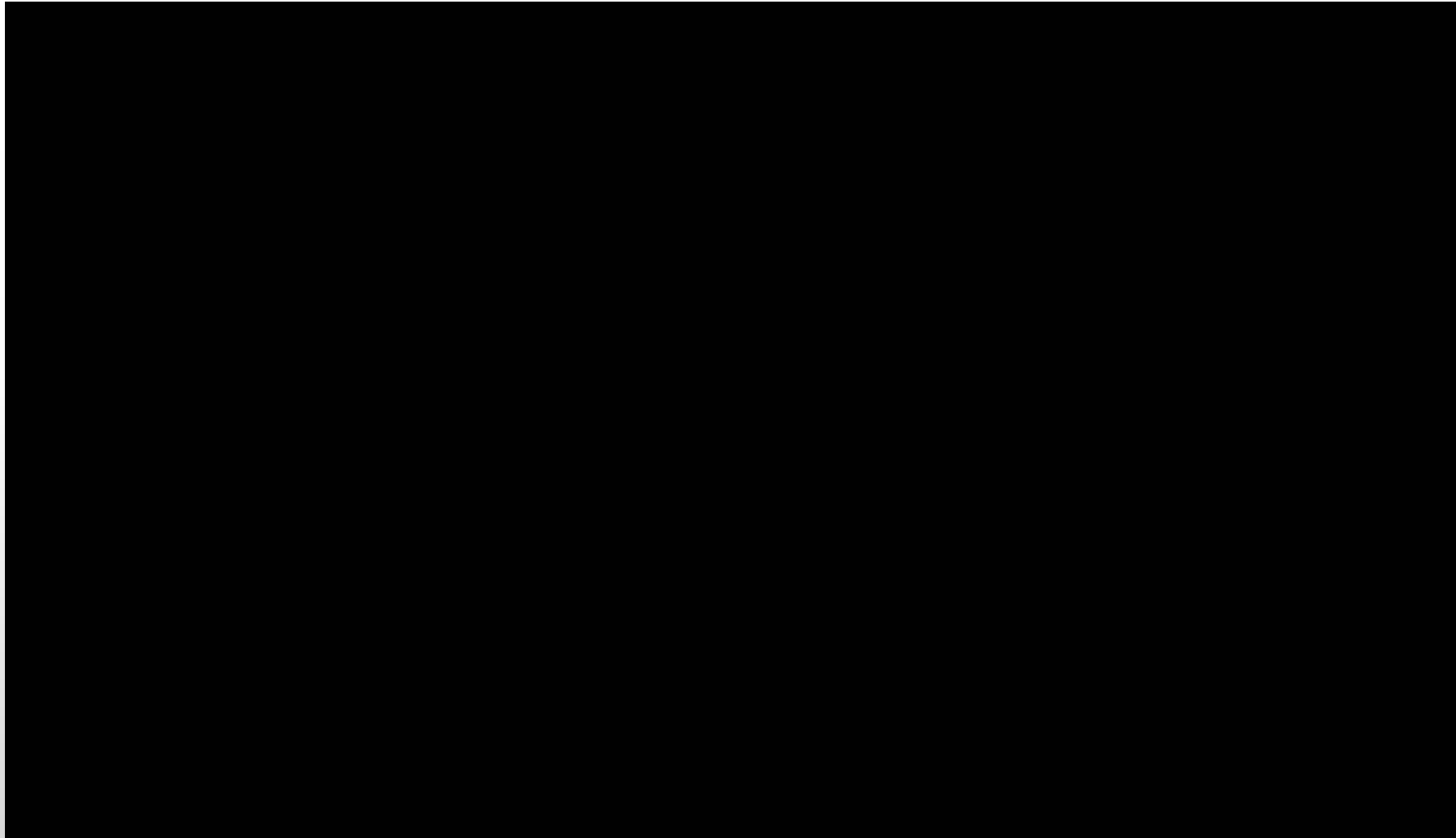
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UpToDate®

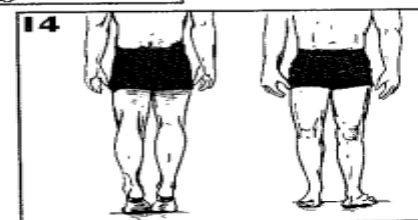
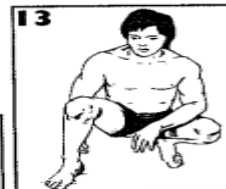
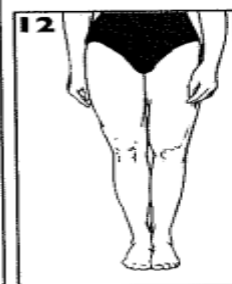
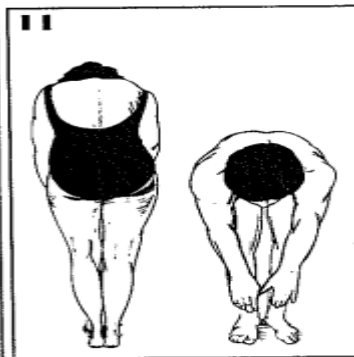
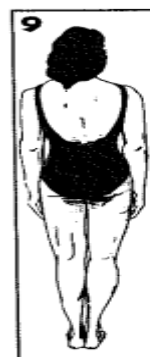
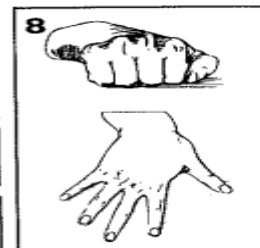
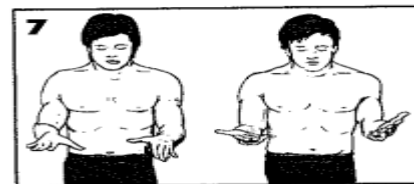
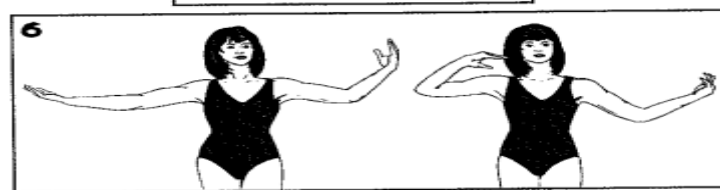
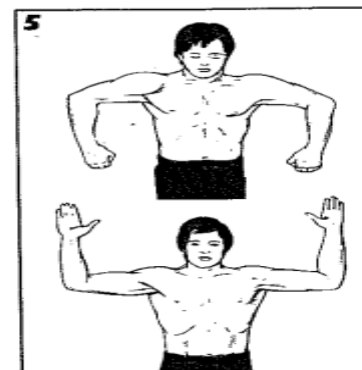
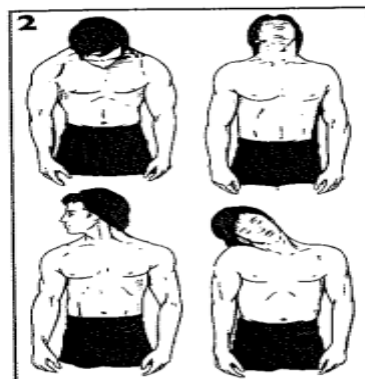
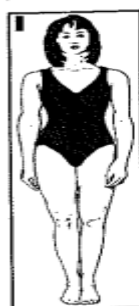
Ask what anticipated sport(s)?

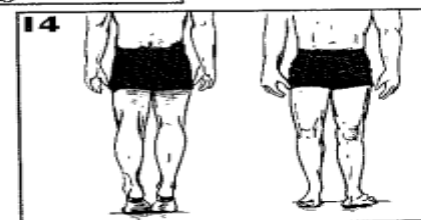
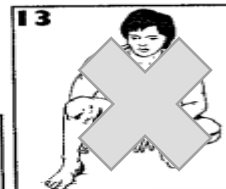
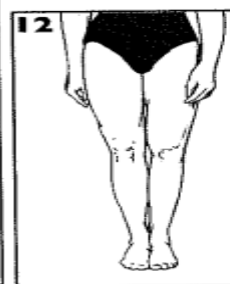
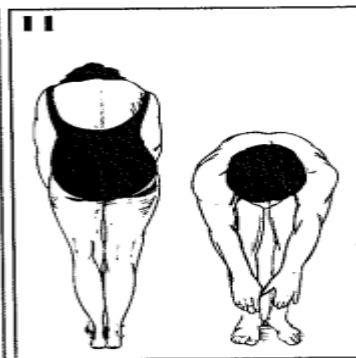
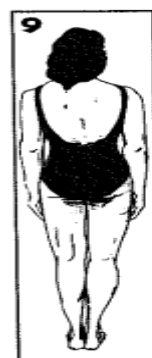
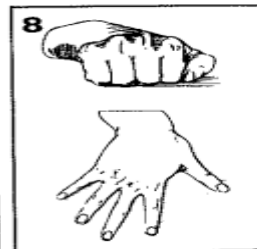
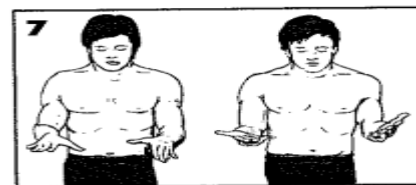
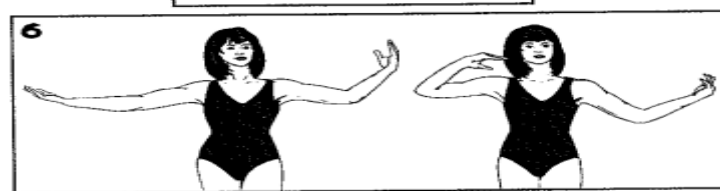
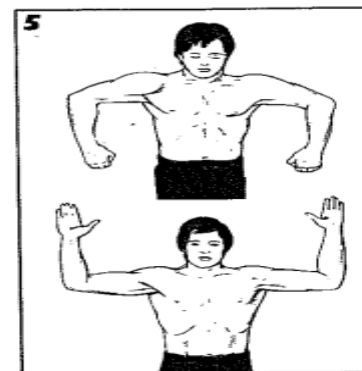
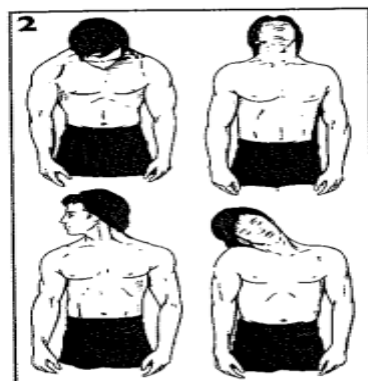
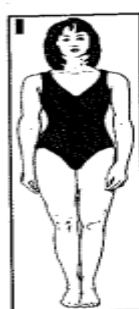


Kory Stringer Video



Document history of heat illness.





Ask participants to come appropriately dressed.

Hypertension

- Diagnosis: 3 BP measurements
- Children & Adolescents
 - NL = < 90th percentile for age, sex & height
 - Pre-Hypertension: 90th-95th percentile
 - **Stage 1 HTN:** > 95th -99th percentile + 5mmHg
 - **Stage 2 HTN:** > 99th percentile + 5mmHg
- All with Dx consideration for: BMP, Lipid profile, TSH, UA, Htc, echo, Renal US, Renin, Cortisol, Aldosterone

(AAP Subcommittee on Screening and Management of HTN in Children. Clinical Practice Guideline. Pediatrics. 2017;140(3):e20171904)

Hypertension

- **Stage 1 HTN:** restrict high static activities (weight-lifting, body building)
- **Stage 2 HTN :** *Severe Essential HTN or secondary HTN* (HTN caused by a previous identified disease) need evaluation before clearance to participate

Table 163. 90th Percentile of Blood Pressure in Boys 2 to 17 Years of Age According to Height Percentile

Age	90 th % Systolic BP for Height Percentile of:					90 th % Diastolic BP for Height Percentile of:				
	5 th	25 th	50 th	75 th	95 th	5 th	25 th	50 th	75 th	95 th
2	98	100	102	104	105	55	56	57	58	59
4	102	105	107	109	110	62	63	64	65	66
6	105	108	110	111	113	67	69	70	70	71
8	107	110	112	114	115	71	72	73	74	75
10	110	113	115	117	118	73	74	75	76	77
12	115	117	119	121	123	75	76	77	78	78
14	120	123	125	126	128	76	77	78	79	80
16	125	128	130	132	133	79	80	81	82	83
17	128	131	133	134	136	81	82	83	84	85

Recheck blood pressure when appropriate.

Concussion

Consensus statement on concussion in sport—the 5th international conference on concussion in sport held in Berlin, October 2016

Paul McCrory, Willem Meeuwisse, Jiří Dvorak, Mark Aubry, Julian Bailes, Steven Broglio, et.al.

[Consensus statement on concussion in sport—the 5th international conference on concussion in sport held in Berlin, October 2016 \(bmj.com\)](http://bmj.com)


Epidemiology Sport Concussion

- Overall rates estimate 3.8 million recreational & sport-related concussions annually; with as many as **50% unreported**.
- Tackling and being tackled represent the highest FB rates.
- Concussions represent estimated 9% of all high school athletic injuries.
- Rates highest for FB, girl's soccer, boys' soccer and girls' basketball.

Concussion Legal: Zach Story

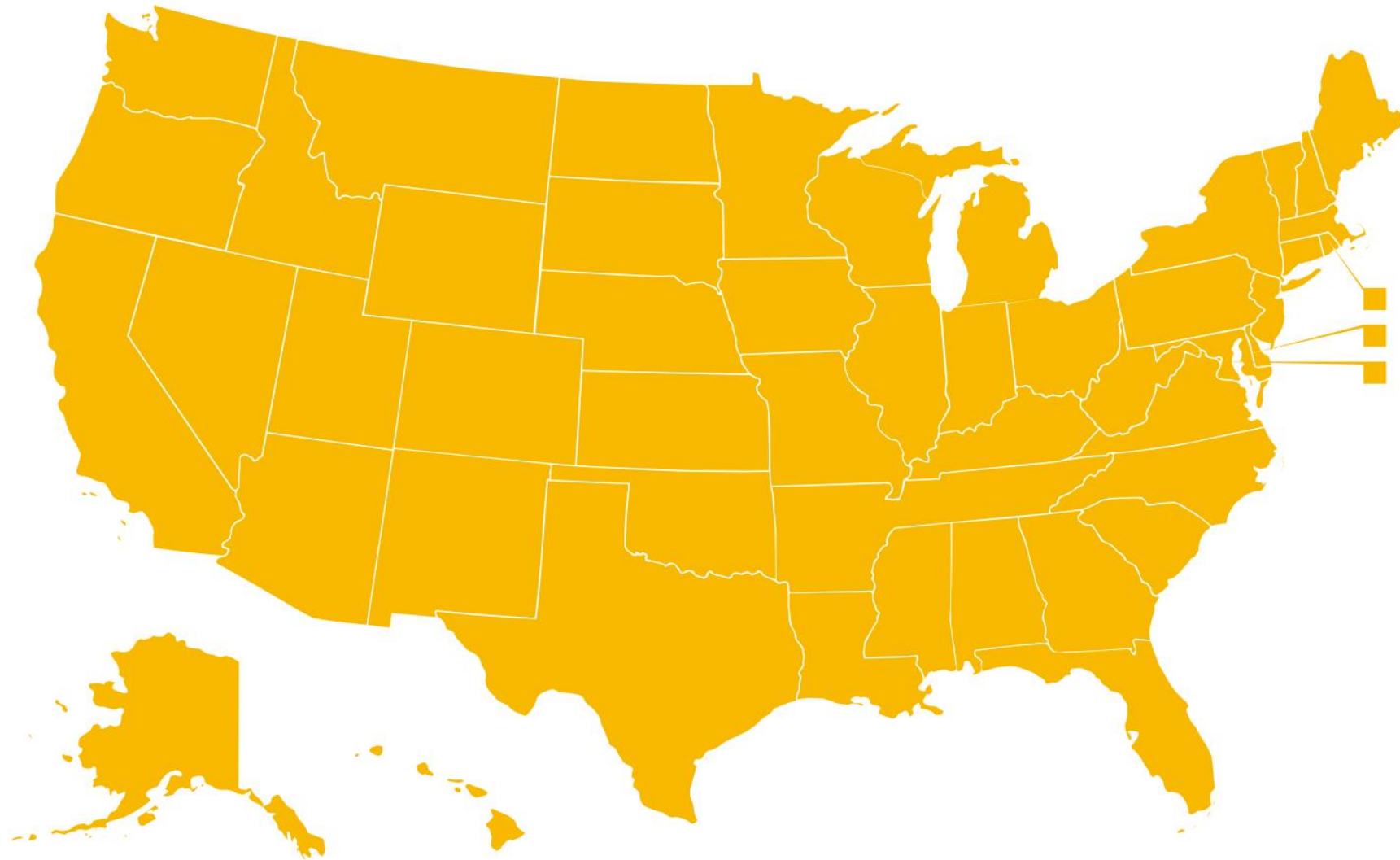
First Law: On July 26, 2009, House Bill 1824 – also known as the Zackery Lystedt Law, became effective and Law May 2009, State of Washington.

<https://www.youtube.com/watch?v=88UjU-oXYl8>





2014-2015



2009

2010

2011

2012

2013

2014-15

Symptoms

- Headache
- “Pressure in head”
- Neck Pain
- Dizziness
- Blurred vision
- Balance problems
- Sensitive to light
- Sensitive to sound
- Feeling slowed down
- Feeling like “in a fog”
- Anxious
- “Don’t feel right”
- Difficulty concentrating
- Difficulty remembering
- Fatigue or low energy
- Confusion
- Drowsiness
- Trouble falling asleep
- More emotional
- Irritable
- Sadness
- Nervous

ACUTE CONCUSSION EVALUATION (ACE)

PHYSICIAN/CLINICIAN OFFICE VERSION

Gerard Gioia, PhD¹ & Micky Collins, PhD²

¹Children's National Medical Center

²University of Pittsburgh Medical Center

Patient Name: _____
DOB: _____ Age: _____
Date: _____ ID/MR# _____

A. Injury Characteristics Date/Time of Injury _____ Reporter: ☐ Patient ☐ Parent ☐ Spouse ☐ Other _____

1. Injury Description

- 1a. Is there evidence of a forcible blow to the head (direct or indirect)? ☐ Yes ☐ No ☐ Unknown
1b. Is there evidence of intracranial injury or skull fracture? ☐ Yes ☐ No ☐ Unknown
1c. Location of Impact: ☐ Frontal ☐ Lt Temporal ☐ Rt Temporal ☐ Lt Parietal ☐ Rt Parietal ☐ Occipital ☐ Neck ☐ Indirect Force
2. **Cause:** ☐ MVC ☐ Pedestrian-MVC ☐ Fall ☐ Assault ☐ Sports (specify) _____ Other _____
3. **Amnesia Before (Retrograde)** Are there any events just BEFORE the injury that you/ person has no memory of (even brief)? ☐ Yes ☐ No Duration _____
4. **Amnesia After (Anterograde)** Are there any events just AFTER the injury that you/ person has no memory of (even brief)? ☐ Yes ☐ No Duration _____
5. **Loss of Consciousness:** Did you/ person lose consciousness? ☐ Yes ☐ No Duration _____
6. **EARLY SIGNS:** ☐ Appears dazed or stunned ☐ Is confused about events ☐ Answers questions slowly ☐ Repeats Questions ☐ Forgetful (recent info)
7. **Seizures:** Were seizures observed? No ☐ Yes ☐ Detail _____

B. Symptom Check List* Since the injury, has the person experienced any of these symptoms any more than usual today or in the past day?

Indicate presence of each symptom (0=No, 1=Yes).

*Lewell & Collins, 1998 JHTR

PHYSICAL (10)		COGNITIVE (4)		SLEEP (3)	
Headache	0 1	Feeling mentally foggy	0 1	Drowsiness	0 1
Nausea	0 1	Feeling slowed down	0 1	Sleeping less than usual	0 1 N/A
Vomiting	0 1	Difficulty concentrating	0 1	Sleeping more than usual	0 1 N/A
Balance problems	0 1	Difficulty remembering	0 1	Trouble falling asleep	0 1 N/A
Dizziness	0 1	COGNITIVE Total (0-4) _____		SLEEP Total (0-4) _____	
Visual problems	0 1	EMOTIONAL (4)		Exertion: Do these symptoms <u>worsen</u> with: Physical Activity <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A Cognitive Activity <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A Overall Rating: How <u>different</u> is the person acting compared to his/her usual self? (circle) Normal 0 1 2 3 4 5 6 Very Different	
Fatigue	0 1	Irritability	0 1		
Sensitivity to light	0 1	Sadness	0 1		
Sensitivity to noise	0 1	More emotional	0 1		
Numbness/Tingling	0 1	Nervousness	0 1		
PHYSICAL Total (0-10) _____		EMOTIONAL Total (0-4) _____			
(Add Physical, Cognitive, Emotion, Sleep totals)		Total Symptom Score (0-22) _____			

C. Risk Factors for Prolonged Recovery (check all that apply)

Concussion History? Y <input type="checkbox"/> N <input type="checkbox"/>	✓ Headache History? Y <input type="checkbox"/> N <input type="checkbox"/>	✓ Developmental History	✓ Psychiatric History
Previous # 1 2 3 4 5 6+	Prior treatment for headache	Learning disabilities	Anxiety
Longest symptom duration Days _____ Weeks _____ Months _____ Years _____	History of migraine headache <input type="checkbox"/> Personal <input type="checkbox"/> Family _____	Attention-Deficit/ Hyperactivity Disorder	Depression
If multiple concussions, less force caused reinjury? Yes <input type="checkbox"/> No <input type="checkbox"/>		Other developmental disorder _____	Other psychiatric disorder _____

List other comorbid medical disorders or medication usage (e.g., hypothyroid, seizures) _____

D. RED FLAGS for acute emergency management: Refer to the emergency department with sudden onset of any of the following:

- * Headaches that worsen
- * Looks very drowsy/ can't be awakened
- * Can't recognize people or places
- * Neck pain
- * Seizures
- * Repeated vomiting
- * Increasing confusion or irritability
- * Unusual behavioral change
- * Focal neurologic signs
- * Slurred speech
- * Weakness or numbness in arms/legs
- * Change in state of consciousness

E. **Diagnosis (ICD):** ☐ Concussion w/o LOC 850.0 ☐ Concussion w/ LOC 850.1 ☐ Concussion (Unspecified) 850.9 ☐ Other (854) _____
☐ No diagnosis

F. Follow-Up Action Plan Complete ACE Care Plan and provide copy to patient/family.

☐ No Follow-Up Needed

☐ Physician/Clinician Office Monitoring: Date of next follow-up _____

☐ Referral:

☐ Neuropsychological Testing

☐ Physician: Neurosurgery _____ Neurology _____ Sports Medicine _____ Physiatrist _____ Psychiatrist _____ Other _____

☐ Emergency Department

ACE Completed by: _____

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This form is part of the "Heads Up: Brain Injury in Your Practice" tool kit developed by the Centers for Disease Control and Prevention (CDC).

Ensure the PPE form is filled out completely.

A 14-year-old who wants to play HS basketball and start training in a competitive boxing club, comes in for a PPE. On her screening history you find out that at the age of 8 she had eye surgery after a trauma to the eye. Her right eye now is best corrected to 20/50. What are your recommendations?

- 1. Clearance to participate, in all sports with no restrictions**
- 2. Clearance to participate, in Basketball with eye protection, no clearance for boxing**
- 3. No Clearance to participate in Basketball nor boxing, but clearance in all non-contact sports.**
- 4. No clearance to participate in any sport**
- 5. Referral to Ophthalmology**

Eye

Abnormal visual acuity is among the most frequent reported finding during a PPE

- Functionally 1-eyed athlete ($<20/40$), loss of an eye, detached retina, serious eye surgery/injury
- Eye protection that passes American Society for Testing and Materials (ASTM) standards or for Hockey, HECC (Hockey Equipment Certification Council) or CSA (Canadian Standards Association)

American Society for Testing Materials



Eye

Sports needed:

- Baseball/Softball (ASTM F910 for youth batter or base runner, otherwise ASTM F803)
- Basketball, Field Hockey (goalie: full mask), Women's and Men's Lacrosse, Soccer (ASTM F803)
- Paintball,
- Racket sports

Restricted sports:

- Boxing, Full-contact Martial Arts

Polycarbonate lenses in swimming, no standard for wrestling,
any street wear for biking

A 14 year-old who wants to play HS basketball and start training in a competitive boxing club, comes in for a PPE. On her screening history you find out that at the age of 8 she had eye surgery after a trauma to the eye. Her right eye now is best corrected to 20/50. What are your recommendations?

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- 4. No clearance to participate in any sport**
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Take visual acuity test with corrective lenses.

Neurological

- Seizure disorder, well controlled:
 - No restrictions
- Seizure disorder, poorly controlled:
 - Warning/restriction for collision, contact or limited contact sports
 - Complete restriction from archery, riflery, swimming, power weight lifting, strength training and sports involving heights

Respiratory

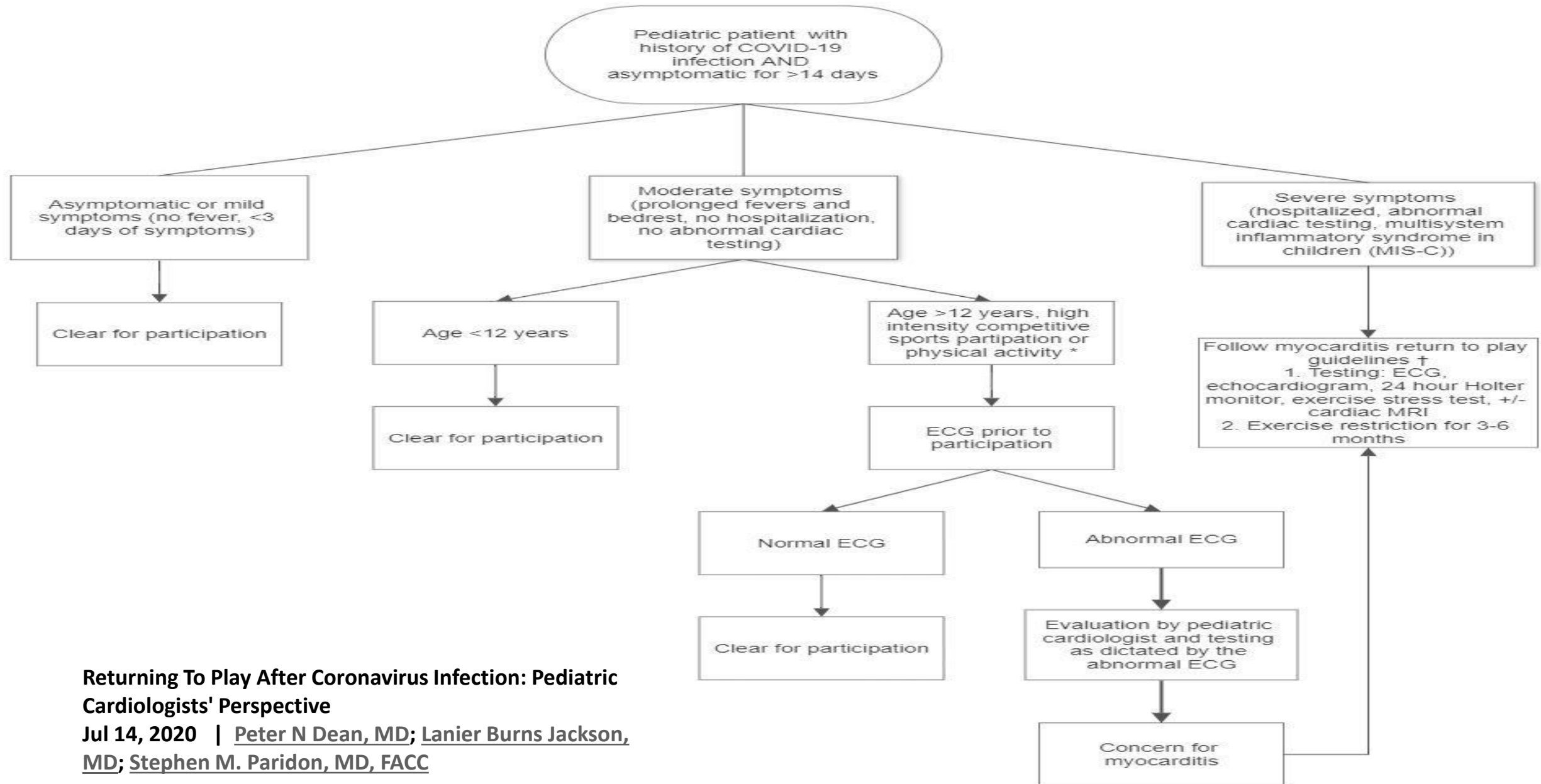
- Patients with pulmonary disease (including CF) can participate in all sports if oxygenation remains satisfactory during a graded exercise test.
- Asthma: Only those with severe disease or very poor control need exercise modification

Ensure respiratory illness history and status is documented.

15-year-old and her 13-year-old sibling come to see you for sports physicals. One month ago they tested positive for COVID 19. She (15-year-old) was symptomatic and was seen in the ED with fever, cough, flu-like illness. She had diminished taste and smell. The fever resolved after 6 days, flu-like symptoms resolved after 14 days and her taste, smell and all other symptoms resolved by one week later. Her brother did not experience any symptoms. The family did quarantine for 10-14 days and both patients are now well and in their usual state of health. The remainder of the history and physical examination is normal. They plan to participate in basketball and soccer respectively.

What do you recommend?

Return to Play After COVID-19 Infection in Pediatric Patients



Returning To Play After Coronavirus Infection: Pediatric Cardiologists' Perspective
Jul 14, 2020 | Peter N Dean, MD; Lanier Burns Jackson, MD; Stephen M. Paridon, MD, FACC

COVID-19

- Not every medical society has the exact same recommendations; most agree some level of discussion, education and evaluation is warranted
- Considerations: in-season etc. vs. PPE
- Everchanging
- AAP guidance: [Services.aap.org](https://services.aap.org) COVID-19 Interim Guidance: Return to Sports and Physical Activity (aap.org)

Ask: Have you had COVID-19?

Hematology

Sickle cell trait

- No restrictions
- Careful conditioning, acclimatization and hydration
 - Pretzlaff, '02, in ordinary conditions, no increased risk
 - Kark et al '87 and Drehner et al '99 in US Armed Forces found 20 fold increase in risk of death among recruits

• **Sickle cell disease**

- If status of illness permits
- Restrict from high exertion, collision and contact sports

Document chronic disease history i.e. sickle cell status in chart.

Skin

Boils, HSV, Impetigo, Scabies, Molluscum Contagiosum:
participation is restricted while contagious in all mat
sports, contact and limited contact sports

Encourage student-athlete to supply all information on any recent or recurrent rash.

Infectious Disease

Fever:

- No participation is permitted

Hepatitis/HIV:

- No restrictions for otherwise healthy individuals
- Always use universal precautions

Nephrology and Genitourinary

Inguinal Hernia

- Asymptomatic

- Participation permitted

- Symptomatic

- Frequently require treatment and need to be individually evaluated

- Single or Undescended Testicle:

- No restriction but must wear a cup in some contact sports
 - Risk assessment and discussion about sperm banking

Summary

- Ask what anticipated sports?
- Recheck blood pressure when appropriate.
- Ask participants to come appropriately dressed
- Take visual acuity test with corrective lenses.
- Ask parents/guardians to fill out questionnaire together and consider in advance.
- Ensure the correct PPE form is complete.
- Ideally do the PPE at least 6 weeks before first practice.
- Document chronic disease history i.e. sickle cell status in chart.
- Have you had COVID-19?

References

- PPE, 4th and 5th Edition, AAFP, AAP, ACSM, AMSSM, AOAAM, AOASM; The Physician and Sports Medicine.
- 2019UptoDate. PPE Sports Examination in Children and Adolescents.
- O'Connor et. al. Sports Medicine Just the Facts. 2005.
- Consensus statement on concussion in sport—the 5th international conference on concussion in sport held in Berlin, October 2016 Paul McCrory, Willem Meeuwisse, Jiří Dvorak, Mark Aubry, Julian Bailes, Steven Broglio, et.al.
- *Giese, EA., O'Connor, FG, Depenbrock, P, Oriscello, R. The athlete preparticipation Evaluation Cardiovascular Assessment. American Family Physician 2007*
- <https://www.marfan.org/dx/rules>
- Clinical Report Health Supervision for Children with Marfan Syndrome. Pediatrics October 2013,132:4.

THANK YOU!