





SPORTS DENTISTRY AND PEDIATRIC DENTISTRY WHY SHOULD WE KNOW THIS?

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Scarborough, Maine

November 8, 2022



I AM THRILLED TO BE HERE!!!....

This is meant to be educational
AND FUN !!!!!!
And I have nothing to disclose

OKAY, BUT WHAT "OFFICIALLY" IS SPORTS DENTISTRY THE DEFINITION:





- "Sport Dentistry is the branch of SPORTS MEDICINE that deals with the prevention and treatment of dental injuries and related oral diseases associated with sport and exercise."
- ASD policy statement, revised November 18, 2012

MY OWN "NEW" UNOFFICIAL DEFINITION

- Sports Dentistry is the brand of Sports Medicine which covers the Total Oral Health of Athletes. This includes but is not limited to: Optimal oral health, Orofacial Injury treatment and prevention of injury, Correct function of the stomatognathic system, and any other aspect which ties that system with the total health of athletes.

Me, August 2022.

YEAH, BUT WHAT HAS THIS GOT TO DO WITH US?

????



?????

AFTER ALL, THIS IS WHAT I DID FOR WORK.















Same as you!!! RIGHT!?

"THE MANUAL"

So, some folks think Pedo guys should know about it. Since 1991

Policy on Prevention of Sports-Related Orofacial Injuries

Latest Revision
2018

How to Cite: American Academy of Pediatric Dentistry. Policy on prevention of sports-related orofacial injuries. The Reference Manual of Pediatric Dentistry. Chicago, Ill.: American Academy of Pediatric Dentistry; 2020:106-11.

Purpose

The American Academy of Pediatric Dentistry (**AAPD**) recognizes the prevalence of sports-related orofacial injuries in our nation's youth and the need for prevention. This policy is intended to educate dental professionals, health care providers, and educational and athletic personnel on the prevention of sports-related orofacial injuries.

Methods

This policy was developed by the Clinical Affairs Committee and adopted in 1991, and was revised by the Council of Clinical Affairs. This document is a revision of the previous version, revised in 2013. The revision of this policy is based upon a review of current dental and medical literature related to orofacial injuries, including their prevention. Database searches were performed using the terms: sports injuries, injury prevention, dental injuries, orofacial injuries. Seventy-seven references were chosen from this method and from references within selected articles. The policies, recommendations, and listed references of the Academy for Sports Dentistry (**ASD**) and the International Association of Dental Traumatology were consulted as valuable resources in preparation of this document.

Background

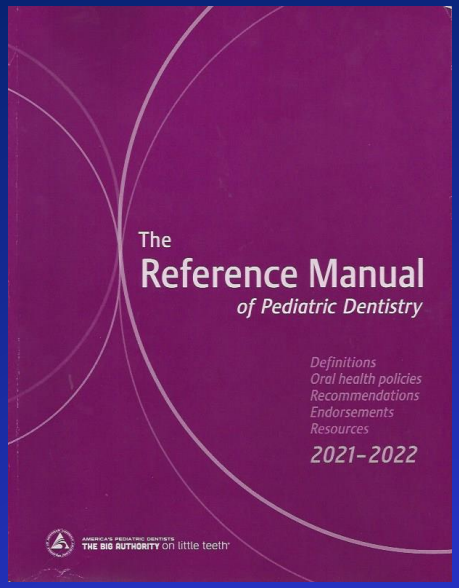
The tremendous popularity of organized youth sports and the high level of competitiveness have resulted in a significant number of dental and facial injuries.[1,2] From 1990-2003, there was an average of 22,000 dental injuries annually in children less than 18 years of age.[3] This was approximately 31.6 dental injuries per 100,000 children and adolescents. In 2007, it was reported that approximately 46 million youths in the United States were involved in some form of sports over the past decade.[4] It has been estimated that 30 million children in the United States participate in organized sport programs.[5] All sporting activities have an associated risk of orofacial injuries due to falls, collisions, contact with hard surfaces, and contact from sports-related equipment. A systematic review reported between 10-61 percent of athletes reported experiencing dental trauma.[6] A 10 year study of 3,385 craniomaxillofacial trauma cases presenting to an oral and maxillofacial surgery department found 31.8 percent of injuries in children occurred during sports activities.[7] Children ages 17 years and younger represented 80.6 percent of the total (sport and not-sport related) dental injuries that presented that presented to United States emergency rooms from 1990-2003.[3] In all age groups, males were more likely to have dental injuries than females.[3]

It has been demonstrated that dental and facial injuries can be reduced significantly by introducing mandatory protective equipment.[8,9] Currently in the United States, high school football, lacrosse, and ice hockey require protective equipment.[10] Popular sports such as baseball, basketball, soccer, softball, wrestling, volleyball, and gymnastics lag far behind in injury protection for girls and boys. Baseball and basketball have been shown to have the highest incidence of sports-related dental injuries in children seven to 17 years of age.[1] More specifically, baseball accounted for the most dental injuries within the seven to 12 year old age group, while basketball was the most frequent sport associated with dental injuries in the 13 to 17 year age group.[3] Youths participating in leisure activities such as skateboarding, inline or roller skating, and bicycling also benefit from appropriate protective equipment.[11-14] A large national survey confirmed the bicycle as the most common consumer sports product related to dental injuries in children, followed by playground equipment, other riding equipment (skates, inline skates), and trampolines.[3]

The use of the trampoline provides specialized training for certain sports. However, when used recreationally, a significant number of head and neck injuries occurs, with head injuries most commonly a result of falls.[15] The American Academy of Pediatrics (**AAP**) recommends practitioners advise patients and their families against recreational trampoline use and discuss that current safety measures have not decreased injury rates significantly.[15] The AAP also states that practitioners "should only endorse use of trampolines as part of a structured training program with appropriate coaching, supervision, and safety measures in place".[15]

Studies of dental and orofacial athletic injuries are reported throughout the medical and dental literature.[16-19] Injury rates vary greatly depending on the size of the sample, the sample's

ABBREVIATIONS
AAP: American Academy of Pediatrics. **AAPD:** American Academy Pediatric Dentistry. **ASD:** Academy of Sports Dentistry. **ASTM:** American Society for Testing and Materials.



Newest Revision: 2018,.

"POLICY ON PREVENTION OF SPORTS-RELATED OROFACIAL INJURIES" REVIEW COUNCIL COUNCIL ON CLINICAL AFFAIRS LATEST REVISION 2018

- THE AAPD ENCOURAGES: (11 THINGS)
- DENTISTS TO PLAY AN ACTIVE ROLE IN EDUCATING THE PUBLIC
- PEDIATRIC DENTAL DEPARTMENTS TO TEACH DENTAL STUDENTS FABRICATION OF CUSTOM-FITTING MOUTHGUARDS
- DENTISTS TO PRESCRIBE, FABRICATE, OR PROVIDE REFERRAL FOR MOUTHGUARD PROTECTION FOR PATIENTS AT INCREASED RISK FOR OROFACIAL TRAUMA

- Mandating the use of properly-fitted mouthguards in other organized sporting activities that carry risk of orofacial injury.
- Pediatric dentists to partner with other dentists and child health professionals, school administrators, legislators, and community sports organizations to promote the broader use of mouthguards

Point One

- Continuation of preventive practices instituted in youth, high school and college football, lacrosse, field hockey, ice hockey, and wrestling (for wrestlers wearing braces).
- All of this means that we are supposed to **KNOW WHAT WE ARE TALKING ABOUT WHEN MAKING SPORTS RECOMMENDATIONS!!!!**

OKAY, SO HOW WILL WE DO THIS?

- Epidemiology of sports participation and sports injuries
- We don't time for trauma, BUT don't forget that pediatric dentists are the ones who "do trauma"
- Prevention of Trauma with Mouthguards:History, Functions and effectiveness, Types and Fabrication of.
- Other Stuff to connect sports and dentistry

BUT FIRST, ATHLETES AT ALL LEVELS ARE JUST *DIFFERENT*



BUT NOT JUST BIG TIME SPORTS ….



Emlyn Patry
York High School
State Championship Game
York vs Gardiner
Gardiner Wins
3-2

HIGH SCHOOL
FIELD HOCKEY

Losing two teeth doesn't stop Patry

York's Emlyn Patry lost two teeth in a collision during Saturdays' title loss, but went back in and scored a goal

By MIKE LOWE
Staff Writer

Emlyn Patry, the York High field hockey player who lost two teeth in Saturday's Class B state championship 3-2 loss to Gardiner, said it's going to be "a bunch of months" before her mouth will be fully healed.

Patry, a senior midfielder, had to

SO WHAT DID SHE THINK?

Gardiner scored 55 seconds later to take a 3-1 lead. And Patry decid-

"The trainers reassured me that it was only my teeth and that otherwise I was all right," said Patry. "I knew

and I had to go back in. I wasn't going to sit and just watch."

This is different than a backyard accident.

THERE CERTAINLY MUST BE TRAUMA AND MOUTHGUARDS RIGHT?





But MORE!!!!!

SPORTS CONCUSSIONS AND MOUTHGUARDS





Fact or Myth?





PERFORMANCE ENHANCING ORAL APPLIANCES











SPORTS NUTRITION, SPORTS DRINKS AND DENTAL EROSION





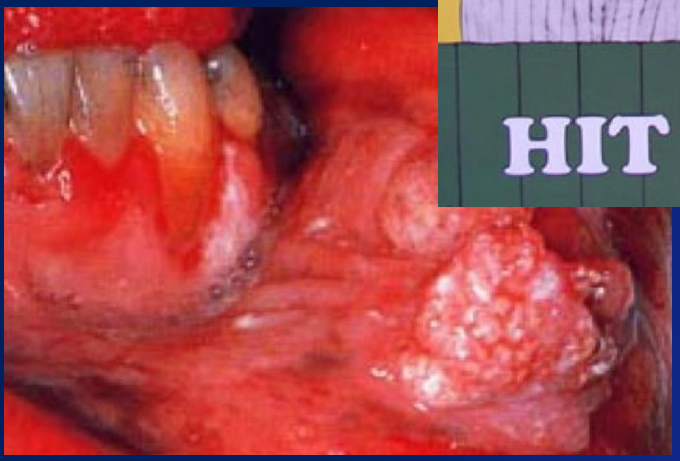


SMOKELESS TOBACCO











AND STILL MORE!!

Special Olympics









THE EVIDENCE BASED PYRAMID



Figure 1. Evidence pyramid graphic, from SUNY down-state medical research library of Brooklyn, EBM tutorial

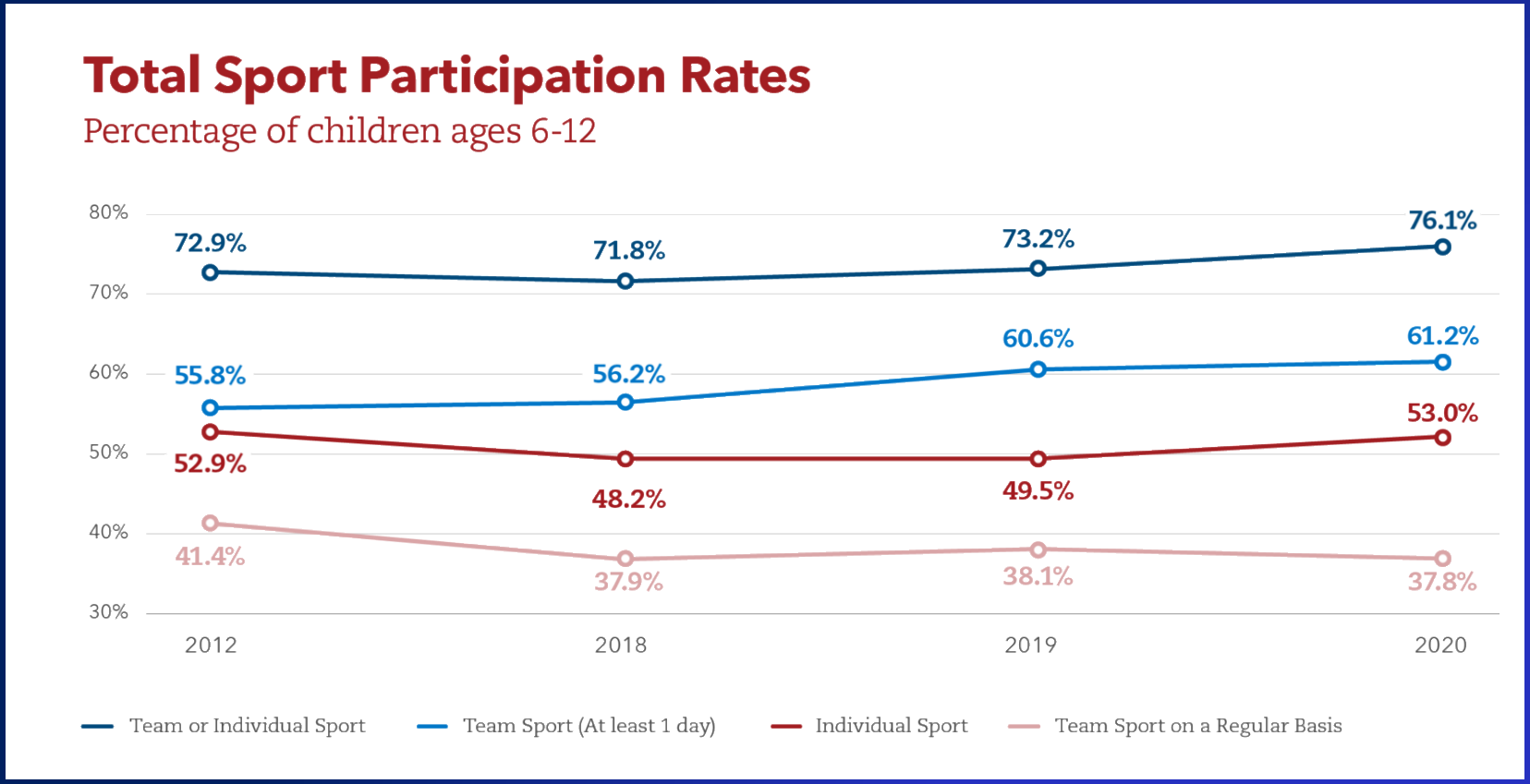
But we are getting much better!!!!

Strong

Moderate

Weak

OKAY, BUT FIRST THE MANDATORY NUMBERS (ASPEN INST)



Project Play

WHAT ABOUT COVID-19? 2019-20?

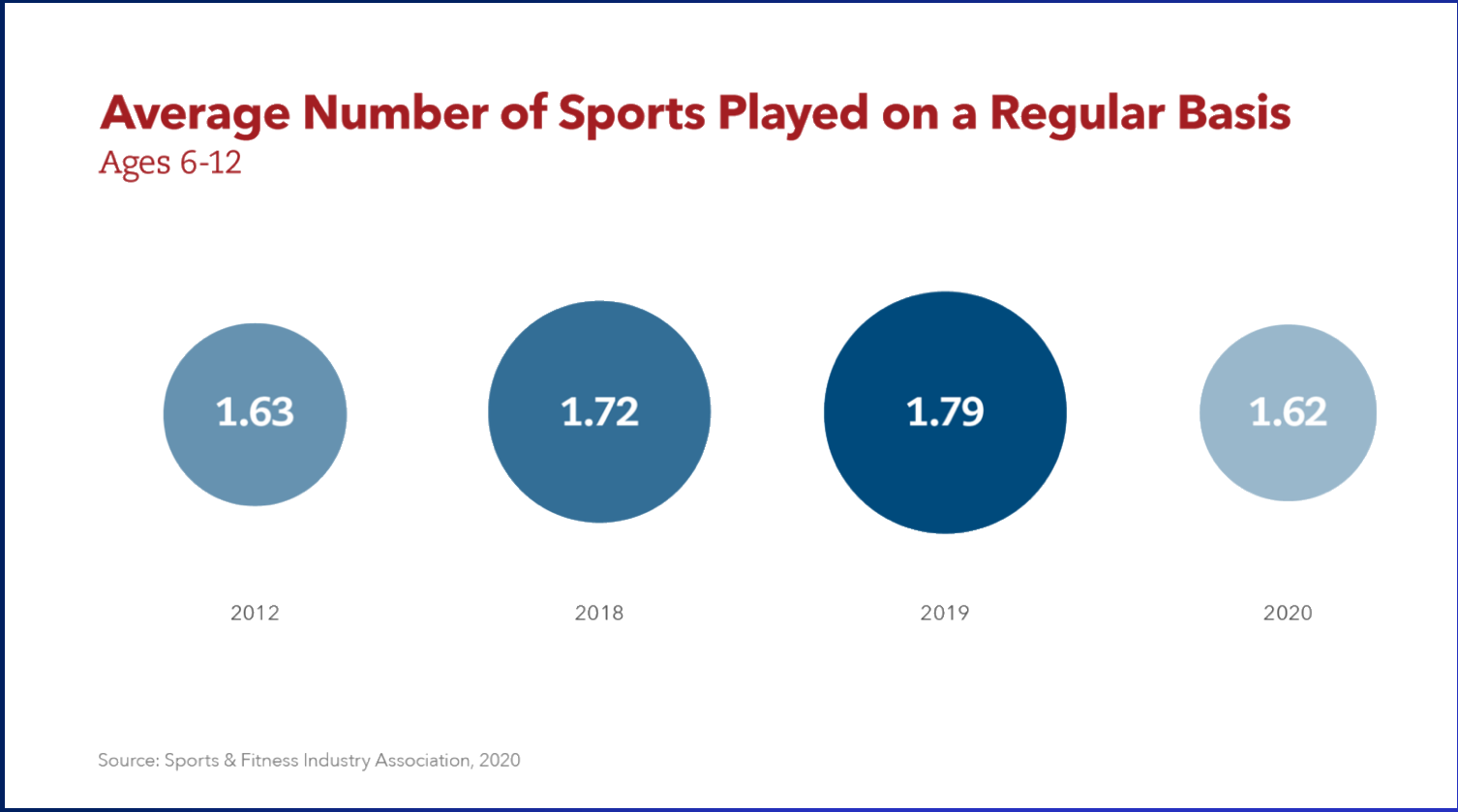
COVID-19 Effect on Number of Occasions Playing Sports

Ages 6 and older (includes adults)

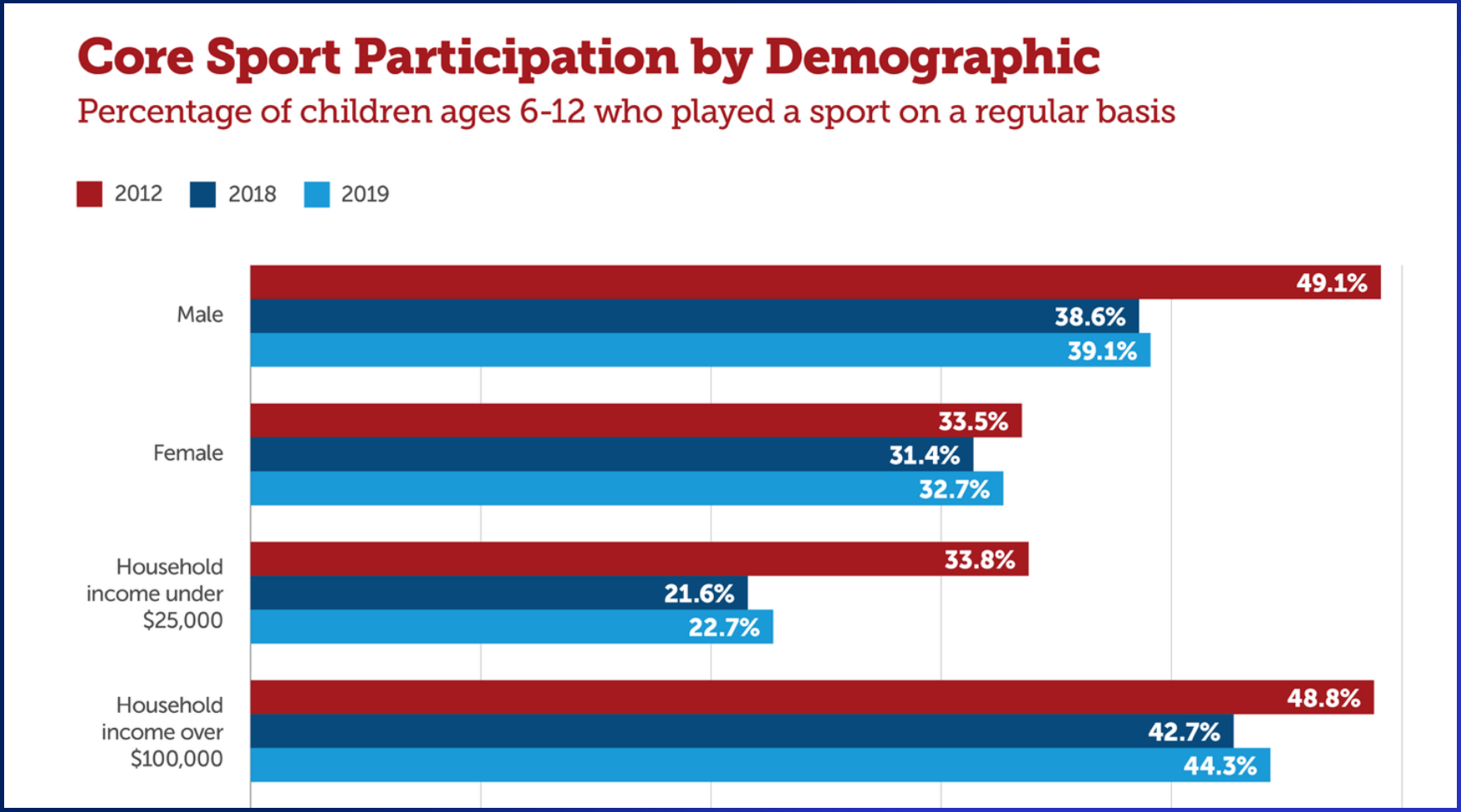
Sport	2019	2020	1-Year Change
Ultimate Frisbee	21 billion	27 billion	26.0%
Track and Field	143 billion	139 billion	-2.5%
Basketball	479 billion	433 billion	-3.6%
Softball (fast-pitch)	120 billion	114 billion	-5.2%
Swimming (team)	99 billion	93 billion	-5.9%
Soccer (outdoor)	373 billion	348 billion	-6.7%
Baseball	479 billion	433 billion	-9.5%
Flag Football	115 billion	97 billion	-15.3%
Touch Football	83 billion	67 billion	-18.6%
Cheerleading	163 billion	128 billion	-21.5%
Tackle Football	152 billion	110 billion	-27.5%
Wrestling	59 billion	43 billion	-27.8%
Volleyball (court)	259 billion	185 billion	-28.6%
Lacrosse	93 billion	63 billion	-31.8%
Gymnastics	207 billion	140 billion	-32.3%
Volleyball (beach/sand)	73 billion	49 billion	-33.2%
Rugby	39 billion	24 billion	-36.6%
Ice Hockey	79 billion	46 billion	-41.6%

Source: Sports & Fitness Industry Association, 2020

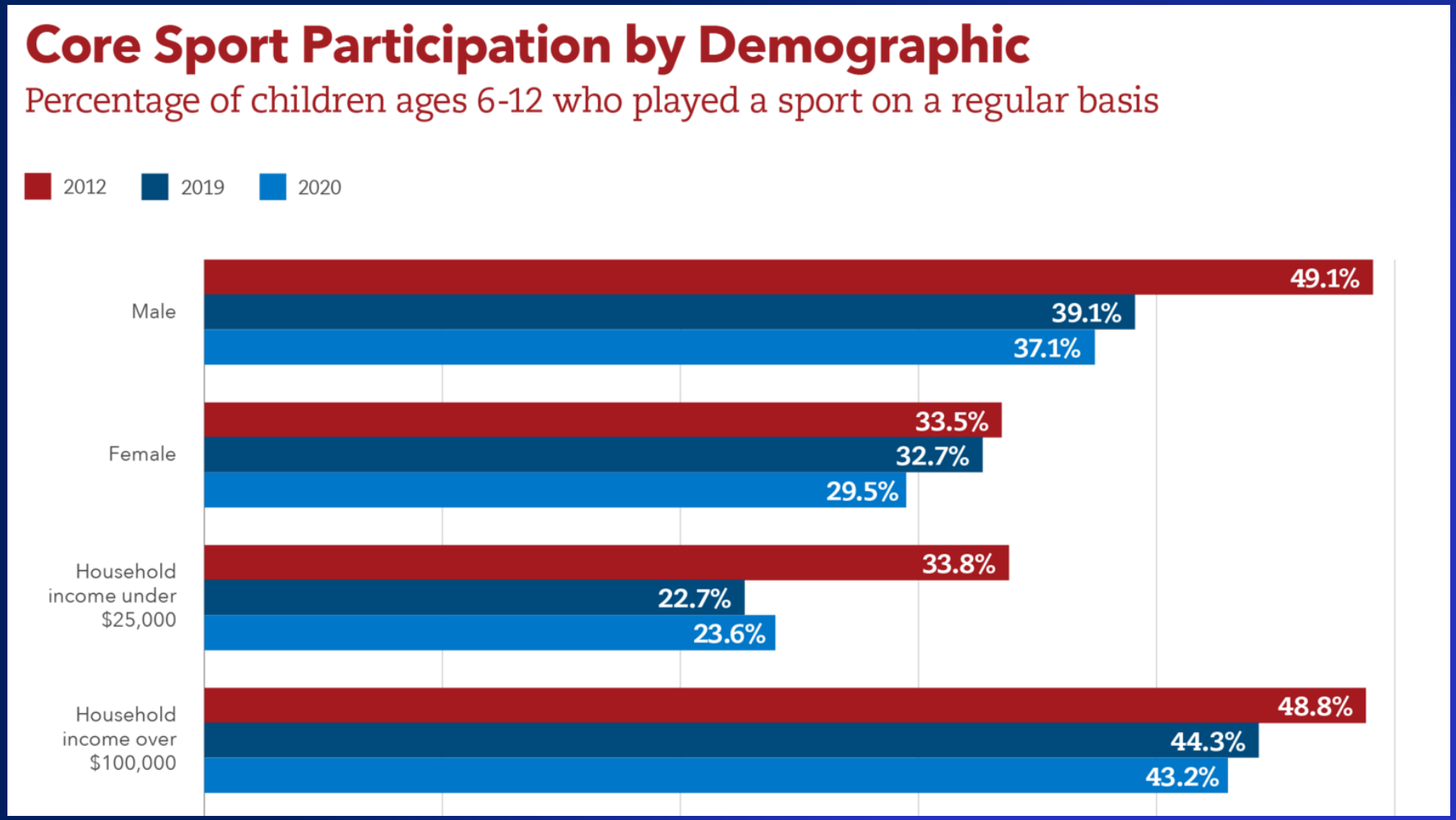
AND THIS.....


Average Number of Sports Played on a Regular Basis
Ages 6-12
1.63
1.72
1.79
1.62
2012
2018
2019
2020
Source: Sports & Fitness Industry Association, 2020

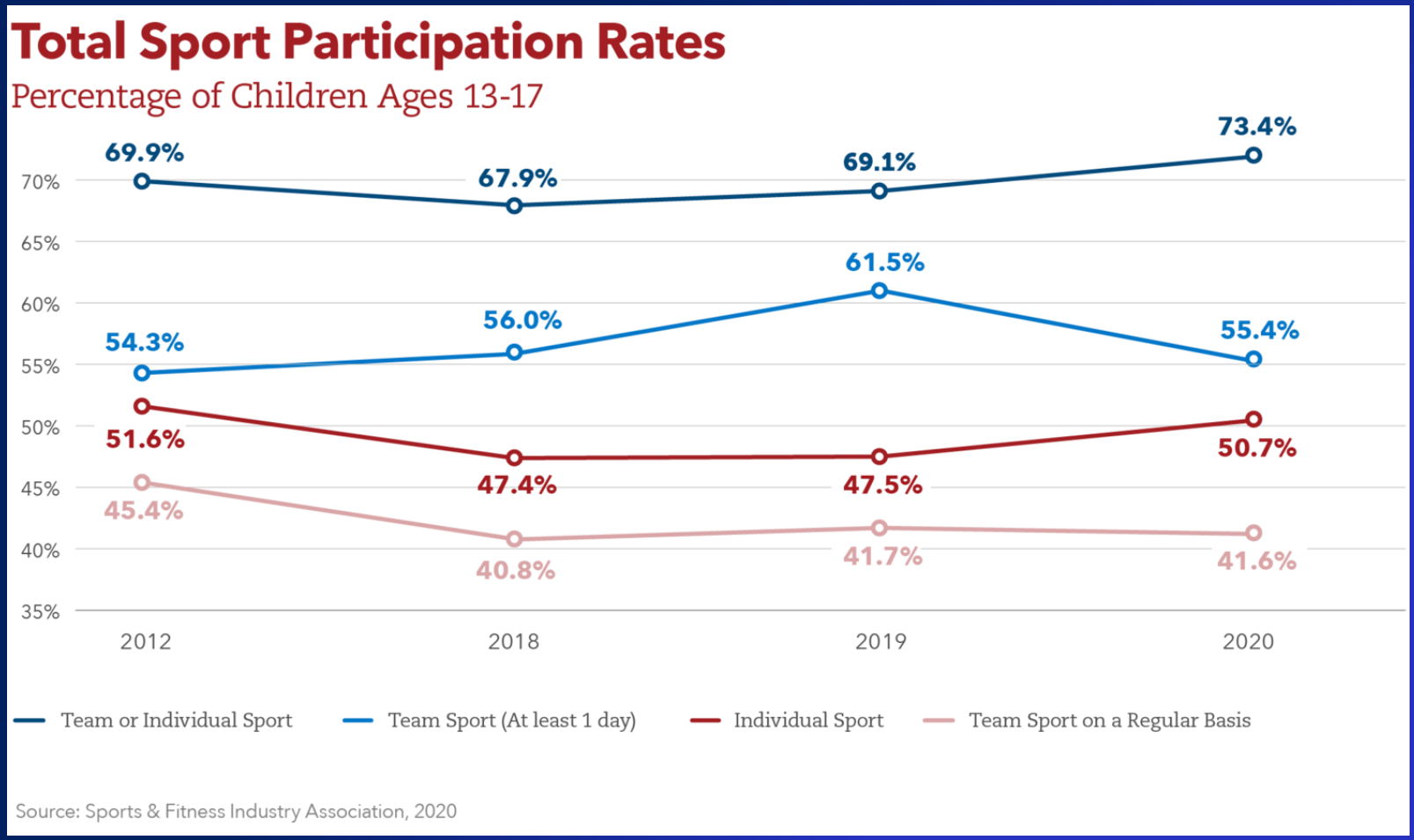
BY GENDER


Core Sport Participation by Demographic
Percentage of children ages 6-12 who played a sport on a regular basis
2012
2018
2019
Male
49.1%
38.6%
39.1%
Female
33.5%
31.4%
32.7%
Household income under $25,000
33.8%
21.6%
22.7%
Household income over $100,000
48.8%
42.7%
44.3%

BY GENDER AND INCOME



NEXT LEVEL/ HIGH SCHOOL 13-17 YEAR OLDERS



FOR HIGH SCHOOL ATHLETES…

Athletic Participation Survey Totals	Year	Boys Participants	Girls Participants	Total
	1971-72	3,666,917	294,015	3,960,932
	1975-76	4,109,021	1,645,039	5,754,060
	1980-81	3,503,124	1,853,789	5,356,913
	1985-86	3,344,275	1,807,121	5,151,396
	1990-91	3,406,355	1,892,316	5,298,671
	1995-96	3,634,052	2,367,936	6,001,988
	2000-01	3,921,069	2,784,154	6,705,223
	2005-06	4,206,549	2,953,355	7,159,904
	2010-11	4,494,406	3,173,549	7,667,955
	2015-16	4,544,574	3,324,326	7,868,900
	2017-18	4,565,580	3,415,306	7,980,886
	2020-21			Unavailable

NFHS Annual Report 2021

- **THIS IS IN ADDITION TO THE NUMBER OF "TRAVEL TEAMS", "ELITE LEAGUES", INDEPENDENT ASSOCIATIONS (AAU, USA HOCKEY, AMERICAN LEGION BASEBALL, ETC.) AND RECREATIONAL PLAY.**

NUMBERS HAVE STAYED STABLE

Centers for Disease Control and Prevention
CDC 24/7: Saving Lives, Protecting People™

! YRBS Explorer Help

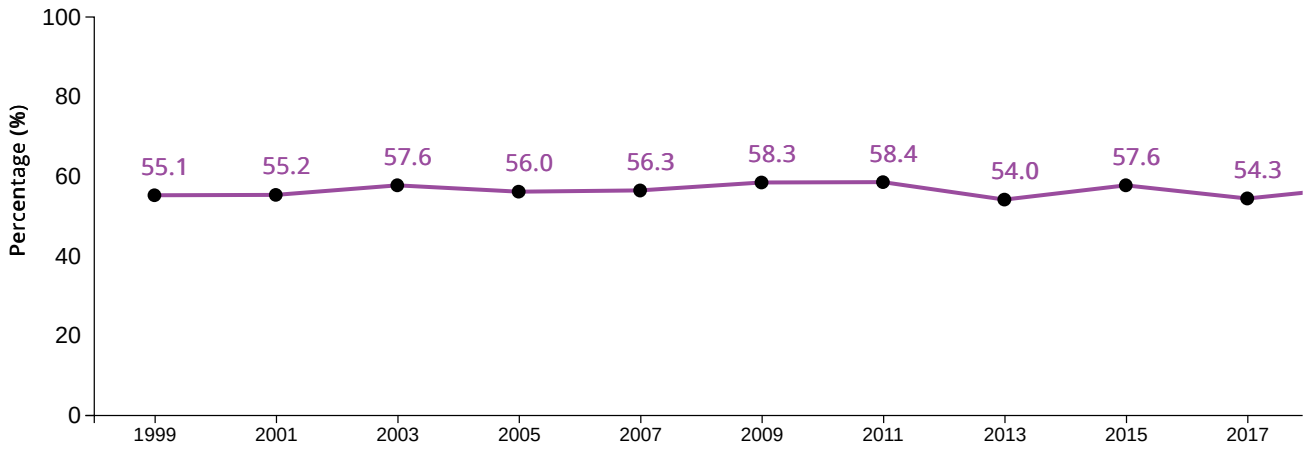
Physical Activity

High School Students Who Played On At Least One Sports Team*

Location: United States

Patterns Over Time †

We are tracking the prevalence of sports team participation over time. Here's what's been happening.

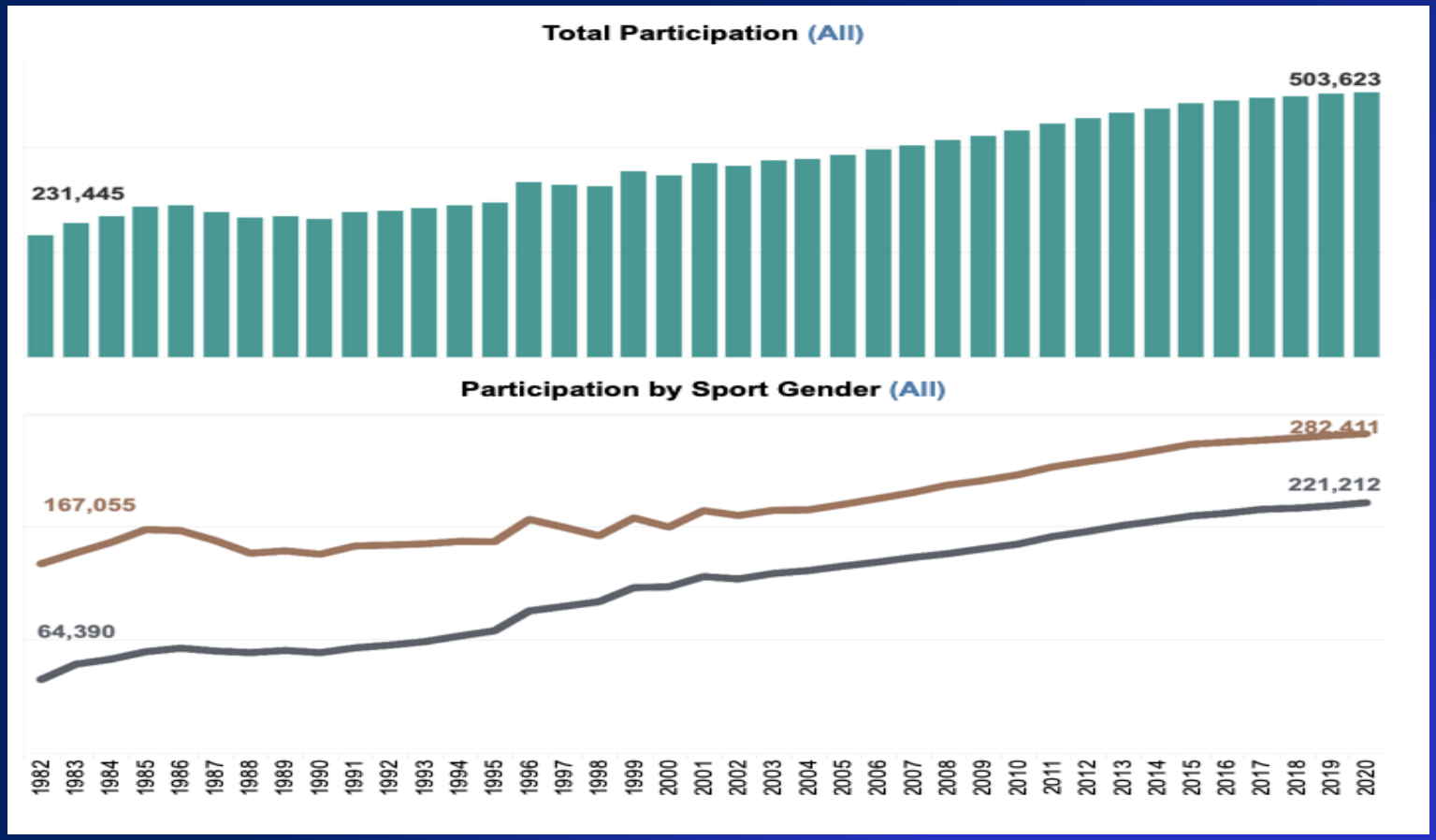


* Counting any teams run by their school or community groups, during the 12 months before the survey.

† Overall, the percentage of students reporting this behavior did not change from 1999 to 2019. The direction of the trend line did not change from 1999 to 2019. Any indicated increase or decrease is statistically signi! cant.

[Based on linear and quadratic trend analyses using logistic regression models controlling for sex, race/ethnicity, and grade ($p < 0.05$). Signi! cant linear trends (if present) across all available years are described ! rst followed by linear changes in each segment of signi! cant quadratic trends (if present).]

NCAA COLLEGIATE PARTICIPATION



NCAA
SIDEARMSPORTS
LEARFIELD | IMG COLLEGE
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OKAY, SO WE SEE A LOT OF ATHLETES. Point Two ARE THEY REALLY AT INCREASED RISK OF INJURY?





DO THEY GET INJURED?

- There is a difference between the "risk" of injury versus and athlete's or a sport's "rate" of injury. Prevalence versus Incidence
- Parents and athletes are concerned with the risk of injury (athletes injured/ total athletes) Prevalence
- Sports epidemiologists and rule makers are concerned with rates of injury (injuries/Athlete exposures)

THE RATE OF DENTAL INJURIES MAKES THEM "RARE OCCURRENCES".

- "Dental injuries Sustained by High School Athletes in the United States from 2008/2009 through 2013/2014 Academic Years". Dent Traum, 2015 Collins, et al.
- 0.90 per 100,000 AE's
- Total of 222 injuries in 24,787,258 AE's.
- As with other rare injuries such as heat illnesses and eye injuries, dental injuries can be effectively prevented or lessened so the injuries should be considered important.
- The NFHS and the NCAA both use injury surveillance systems which categorize injury rates and this information is used to set rules. (NCAA Ice Hockey)

BUT THAT DOESN'T SEEM RIGHT. WE ALL SEE INJURIES. THE "RISK" TO ATHLETES TELLS A DIFFERENT STORY.

- "Retrospective Surveys of various groups of athletes have found that 10-61% have experienced at least one orofacial injury during their participation in sports."

Knapik, JJ, et al."Mouthguards in Sports Activities; History Physical Properties and Injury Prevention Effectiveness". Sports Med, 37(2):117-144,2007

MORE RECENTLY AND FROM A BRAZILIAN EVIDENCE BASED CENTER

- "The use of mouthguards and prevalence of dento-alveolar trauma among athletes: A systematic review and meta-analysis." Loyse M. Fernandes , et al. Dental Traumatology, Feb 2019, 35(1)

- It was observed that the prevalence of dental trauma within the included studies varied between 7.1% and 71.5% among athletes.



Graziela Del Luca Cantos

AAPD REFERENCE MANUAL

- "Sports accidents...10-39 percent of all dental injuries in children."

So, Not Rare as far as Risk (Point Three)

participants, and the specific sports.."

"Policy on the Prevention of Sports-related Orofacial Injuries." revised 2018

SO THERE IS A "RISK" WHAT FACTORS ARE INVOLVED IN "RISK"?

- AGE
- GENDER
- DENTAL ANATOMY
- SPORT TYPE

AGE





- MOST COMMON AGE FOR DENTAL INJURIES TO PERM. TEETH IS 8YRS OLD BUT FOR *SPORTS DENTAL INJURIES* IS 13-18 YRS OF AGE.
- AS AGE AND SKILL LEVELS INCREASE, GENERALLY INJURY RATES DECLINE BUT SEVERITY INCREASES
- TARGET POPULATION MIDDLE SCHOOL AND HIGH SCHOOL.

BOTTOM LINE THOUGH:
UNDER 12 THE RISK IS NOT AS GREAT



Target
13-18

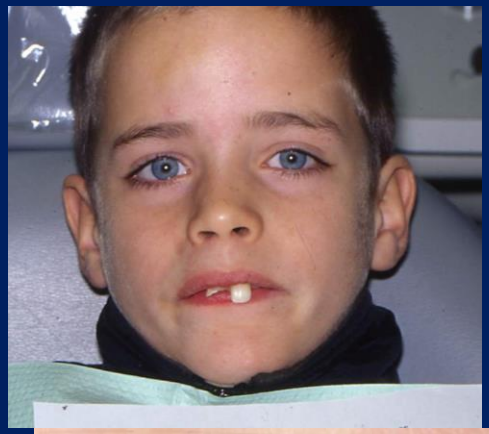


GENDER



- Males tend to outnumber females in participation and injuries
- 2022 Will Mark the 50th Anniversary of Title IX and the difference between men and women in orofacial sports injuries has changed

DENTAL ANATOMY AS A RISK FACTOR



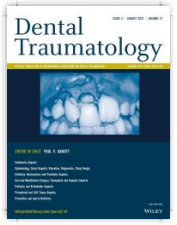




The vast majority of dental injuries involve the maxillary anterior incisors

A RELATIVELY NEW REFERENCE

Dental Traumatology



Early View

Online Version of Record before inclusion in an issue

COMPREHENSIVE REVIEW | ! Free Access

The association of inadequate lip coverage and malocclusion with dental trauma in Brazilian children and adolescents – A systematic review and meta-analysis

Walbert de Andrade Vieira # , Vanessa Gallego Arias Pecorari

...See all authors

$ % & '

Figures References Related Infor

Recommended

The prevalence of traumatic dental injuries

Inadequate lip coverage and increased overjet are associated with the presence of dental trauma in Brazilian children and adolescents, regardless of dentition type and age group, based on a very low to moderate certainty of evidence. The presence of an anterior open bite was associated with dental trauma in children in the primary dentition, but further studies should be conducted to investigate this condition.

Dental Traumatology. 2021;00:1–16.

SPORT CLASSIFICATION

- NON CONTACT
  - LOW VELOCITY
  - HIGH VELOCITY
- CONTACT
- COLLISION

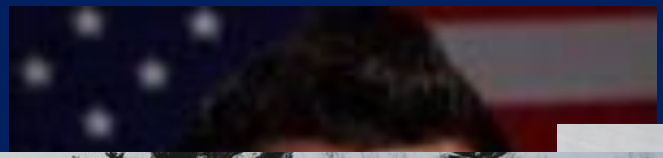
NON CONTACT LOW VELOCITY

- Golf
- Swimming
- Billiards
- Nordic Skiing
- Curling
- Weightlifting

Used for performance perhaps
But not protection



High Speed Non-Contact










Go Frankie!!!!!!!!!
USA

CONTACT SPORTS

- Basketball
- Soccer
- Wrestling
- Lacrosse
- Volleyball
- Field Hockey
- Baseball



CHRISTY COLLINS, ET AL. "DENTAL INJURIES SUSTAINED BY HIGH SCHOOL ATHLETES IN THE UNITED STATES, 2008/09 THROUGH 2012/13 ACADEMIC YEARS": *DENTAL TRAUMATOLOGY*, 2016 APR;32(2):121-7

- SPORTS WITH HIGHEST RATE OF DENTAL INJURIES
  - GIRLS' FIELD HOCKEY (3.9)
  - BOYS' BASKETBALL (2.6)
  - BOYS' BASEBALL (1.5



- ATHLETES PARTICIPATING IN SPORTS WITH THE POTENTIAL FOR DENTAL INJURIES RESULTING FROM CONTACT WITH ANOTHER PLAYER OR CONTACT WITH PLAYING APPARATUS SHOULD WEAR A MOUTHGUARD
  - BASKETBALL, BASEBALL, SOFTBALL, AND WRESTLING

COLLISION SPORTS

- AMERICAN FOOTBALL
- AUSTRALIAN RULES FOOTBAL
- RUGBY
- ICE HOCKEY
- BOXING



FIRST HOW DO ATHLETES GET HURT? CAUSE OF DENTAL RELATED SPORTS INJURIES

- IMPACT WITH ANOTHER PLAYER
- IMPACT WITH THE GROUND OR FLOOR
- IMPACT WITH THE PLAYING INSTRUMENT OR EQUIPMENT (BALLS, PUCKS, STICKS)

Kaplan, et al 2000

IMPACT WITH ANOTHER PLAYER



IMPACT WITH THE GROUND, FLOOR OR GOALS



IMPACT WITH PLAYING ITEM:
BALL, PUCK, STICK, ETC



MORE ON HOW….

TWO "MECHANISMS" FOR INJURY

DIRECT IMPACT

- The tooth itself is struck
- Injuries usually to the Anterior Teeth
- Energy of Impact/ Mass vs Velocity



INDIRECT TRAUMA

- Lower jaw is forced against the upper teeth
- Crown and or root fracture in posterior teeth
- TMJ injuries
- Jaw Fractures
- Concussions (??)



OKAY, BACK TO CAN YOU BE A SPORTS DENTIST?



WELL?????

- Should you have expected this and do you have what you need to treat it? (preparation)
- What do we do right now? (Treatment)
- Can he/she still play?
- How can we protect him/her in the future?

NOW WE CAN MOVE ON!
A SHORT HIT ON
DENTAL TRAUMA





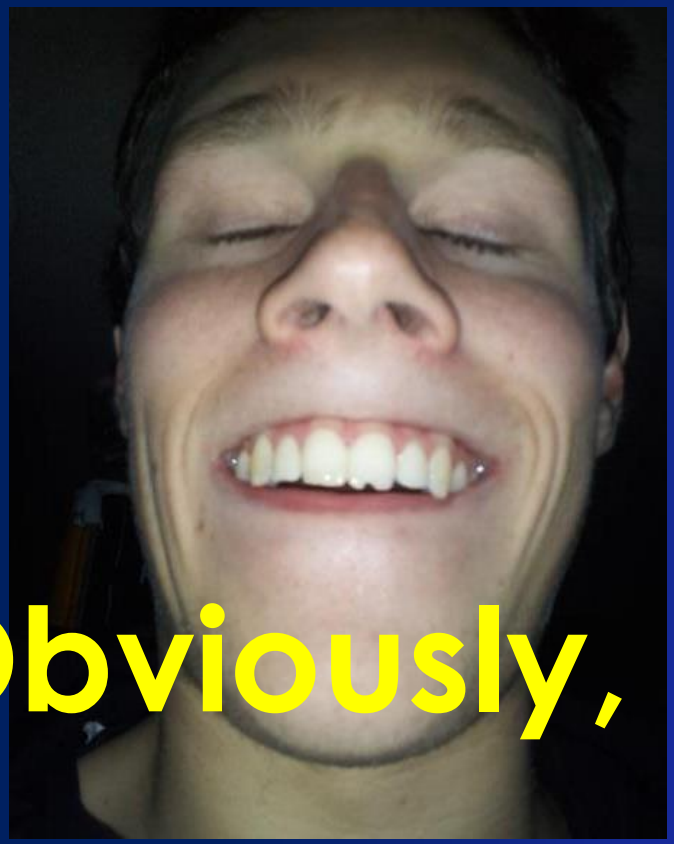




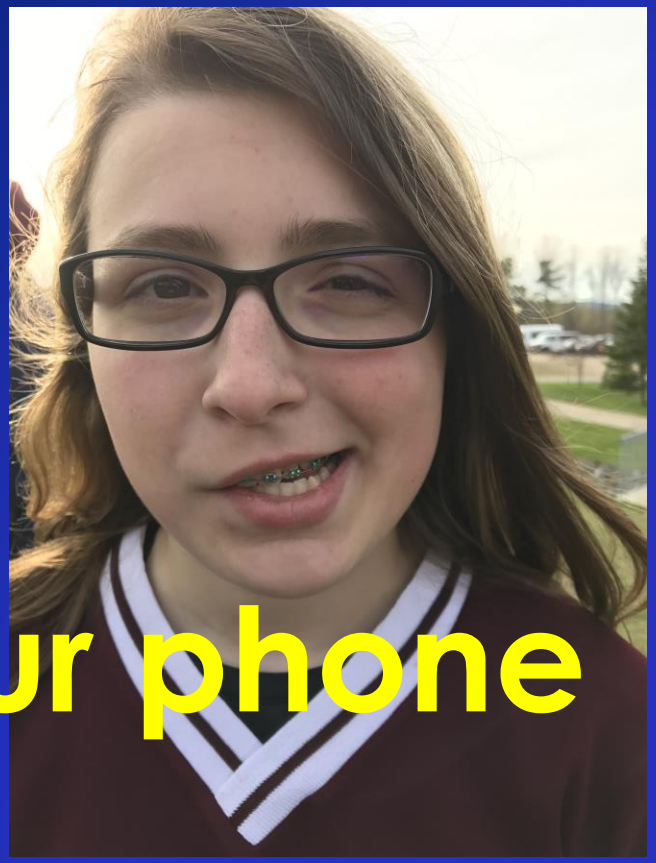
THIS IS NOT A TRAUMA LECTURE BUT THESE ARE IMPORTANT TO THE SPORTS DENTIST

- COMMUNICATE WITH HEALTH PROFESSIONALS AT THE FIELD
- ALL PLAYERS, EVEN YOUTH PLAYERS WANT TO KEEP PLAYING. SO CONTINUANCE OF PLAY IS ALWAYS IMPORTANT AND IS THE FIRST QUESTION.
- HOW MUCH TIME DO YOU HAVE TO GET TREATMENT?
- CAN THE PLAYER RETURN TO PLAY?
- HOW DO YOU PROTECT HIM/HER FROM FUTURE INJURY?
- WHAT HAS TO HAPPEN IMMEDIATELY (FIRST AID)?
- THEN YOU NEED TO BE GOOD AT DEFINITIVE TREATMENT

TWO THINGS TO KEEP IN MIND FOR YOUR HEALTH PARTNERS (COACHES, ATHLETIC TRAINERS, SCHOOL NURSES, PARENTS:



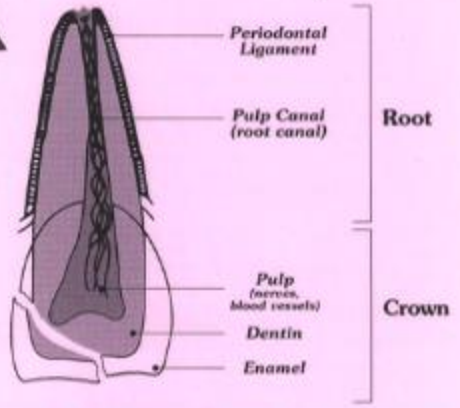
Obviously,



Your phone

SECOND: RESOURCES

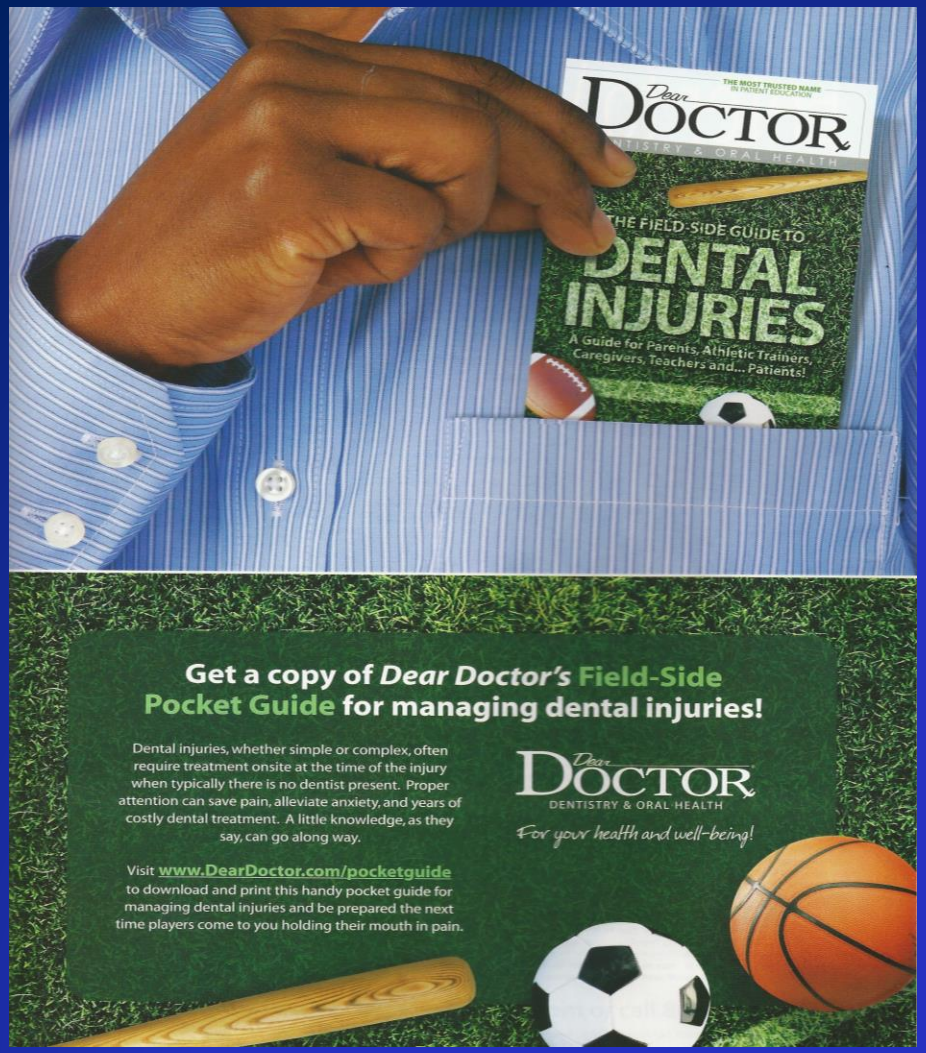
Emergency Treatment of Athletic Dental Injuries



Professionally-made, properly fitted Custom Mouthguards are recommended for all contact and collision sports. See www.sportsdentistry-iasd.org

AVULSION (Entire Tooth Knocked Out Including Root)

1. Avoid additional trauma to tooth while handling. **Do Not** handle tooth by the root. **Do Not** brush or scrub tooth. **Do Not** sterilize tooth.
2. If debris is on tooth, *gently* rinse with water.
3. If possible, reimplant tooth and stabilize by biting down gently on a towel or handkerchief. Do only if athlete is alert and conscious.
4. If unable to reimplant:
   Best - Place tooth in a physiologic transport medium (e.g. Hank's Balanced Saline Solution).
   2nd best - Place tooth in cold milk.
   3rd best - Wrap tooth in saline-soaked gauze.
   4th best - Place tooth under athlete's tongue. Do this ONLY if athlete is conscious and alert.
   5th best - Place tooth in cup of water.
5. Time is very important. Reimplantation within 30 minutes has the highest degree of success rate. **TRANSPORT IMMEDIATELY TO DENTIST.**



BUT, I REALLY LIKE THIS ONE:





IADT ToothSOS Mobile App

FREE IADT Dental Trauma First Aid App

How to take care of a dental trauma at the scene of an accident.
This a

Link t

Thanks to Nestor Cohenca

OKAY, THAT'S ENOUGH TRAUMA
LET'S START TO *PREVENT* TRAUMA
FIRST PROTECT THE FACE



But this is all about protecti the teeth!!!

PREVENTION OF INJURIES
THE ATHLETIC MOUTHGUARD
THE SYMBOL OF SPORTS DENTISTRY











You see them more and more. Not just for football and hockey





STEPH CURRY



Kevin Durant



Jimmy Butler



Al Horford

KATIE SUMMERHAYES UK FREESTYLE SKIER



JOSEF MARTINEZ
ATLANTA UNITED MLS





USA WRESTLING



opro

OFFICIAL
MOUTHGUARD OF
USA WRESTLING

USA
WRESTLING

BEN HALLOCK STANFORD AND USA WATER POLO

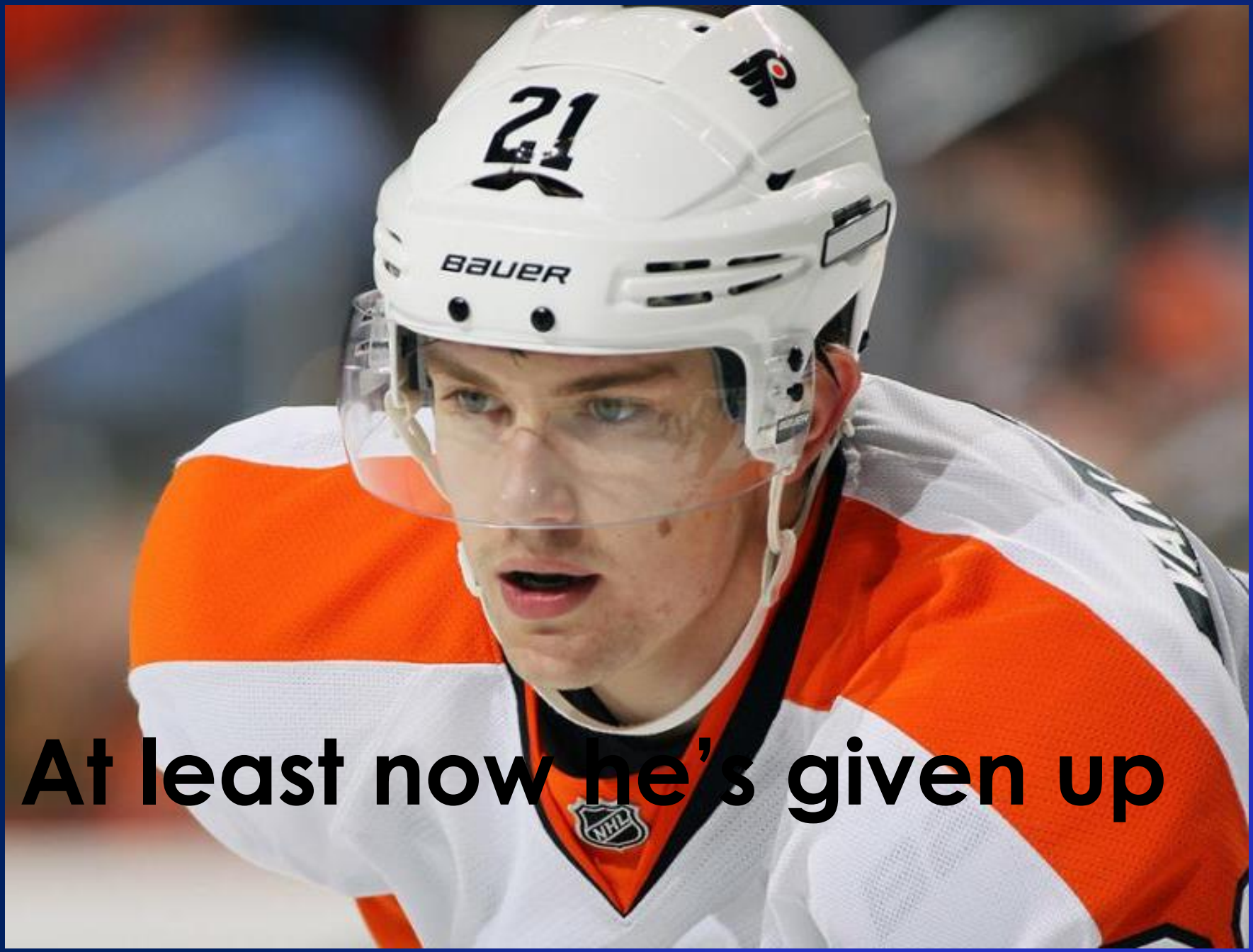


KILEY MCKINNON, USA FREE STYLE AERIAL SKIER

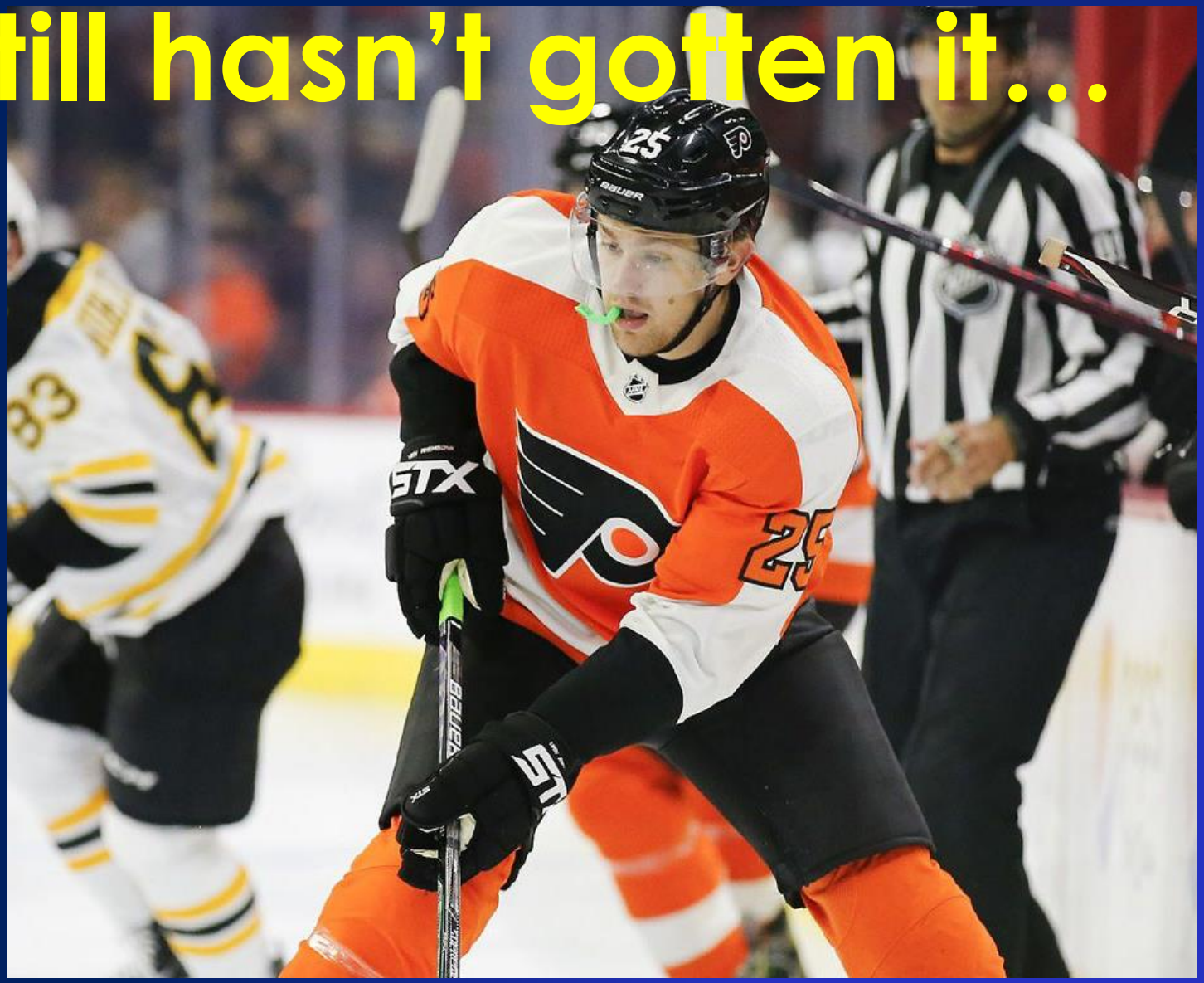




2018 Olympian


21
BAUER
NHL
At least now he's given up

Well no, he got traded Still hasn't gotten it…



AND HIS BROTHER TREVOR (NOW WITH THE CAPS)



PIETRANGELO THAT'S BETTER!!



DEFINITION OF A MOUTHGUARD

- 2. Terminology
- 2.1.1 mouth protector—a resilient device or appliance placed inside the mouth (or inside and outside), to reduce mouth injuries, particularly to teeth and surrounding structures.
- ASTM standard: Designation 697-16

THE (UPDATED) FUNCTIONS OF A MOUTHGUARD

- Dental Protection
- Soft Tissue Protection
- TMJ protection
- Bone protection
- Concussion Protection
- Systemic Influences

Does it work?

“meta-analyses indicated that the use of MGs
reduced the overall risk of orofacial injuries in
12 cohort trials
(summary RR [nonusers/users] = 2.33”,

Knapik JJ, et al. Sports Medicine (2019) 49:1217–1232

VERY RECENTLY AND TRYING HARD TO BE EVIDENCE BASED AGAIN!!!

- THE USE OF MOUTHGUARDS AND PREVALENCE OF DENTO-ALVEOLAR TRAUMA AMONG ATHLETES: A SYSTEMATIC REVIEW AND META-ANALYSIS. LOYSE M. FERNANDES, ET AL. DENTAL TRAUMATOLOGY, FEB 2019, 35(1)

- META-ANALYSES SHOWED THAT 73% (MA1) AND 83% (MA2) OF MOUTHGUARD USERS HAVE A LOWER PREVALENCE OF DT.
- DT PREVALENCE AMONG MG USERS WAS 7.5% (N = 160), WHILE DT PREVALENCE AMONG NON-USERS WAS 59.48% (N = 750)

SOFT TISSUE PROTECTION



BUT, DON"T FORGET HISTORICALLY FOR BOXING, SOFT TISSUE WAS THEIR MOTIVATION

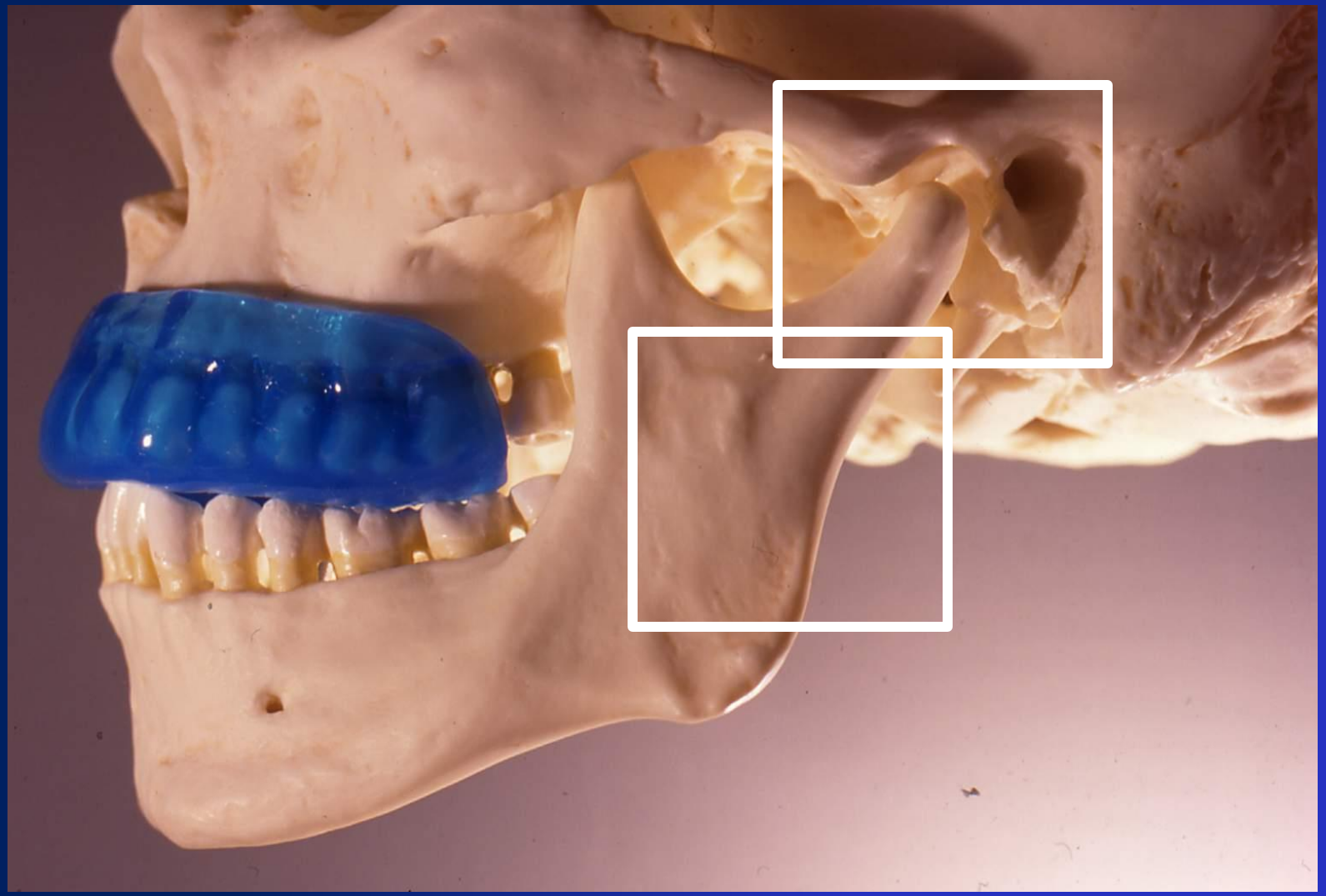
TED "KID" LEWIS







TMJ PROTECTION



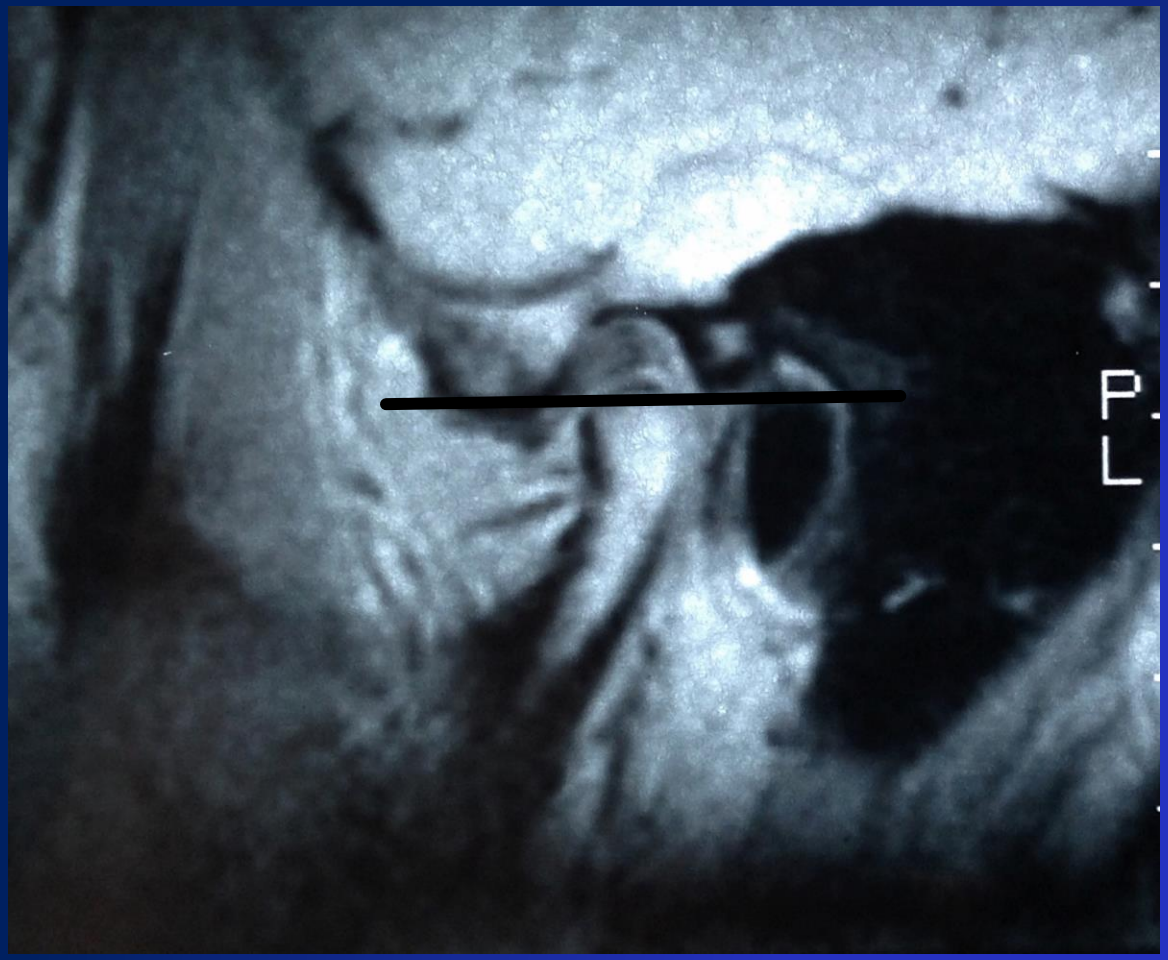


Figure F. 1. Condyle while fully occluded and no mouthguard

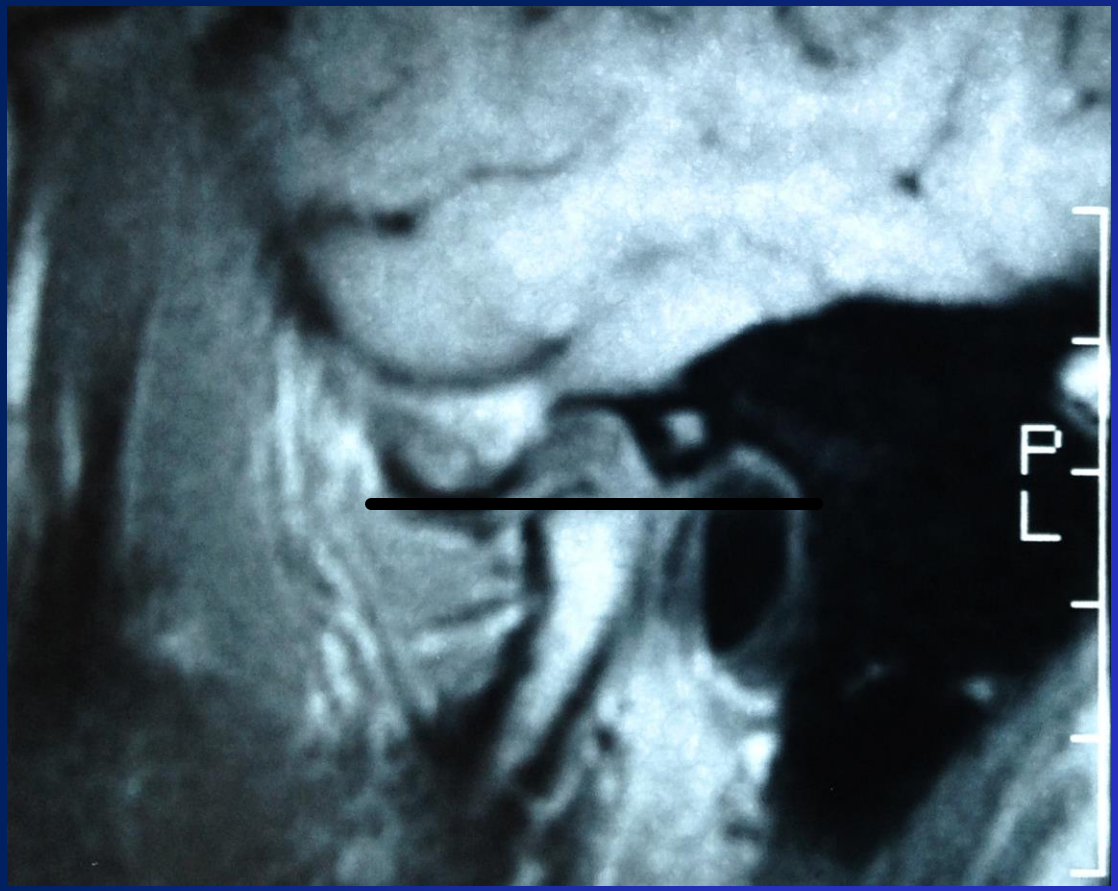


Figure F. 2. Condyle with a 3mm thick mouthguard while fully occluded

NEW INFO BUT IN VITRO SORT OF..

Dental Traumatology



Volume 36, Issue 6
December 2020
Pages 662-669

ORIGINAL ARTICLE | ! Full Access

Mouthguard use and TMJinjury prevention with di! erent occlusions: A three-dimensional " nite element analysis

João Paulo Mendes Tribst # , Amanda Maria de Oliveira Dal Piva
...See all authors

This biomechanical analysis regarding the e!ects of using a mouthguard exhibited considerably decreased stresses on the condylar bone and articular disk when there is an impact to the maxillary incisors regardless of the type of occlusion.

TMJ PROTECTION

- No real *clinical* numbers for this
- The most protected position is fully engaged occluded teeth
- Need a locked occlusion

BONE FRACTURE PROTECTION



BONE PROTECTION

- HICKEY, ET AL 1967

  MEASURED BONE DEFORMATION

- TAKEDA,T., ET AL, *DENT TRAUMA 21:134-140,2005*

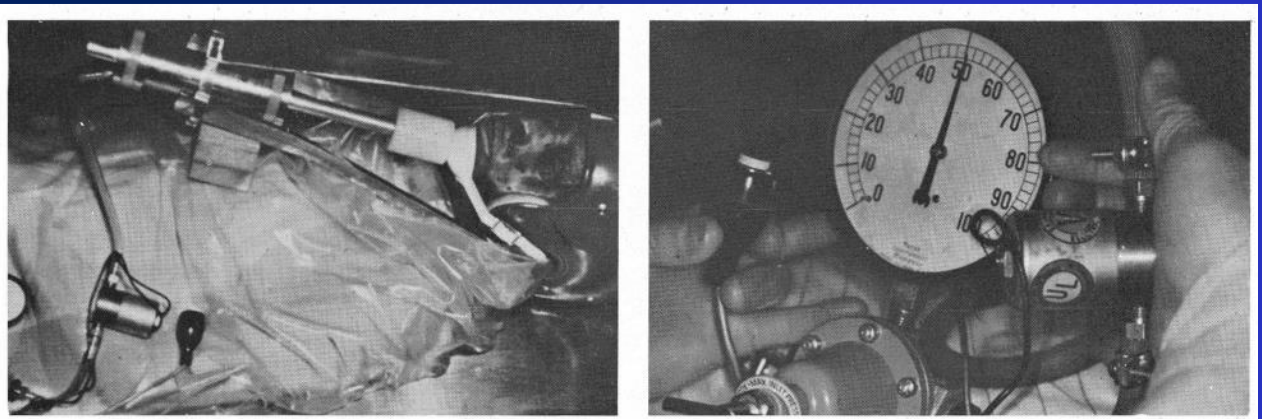


Fig. 3 ■ Left: The impact-producing mechanism is positioned and adjusted so that a controlled blow can be delivered to the chin of the cadaver. Right: The force of the blow is controlled by air pressure that drives the piston. When activated, the solenoid switch causes the release of the air

Can mouthguards prevent mandibular bone fractures and concussions? A laboratory study with an artificial skull model

Takeda T, Ishigami K, Hoshina S, Ogawa T, Handa J, Nakajima K, Shimada A, Nakajima T, Regner CW. Can mouthguards prevent mandibular bone fractures and concussions? A laboratory study with an artificial skull model. Dental Traumatol 2005; 21: 134–140. © Blackwell Munksgaard, 2005.

Tomotaka Takeda[1], Keiichi Ishigami[1], Sanae Hoshina[1], Toru Ogawa[1], Jun Handa[1], Kazunori Nakajima[1], Atsushi Shimada[1], Tsuneya Nakajima[1], Connell Wayne Regner[2]



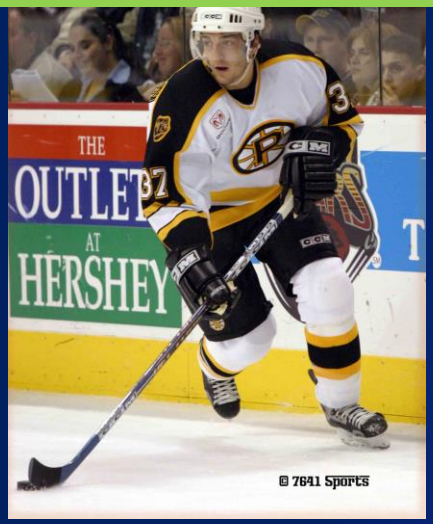
In vitro studies only

CONCUSSION PROTECTION





What do we have to do with this??!!!

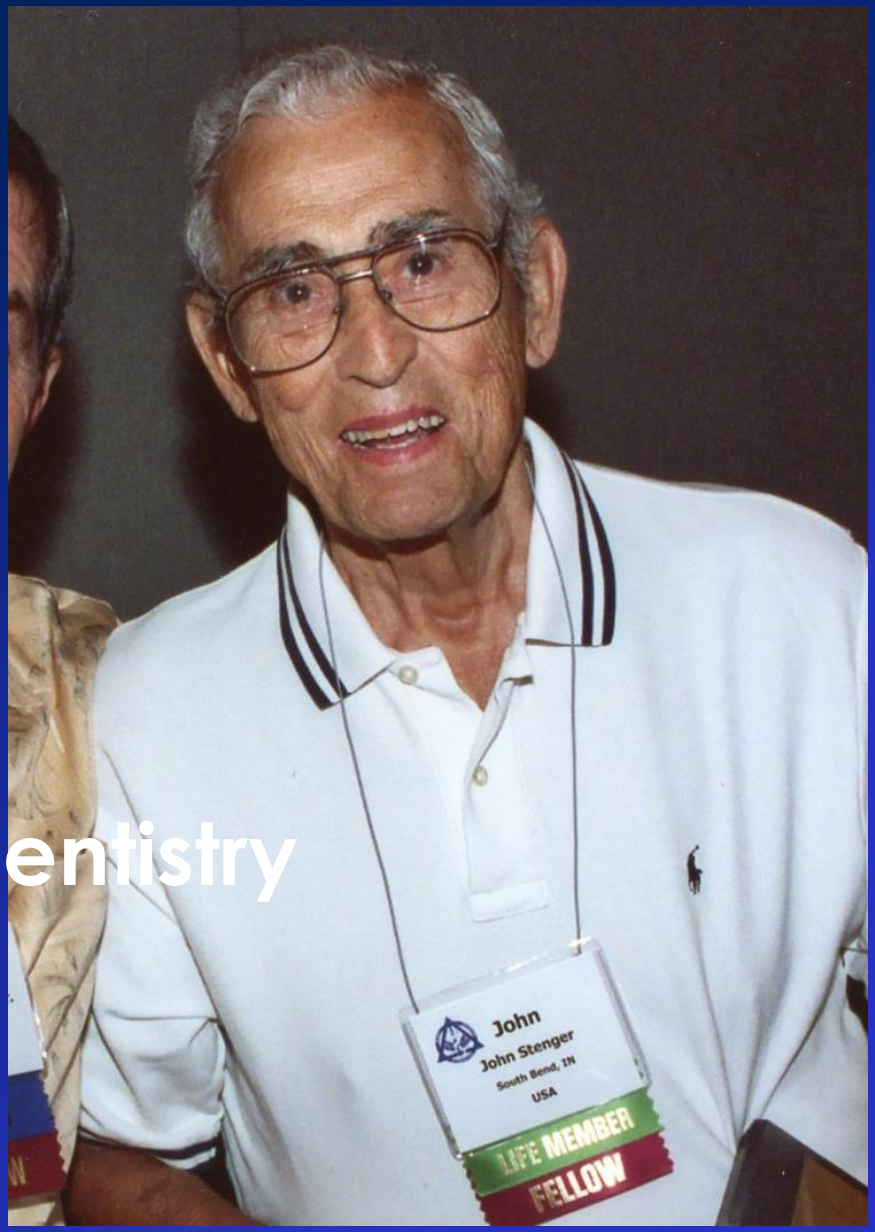






THE SPORTS DENTISTRY CONNECTION

Dr Jack Stenger
Founding Member
Academy for Sports Dentistry
1922-2006



THE HISTORY OF THE "LINK"

- Stenger, J. et al JADA 69:273-281, Sept.1964.

Five year study starting with Jim Schaaf in 1958

Follow Team.

- Hick 1967.

"Decr eased intra



BUT WITH TIME……

Review Br J Sports Med. 2009 May;43 Suppl 1:i56-67. doi: 10.1136/bjsm.2009.058271.

Is protective equipment useful in preventing concussion? A systematic review of the literature

B W Benson [1], G M Hamilton, W H Meeuwisse, P McCrory, J Dvorak

Conclusions: There is evidence that helmet use reduces head injury risk in skiing, snowboarding and bicycling, but the effect on concussion risk is inconclusive. No strong evidence exists for the use of mouthguards or face shields to reduce concussion risk. Evidence is provided to suggest that full facial protection in ice hockey may reduce concussion severity, as measured by time loss from competition.

TWO YEARS LATER (ANOTHER SYSTEMATIC REVIEW)

- "Helmets and Mouthguards: The role of Personal Equipment in Preventing Sport-Related Concussions" *Clin Sports Med* 2011 January 30(1):145-163
  - "…there is little evidence that mouth guards provide protection against concussion"

IT BECAME A "NEGATIVE FACT"

But remember that "Evidence Based Practice" does NOT mean

you

can't believe it.

"ROLE OF MOUTHGUARDS IN REDUCING MTBI/CONCUSSION INCIDENCE IN HIGH SCHOOL FOOTBALL ATHLETES"

JACKSON WINTERS, DDS *, RICHARD DEMONT, PHD, CAT (C), ATC

* PEDIATRIC DENTIST,



General Dentistry, May/June 2014, pp34-38

AND……

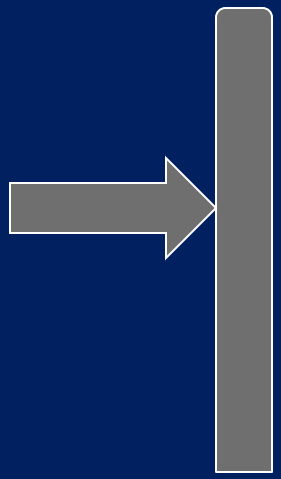
What strategies can be used to effectively reduce the risk of concussion in sport? A systematic review

Carolyn A Emery,[1] Amanda M Black,[1] Ash Kolstad,[1] German Martinez,[1] Alberto Nettel-Aguirre,[1] Lars Engebretsen,[2,3,4] Karen Johnston,[5,6] James Kissick,[7,8,9] David Maddocks,[10] Charles Tator,[11,12] Mark Aubry,[13,14,15] Jiří Dvořák,[16,17] Shinji Nagahiro,[18] Kathryn Schneider[1]

Br J Sports Med: first published as 10.1136/bjsports-2016-097452 on 2 March 2017.

What are the new findings?

- Helmets in skiing/snowboarding reduce the risk of traumatic brain injury, including concussion.
- Policy that eliminates body checking in youth ice hockey leads to a 67% reduced risk of concussion in 11-year-old and 12-year-old hockey players.
- There is evidence to support future research examining mouthguards in contact sport where meta-analysis suggests that there may be a 19% reduced risk of concussion (although not statistically significant) when combining evidence from basketball, ice hockey and rugby.



AGAIN RECENTLY….

- Br J Sports Med. 2020 Jan 14.
- **Mouthguard use in youth ice hockey and the risk of concussion: nested case-control study of 315 cases.**
- Chisholm DA, Black AM Palacios-Derflingher L, Eliason PH, Schneider KJ, Emery CA, Hagel BE.
- **"CONCLUSION: Mouthguard use was associated with lower odds of concussion. Players should be required to wear mouthguards in youth ice hockey."**

Furthermore, it extends and supports the findings of a previous study that showed

mouthguards reduce concussion risk,15

which had been in conflict with at least 2 other reports.30,31

2021

While in youth ice hockey players mouthguards were associatedwith a 49%-69% lower odds ofconcussion,15
there had been no significant effect observed in professional hockey players.31

The current study not only found a protective effect, but the effect size it found was of similar magnitude to that observed in youth hockey players.15

But these new articles are HUGE!!!!! And Stay Tuned

- S
- SU
- W
- F
- Tr

HOME ▫ FOREWORDS ▫ PROGRAMME ▫ COMMITTEES ▫ CALL FOR ABSTRACTS ▫ MEDICAL RELATED DOCUMENTS ▫ AMSTERDAM ▫ VENUE ▫ REGISTRATION & HOTEL ▫



Jointly organised by:

International Olympic Committee · FEI · FIA · FIFA · IIHF International Ice Hockey Federation · World Rugby

PERFORMANCE ENHANCING ORAL APPLIANCES











The literature is clear. A well fitted mouthguard does not interfere with performance

Can it *IMPROVE* performance?

FIRST, LET'S DIFFERENTIATE PERFORMANCE EFFECTS FROM PERFORMANCE ENHANCEMENT.

HISTORY OF PERFORMANCE ENHANCEMENT WITH ORAL APPLIANCES

- 1970's

DR. HAROLD GELB THE MORA

DR. JACK STENGER NOTRE DAME

DR. STEVE SMITH PHILADELPHIA EAGLES

THE MORA



MANY MORE SMALL STUDIES FROM 1970-2000

- "The Relationship Between Jaw Posture and Muscular Strength in Sports Dentistry: A Reappraisal" Gelb H, Mehta NR, Forgione AG. J Craniomandibular Practice Oct 1996, 14(4): 320-325.
- "clinical application of value ..may outstrip scientific verification"
- "Studies performed during the mid 1980's, and to which the scientific community refers to continually, on closer examination are flawed"

BUT ONTO 2000-2021

- "Occlusal Splints and exercise Performance: A Systematic Review of Current Evidence" Cesanelli L, et al.
- Int J Environ Res Public Health 2021 Oct. 18(19):10338
- "it is .. difficult to claim that the application of the OS can impact consistently on exercise performance."
- "However, the data are promising"

CURRENTLY

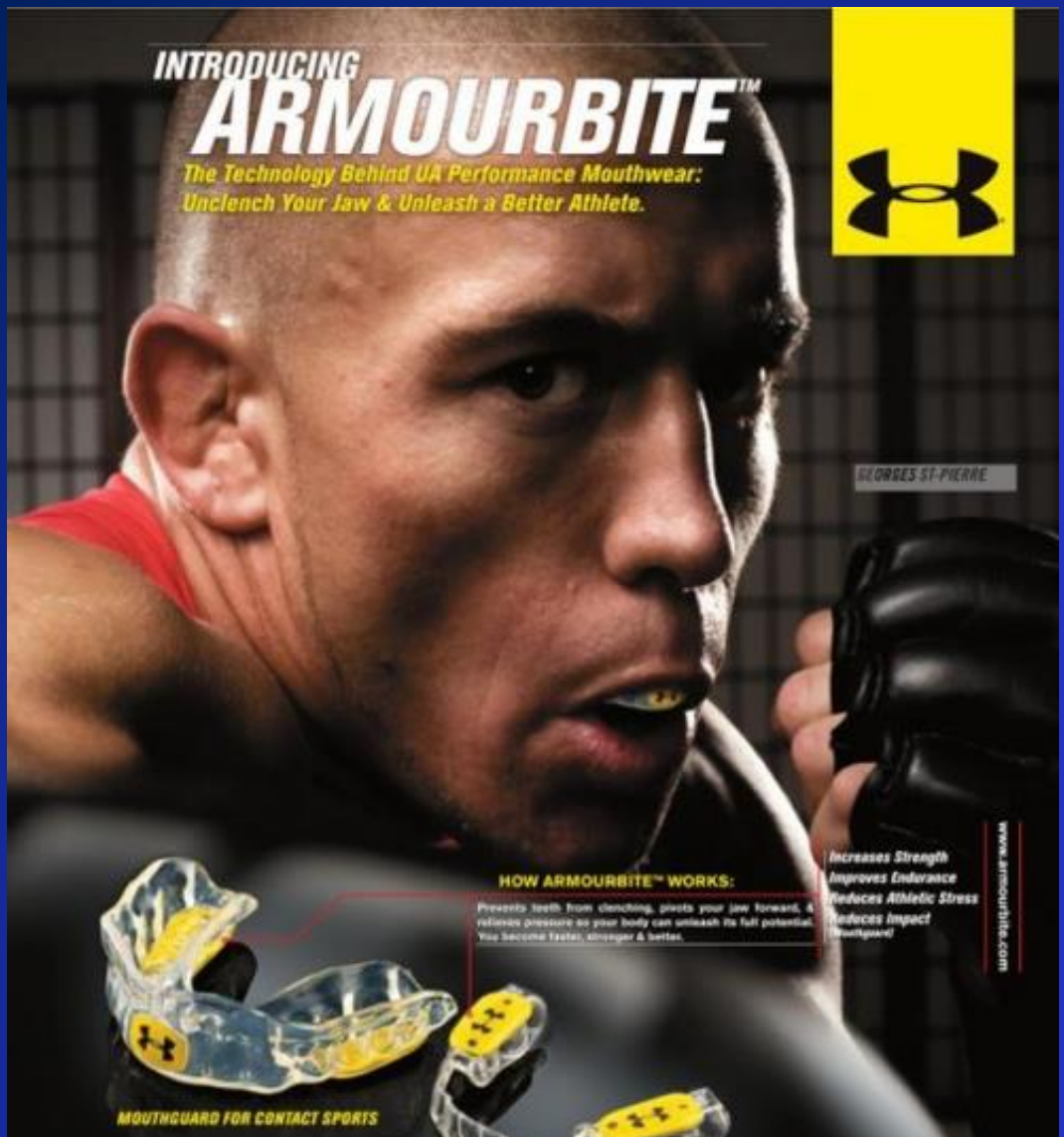

And a custom fitted version
PPM
What is
The 5 or 6 rep
NON
CONTACT
Desi
fitne
snug
NON
CONTACT
TRAINING
ER
ards
BALANCE

SO WHAT IS THE "EVIDENCE"?

- The recent systematic evaluation of a varied and widespread literature puts this in perspective
- Multiple intelligent people have supported this.
- Patient selection is the most probable area to focus on
- Jaw position is the current hot topic(especially in Europe)

SO, HAVE FUN WITH IT

BUT WE ARE NOT READY TO CALL IT FACT.



ON TO JUST



TO PROTECT TEETH?

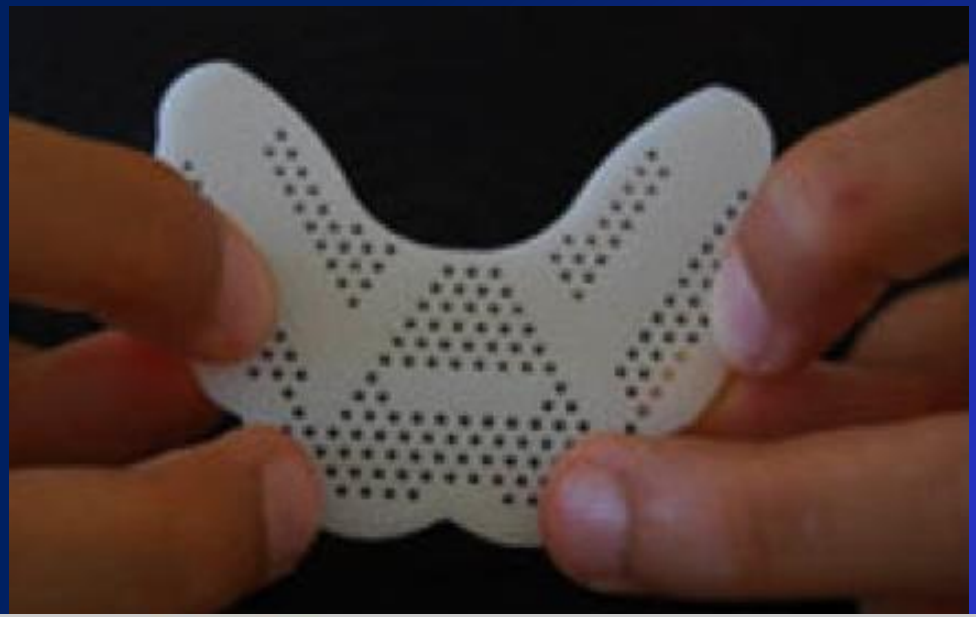
MOUTHGUARDS MUST RESIST INJURIOUS FORCES TO TEETH, SOFT TISSUES AND BONE

THE MOUTHGUARD WORKS BY COMBINING FORCE ABSORPTION AND FORCE DISTRIBUTION.

SHOCK DOCTOR FOR BRACES(ABSORBS WELL)

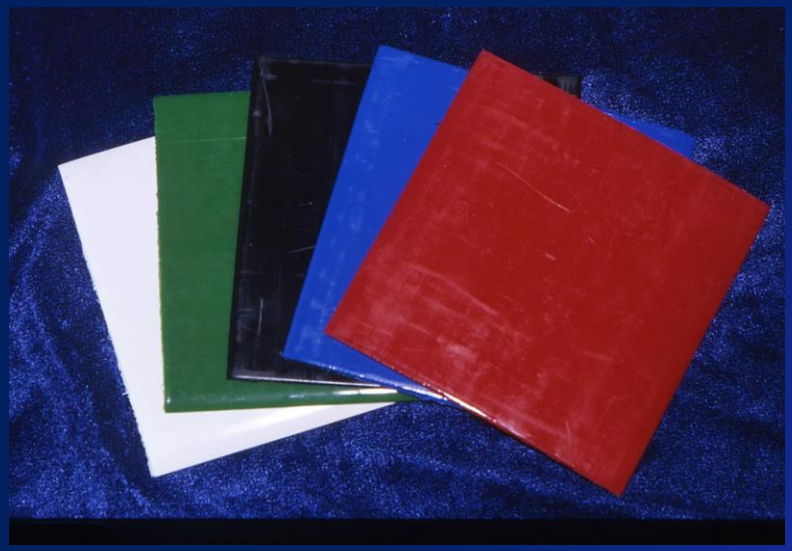


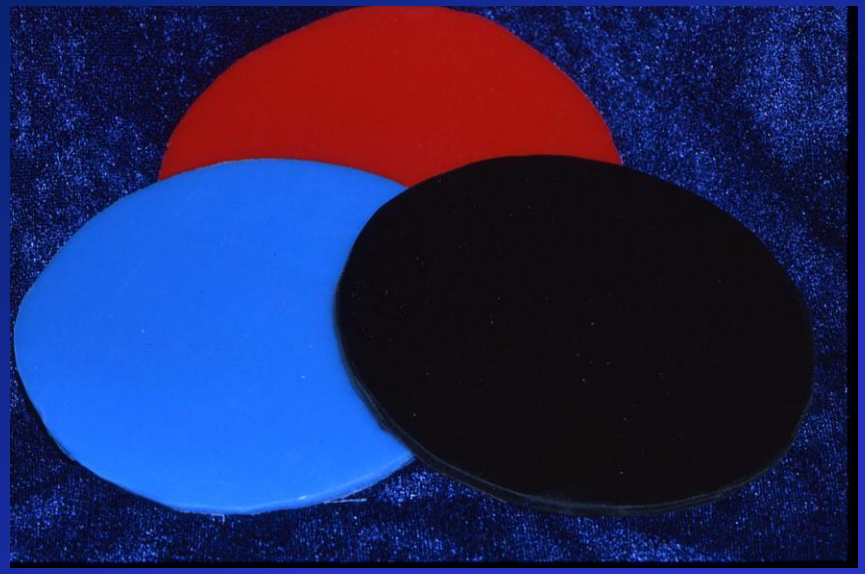
SISU DISTRIBUTES WELL





ETHYLENE VINYL ACETATE (EVA)





Most commonly used material (Thermoforming)

Thickness from 1 mm to 6mm

With New Materials on the Horizon

MOUTHGUARD TYPES

- STOCK. #3
- MOUTH FORMED. #2

  BOIL AND BITE
- CUSTOM FITTED#1
- OTHERS

ASTM

Designation: F 697 – 00 (Reapproved 2016) An American National Standard

Standard Practice for Care and Use of Athletic Mouth Protectors 1

3.1 Mouth protectors covered by this practice shall be of the following types and classes:

3.1.1 *Type I—Thermoplastic Type:*

3.1.1.1 *Class 1a*—Vacuum-formed.

3.1.1.2 *Class 1b*—Vacuum-formed adjusted.

3.1.1.3 *Class 1c*—Mouth-formed.

3.1.1.4 *Class 2a*—Pressure laminated.

3.1.1.5 *Class 2b*—Pressure laminated adjusted. 3.1.2 *Type II—Thermosetting Type:*

3.1.2.1 *Class 1*—Mouth-formed.

3.1.3 *Type III*—Stock type.

What can you give your athlete patients?

- Hand them one out of a box.
- Help them make their own.
- Make it for them.
- Send it to a lab.
- Let your patients use a lab

STOCK TYPE

- NOT FITTED TO TEETH OR ALVEOLUS
- TEETH MUST BE CLENCHED
- IMPOSSIBLE TO SPEAK AND DIFFICULT TO BREATHE
- RECOMMENDED FOR ORTHODONTIC PATIENT
- NOT RECOMMENDED BY THE ACADEMY FOR SPORTS DENTISTRY



WE REALLY HAVEN'T COME TOO FAR



Denta Gard



Shock doctor for Braces

Masel Ortho“Best Seller”





We hate these…but…





Damien Williams
KC Chiefs



LeSean McCoy
KC Chiefs



Darwin Thompson
KC Chiefs



Tyreek Hill/ KC Chiefs



EVEN ON DEFENSE





Ke'Shawn Vaughn

Shaquil Barrett



AND JUST TO BE UP TO DATE





Taylor Rapp, 2021-22 Los Angeles Rams

OKAY, ITS EVERYWHERE



I HAD TO SHOW YOU



OH, AND HERE IS SOMETHING NEW, WELCOME JAHAN DOTSON





"It's kind of just a style thing," Dotson said during a press conference. "I just have it there, just dangling."

OH, I JUST SAW THIS AND THIS MIGHT HAVE SOME PROMISE





THERE IS ONE REAL USE AS AN EMERGENCY BACKUP





My buddy, Ted Croll

MOUTH-FORMED

- VAST MAJORITY OF THE MOUTHGUARD MARKET
- DIFFICULT TO BREATHE
- COST EFFECTIVE
- DIFFICULT TO SPEAK
- CANNOT BE ADAPTED TO ORTHODONTIC APPLIANCES
- OFTEN DESTROYED MID SEASON



BOIL AND BITE MOUTHGUARDS (CONT.)

- ALMOST LIMITLESS TYPES AVAILABLE
- READILY AVAILABLE
- RELIES ON THE PATIENT TO FIT HIS OR HER OWN MOUTHGUARD.
- ALL RULES HINGE ON THIS TYPE OF MOUTHGUARD

MOUTH FORMED





"Boil and Bite": simple to complex

LOTS AND LOTS OF CHOICES TODAY.





But it is all about the FIT!

ALL RIGHT NOW, DON'T TELL ANYBODY. I LIKE THESE…

FOR ORTHO





Vista maxx (A Polyolefin)

THIS BEGAN AS "CUSTMBITE"
MONROE ELKINS

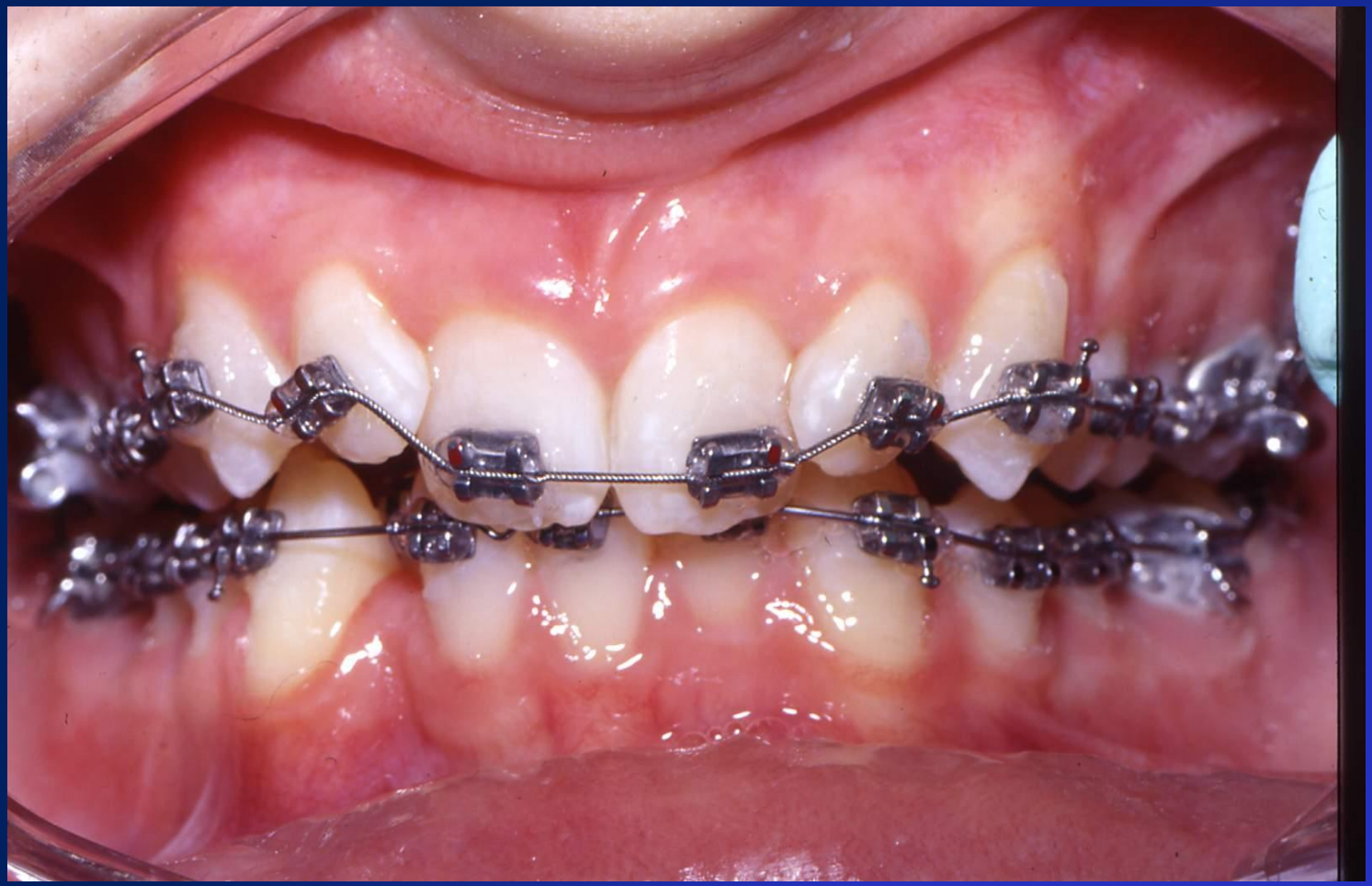







GAME ON™
FITTING INSTRUCTIONS
GAME ON™
GAMEONMOUTHGUARDS.COM
ADA
Accepted
Helps protect teeth from impact trauma during sports

FIRST DAY IN BRACES



THREE MONTHS LATER



From Knapik et al. 2007

- "Custom-made mouthguards composed of EVA resulted in less tooth deflection (greater cushioning effect) and fewer fractured teeth than boil and bite mouthguards composed of similar material."
- In vitro tests
- ...In these investigations, little or no difference was found in injury rates among various types of mouthguards."

THE CUSTOM FITTED MOUTHGUARD









CUSTOM FITTED MOUTHGUARD

- Most comfortable and most universally preferred by athletes
- Easily customized to individual needs
- Expensive/ usually supplied by a dentist
- Two Thermoformed types (Vacuum formed and heat/pressure formed)
- Can be gotten now without a dentist.

VACUUM FORMED MOUTHGUARDS

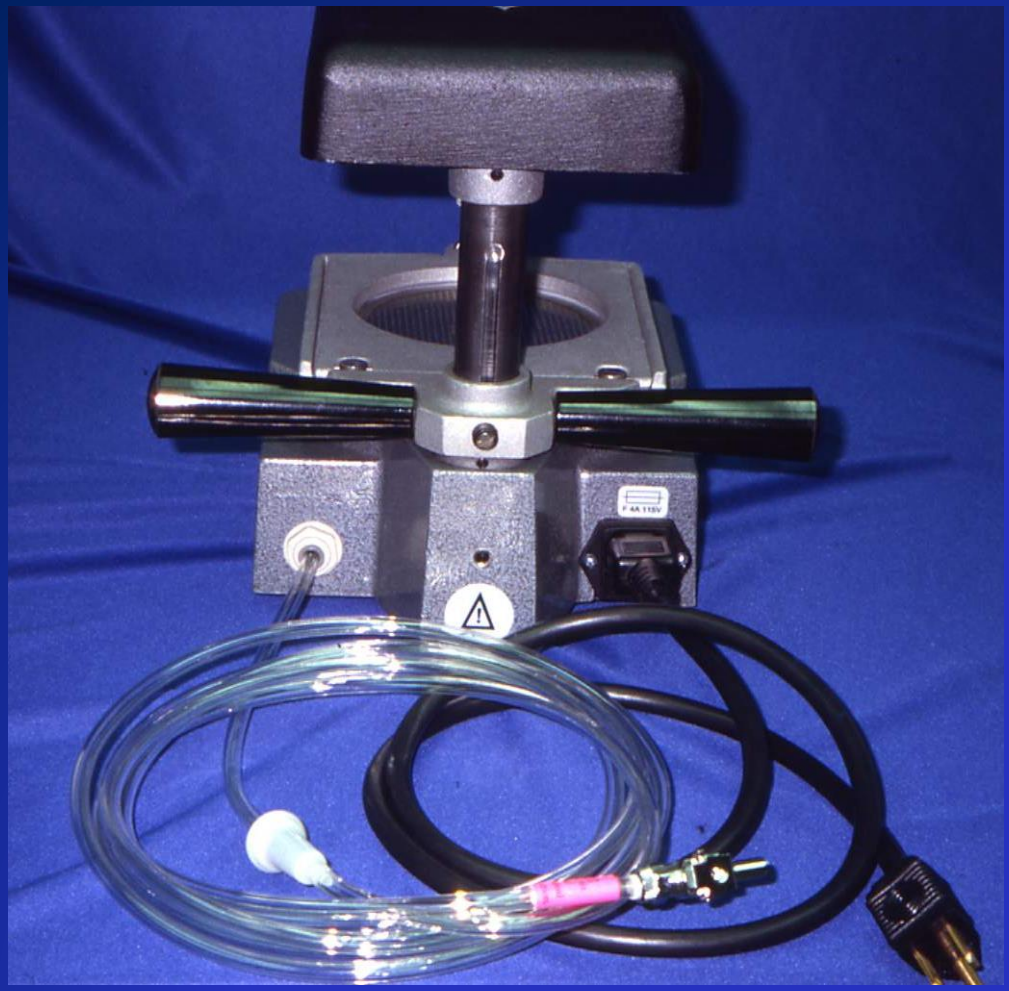
- Vacuum formed : under low heat one atmosphere of pressure

Used to be a single sheet of mouthguard material (but can be more)

- Can be formed to upper or lower teeth
- Difficult to control thickness
- Can deform after several weeks

VACUUM FORMING MACHINES





MORE VACUUM FORMING MACHINES





FABRICATING VACUUM FORMED MOUTHGUARDS

THESE DON'T HAVE TO BE SECOND BEST

Cast Preparation



The Key!
Remove the palate and Keep Dry and porous



DID YOU SEE THIS??? WE'LL TALK ABOUT THIS MORE LATER.

CSA Corner

Intraoral scanners

An American Dental Association Clinical Evaluators Panel survey

Check for updates

ADA CE Online

ADA American Dental Association

Survey Results

Data reflect the responses of 369 American Dental Association Clinical Evaluators (ACE) Panel member dentists in the United States.

Does your practice currently use an intraoral scanner (IOS)?

Yes 53%

No 47%

Top 3 reasons FOR starting to use an IOS*,†



Improve clinical efficiency

Transition from an analog to a digital practice

Improve laboratory communication

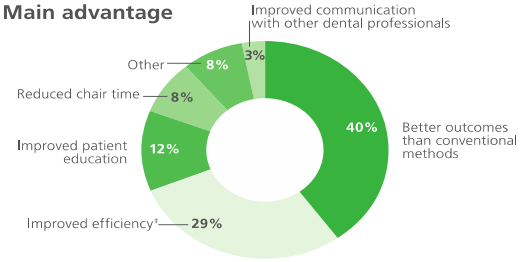
Top reason for NOT using an IOS*



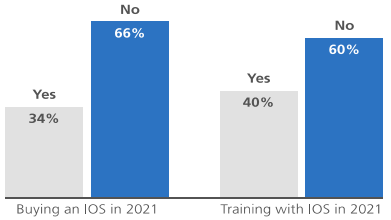
66%

Financial investment is too high or do not see a financial benefit

Main advantage



What are nonusers considering in 2021?

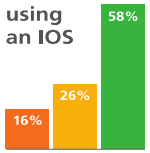


Most frequent treatment with IOS*



Single tooth-supported crowns (90%)

Years using an IOS



Satisfaction with IOS results§

91%

of respondents are at least mostly satisfied

Training received to effectively use an IOS*



Training from a manufacturer¶

Learning by doing

Nonmanufacturer source#



Lubricant of separating material



Figure 1. Typical casts for a custom fitted Mouthguards with adequate extension.

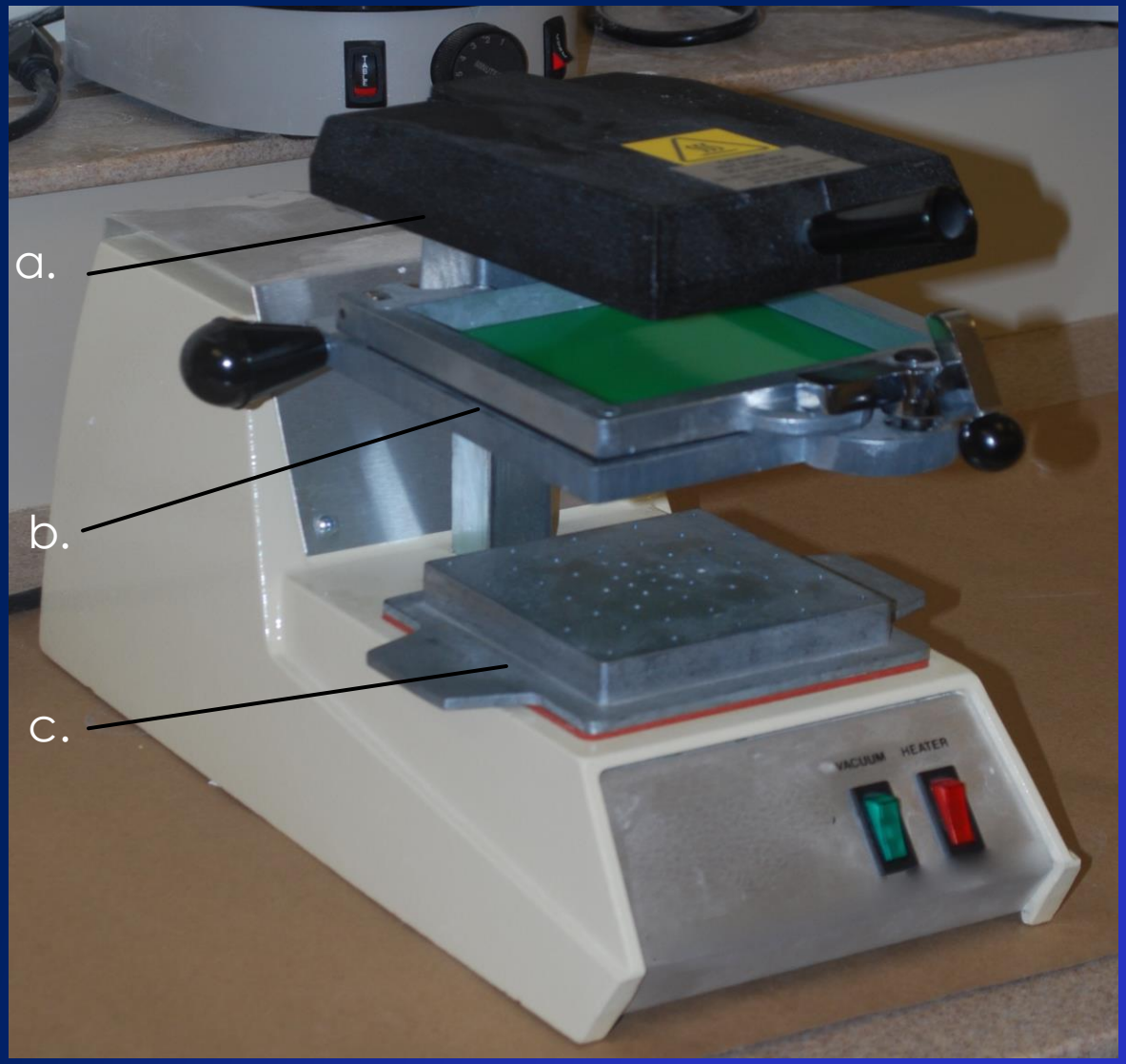


Figure 3. Typical Vacuum forming Machine. a) heating element b) sheet of EVA secured in the holding component c) vacuum stage.

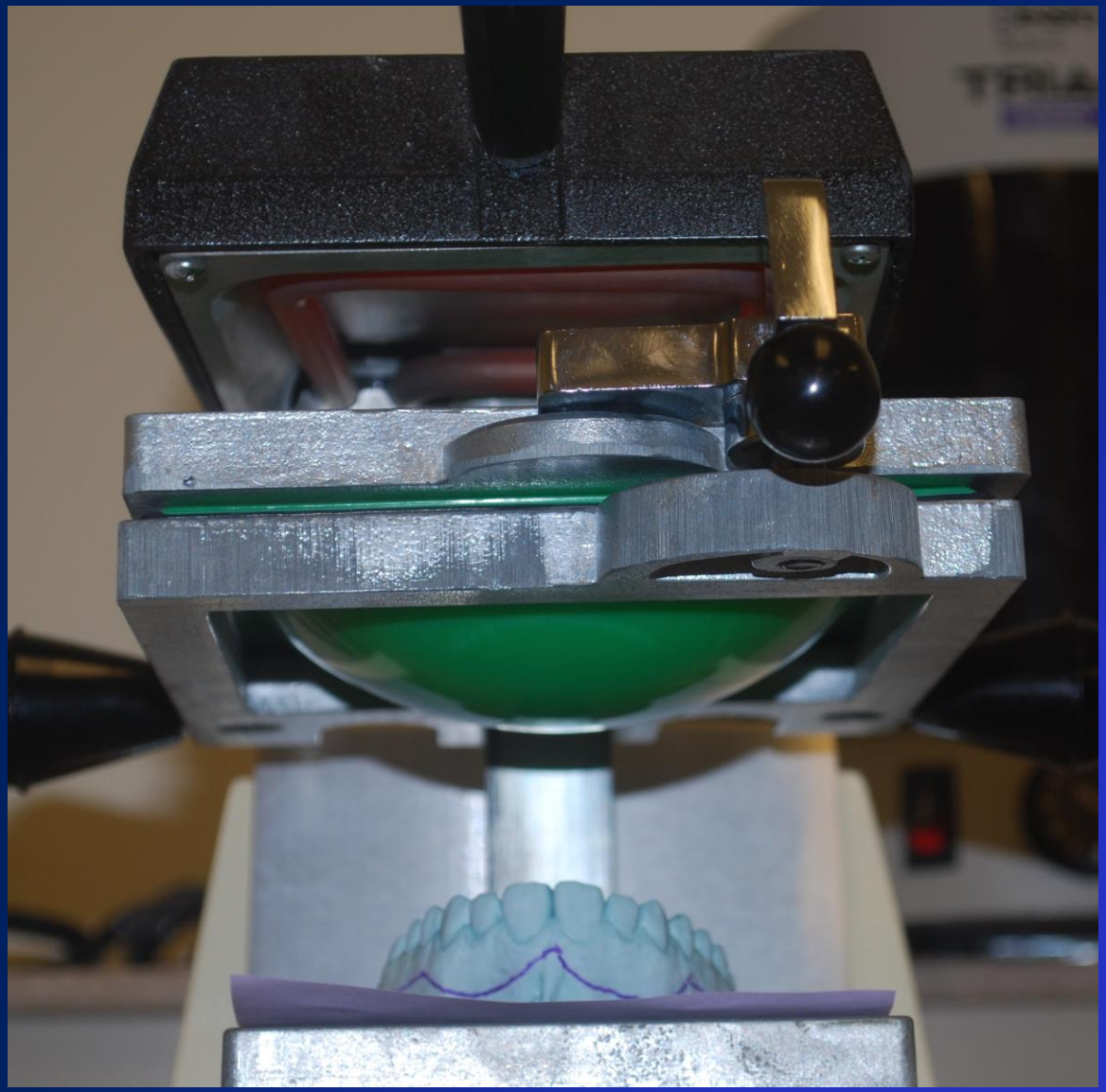


Figure 4. EVA sheet heating and sagging 1-2 inches.



Figure 5. Decorations and name on first layer. Paper logos must not touch the edges of the guard to ensure sealing it into the lamination



You Can Laminate!!

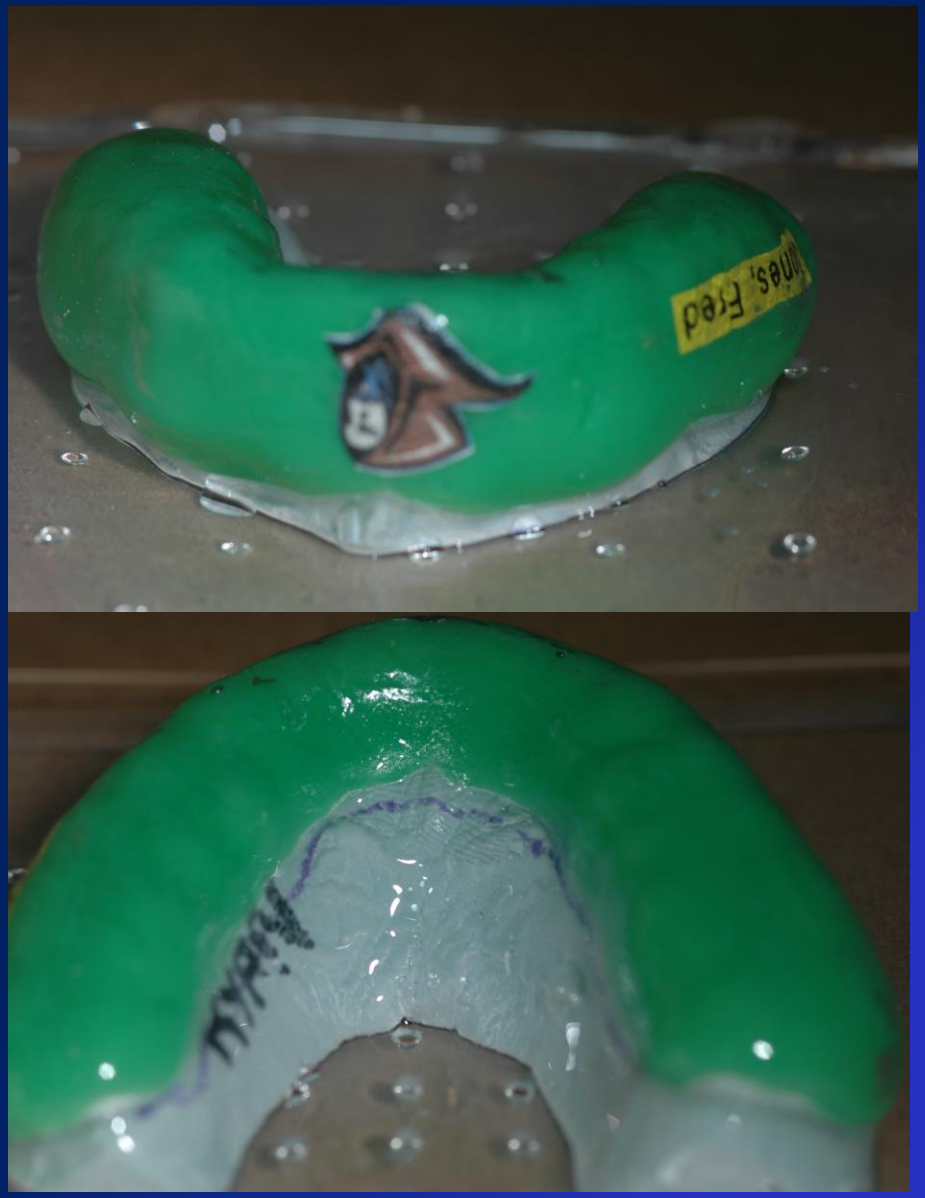


Figure 7. Second clear layer laminated over the colored and decorated first layer



Figure 8. Buffing and flaming the extensions to finish



Figure 10. The finished vacuum formed laminated mouthguard

HEAT PRESSURE LAMINATED MOUTHGUARDS THE CURRENT GOLD STANDARD

- Multiple sheets of material are laminated with a special machine under high heat and higher pressure
- Less deformation due to the multiple layers
- Easily customized by adding items between layers
- Thickness easily altered in specific areas
- Very snug fit, puts premium on impression and cast preparation.

HEAT PRESSURE MACHINES



Drufomat



Mini Star (little Brother of Biostar)

SoHome 850W Dental Pressure Moulding Unit



GLIDEWELL LABS ERKOPRESS



BASIC LAMINATION TECHNIQUE LAMINATION OF TWO 3 MM THICK SHEETS OF EVA





Figure 11. Heat pressure lamination machine A) Heating element B) sheet of EVA secured in the pressure section C) Stage with cast. The stage can be replaced with metal beads.



Figure 12. Trimmed casts essentially the same as for vacuum forming **but for pressure forming the palate does not need to be removed or vented.** It is done so here for the ease of trimming and working with the mouthguard.



Figure 13. The heating element in place. Note the timer counting down the appropriate time for the thickness and color of the material.



Figure 14. The pressure element with the material has been turned over onto the cast and locked in place. The machine then counts down until adequately cooled.



Figure 15. The first layer trimmed and corrected to margins.

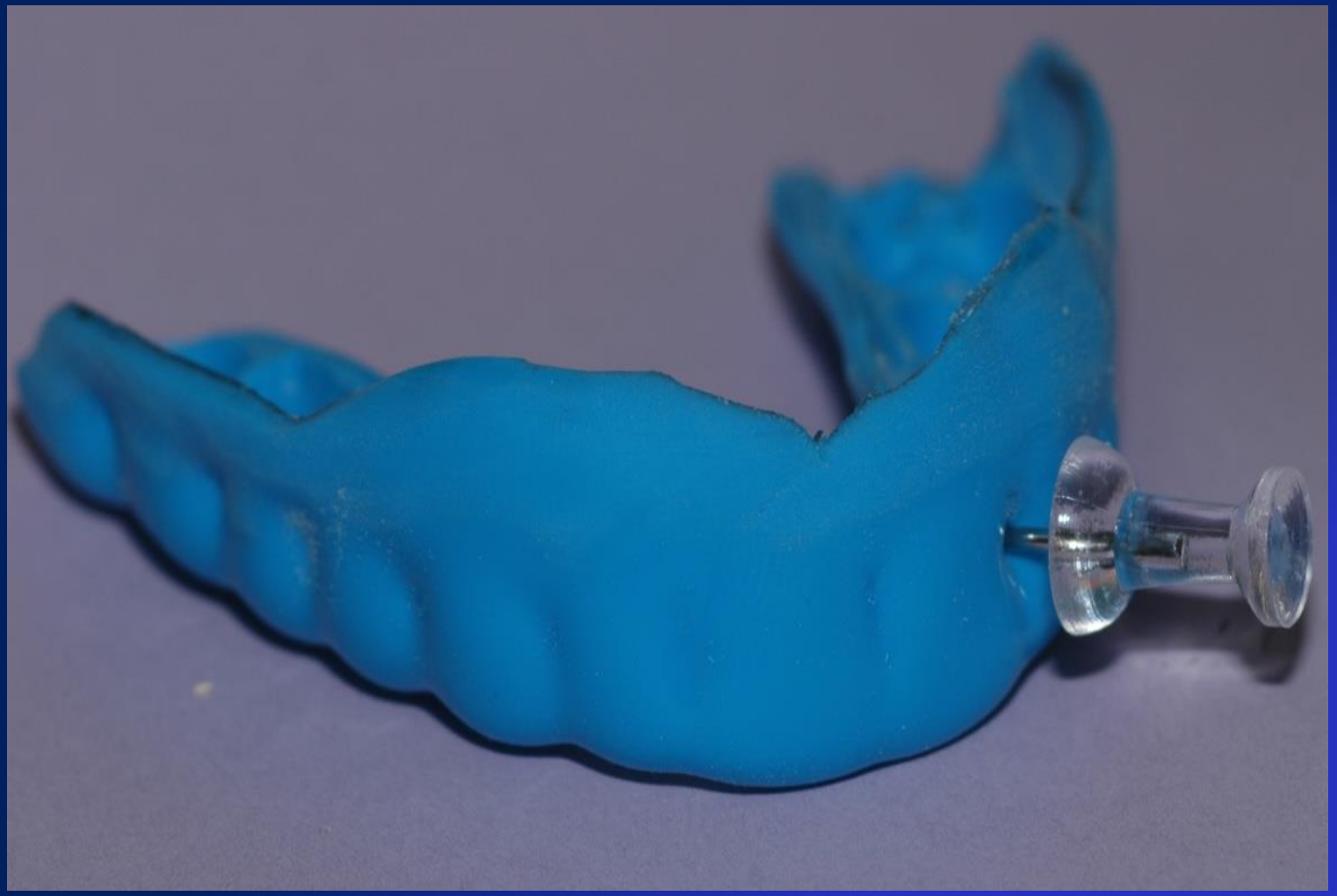


Figure 16. Puncturing with sharp object in areas of deep indentations will avoid air entrapment and incomplete lamination.



Figure 17. Customized with name, paper logo and vinyl tape stars.



Figure 18. Clear layer laminated over the first.



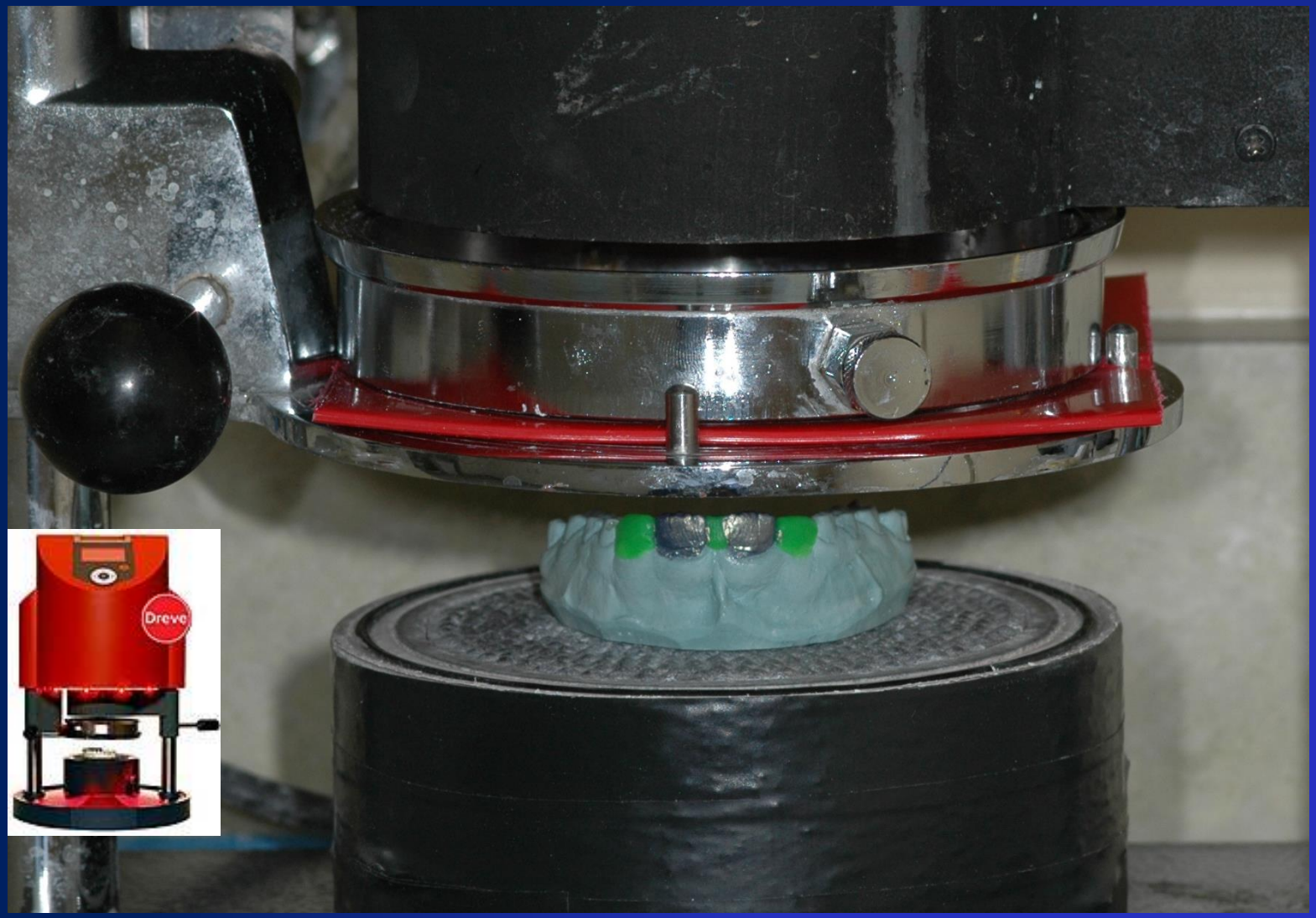
Figure 19. Finished Heat pressure laminated mouthguard.

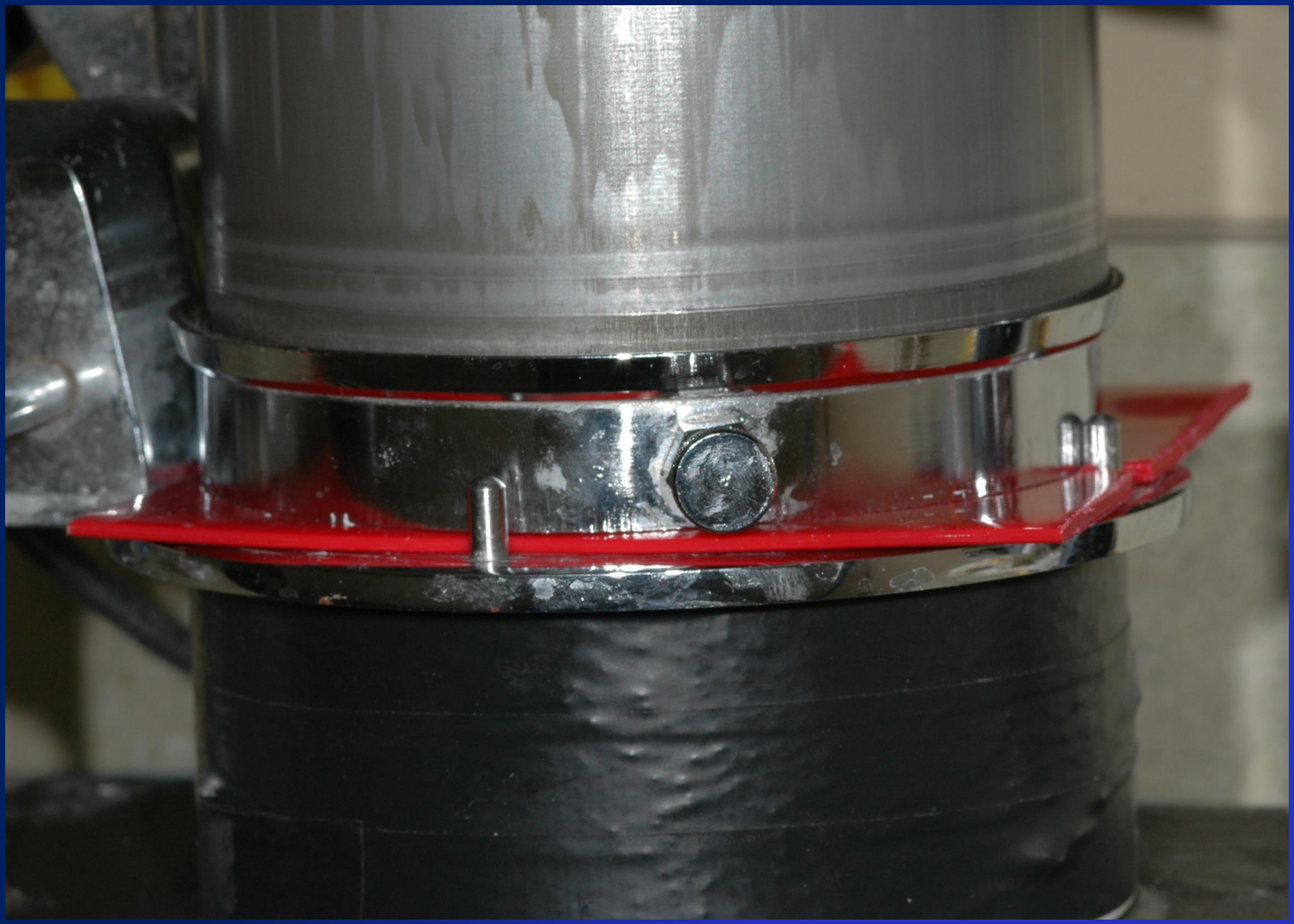


But the real beauty is the versatility and The ability to give Each athlete what they want or need

Figure 22. The internal detail achievable with the pressure technique is clear and very precise This results in a secure and snug fitting guard.

DRUFOMAT HEAT PRESSURE MACHINE





TO CORRECT THE BITE

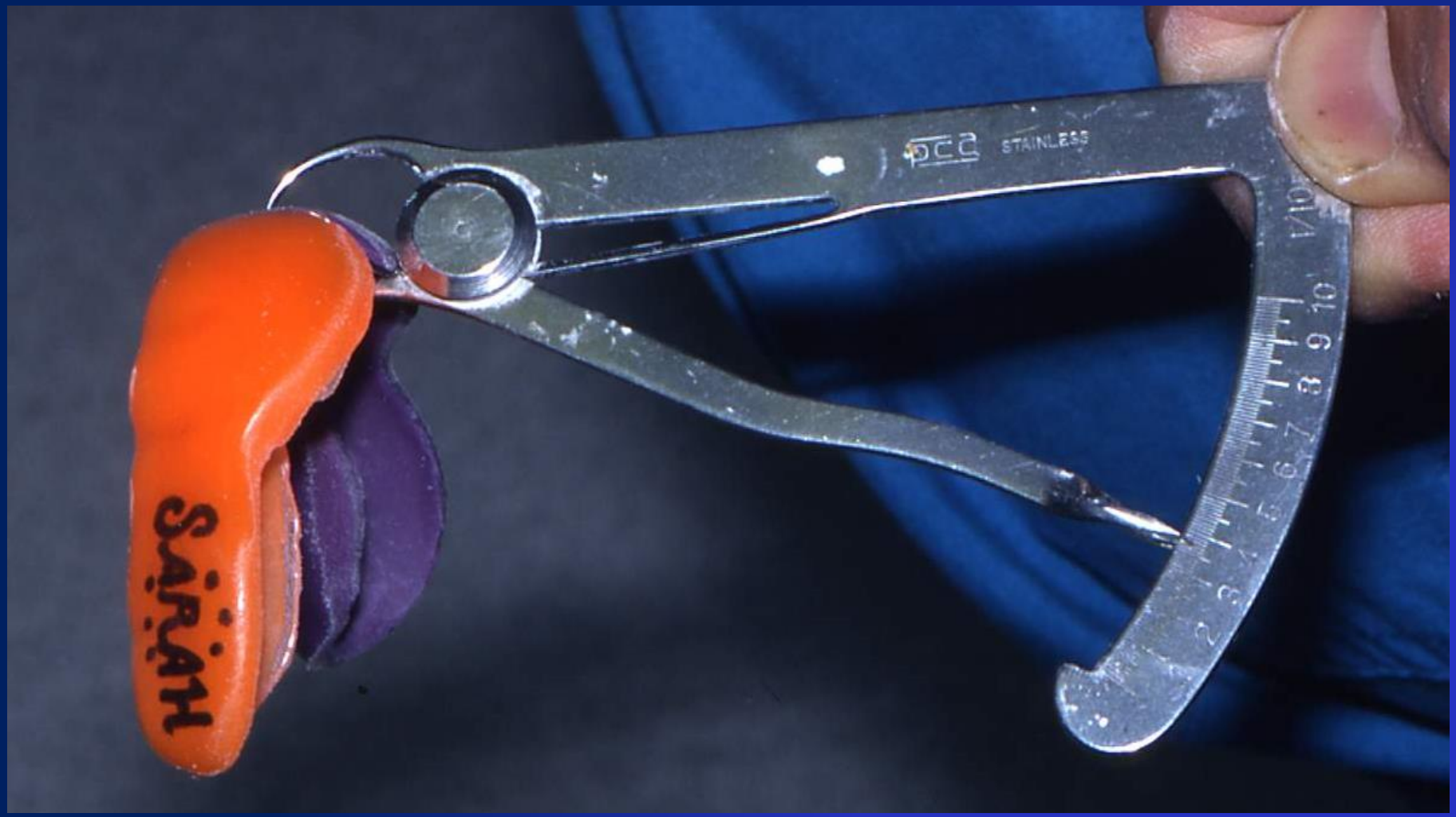
This is Important! Articulator or in the Mouth




Most of us here do it intraorally
With a warming flame



How Thick?



"EVA" mouthguards: how thick should they be"
Westerman B., Stringfell0w P., Eccleston J.
Dental Traumatology 2002; 18:24-27

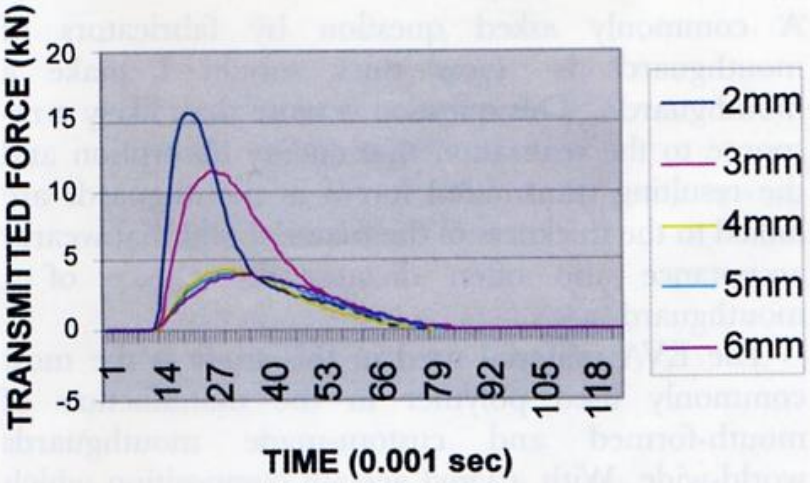


Fig. 1. Mean maximum transmitted forces (kN).

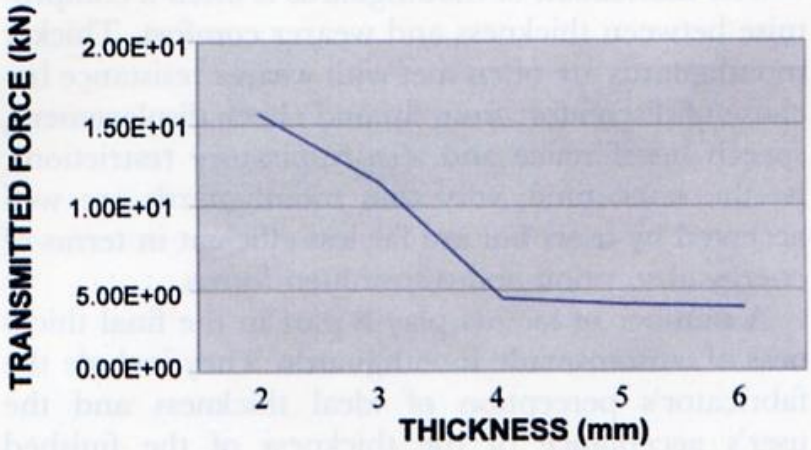


Fig. 2. Mean maximum transmitted forces (kN) and thickness (mm).

Three to Four mm





ProForm Mouthguard Strap attachment tab, and hot glue stick

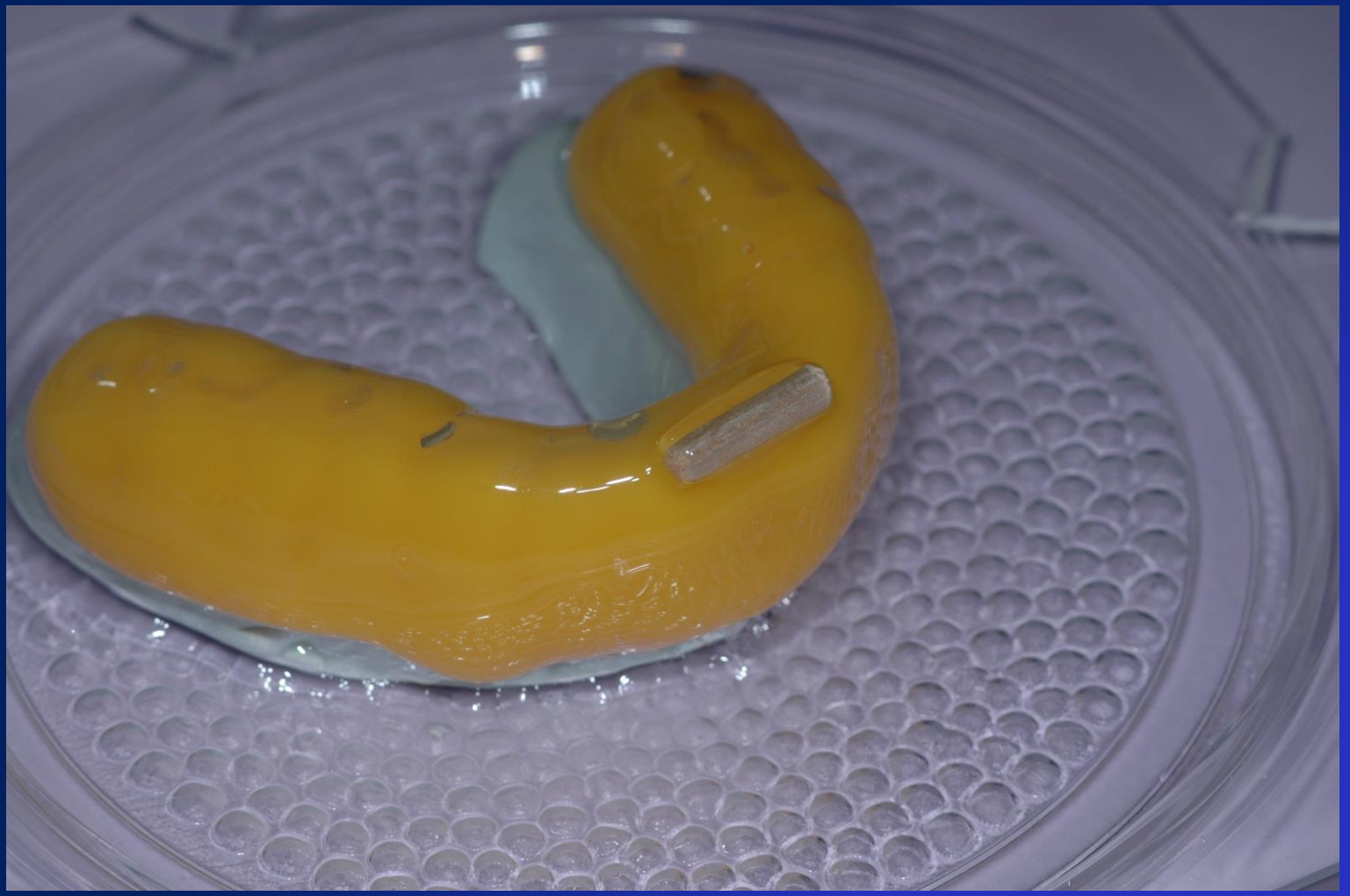




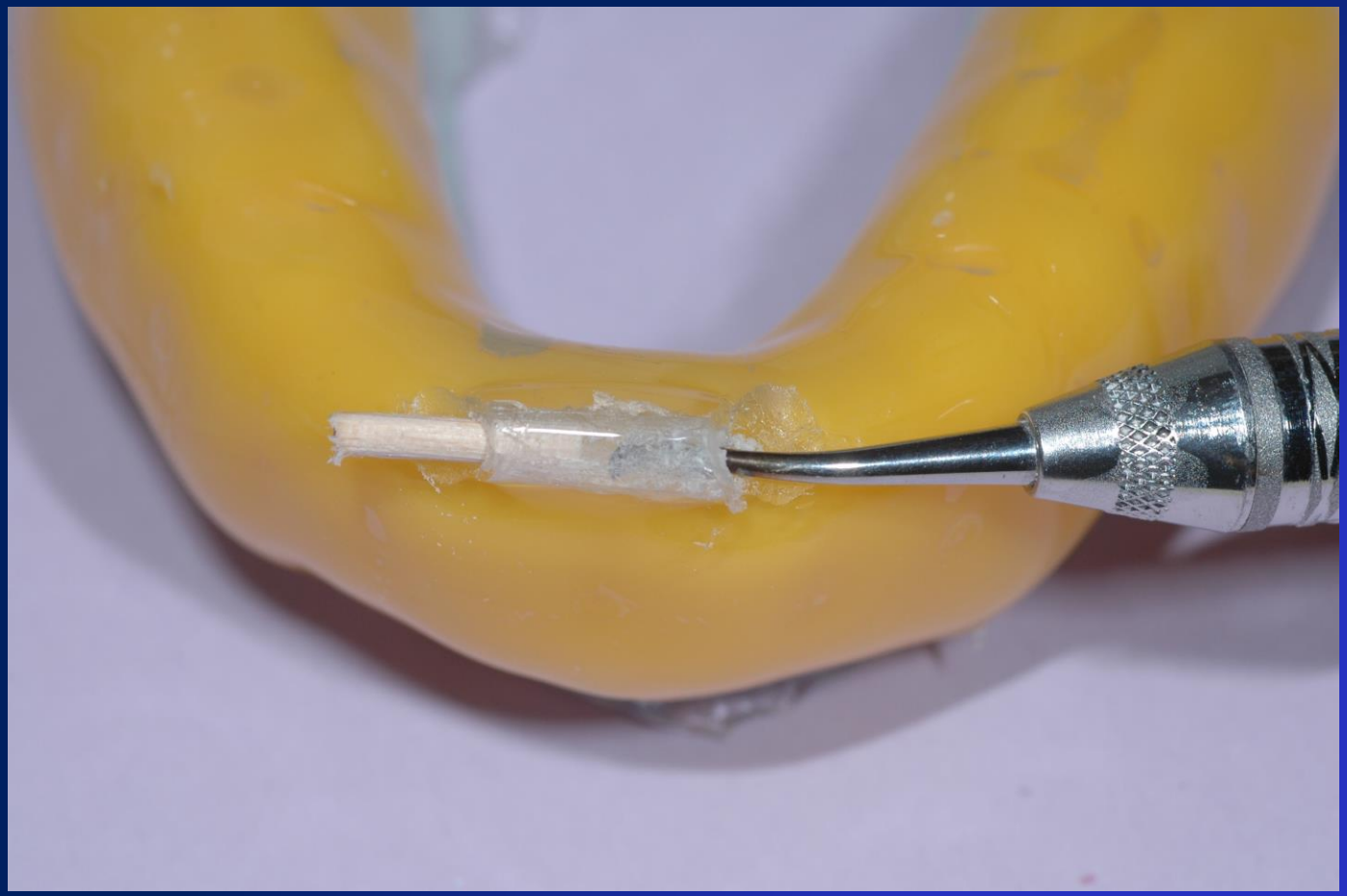
Attached tab and tether to mouthguard



Small dowel lubricated and tacked to mouthguard



Clear layer over dowel



Removal of the dowel

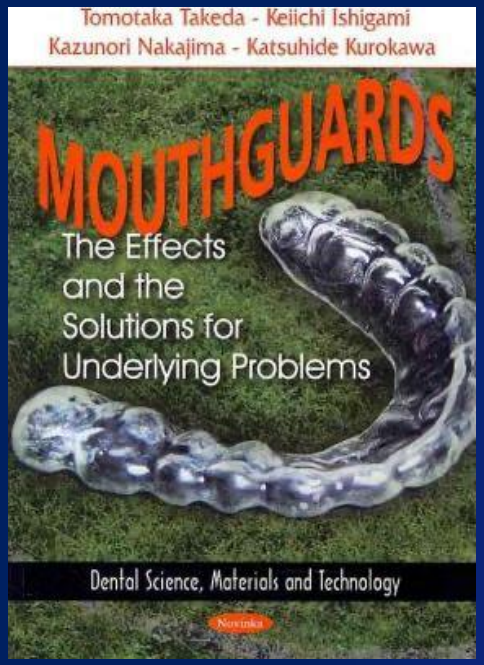


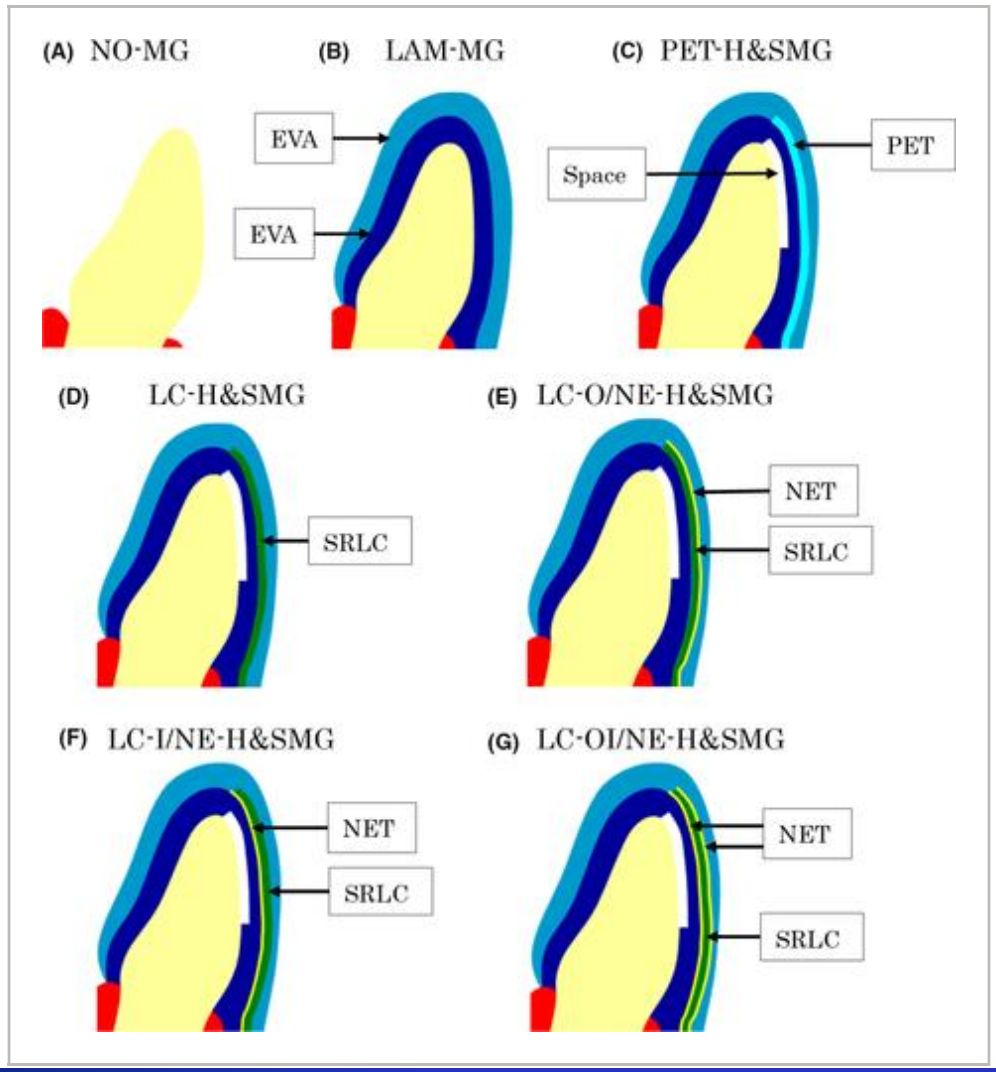


Surgical tubing inserted through the channel and the completed strap

IS THERE A BEST DESIGN?

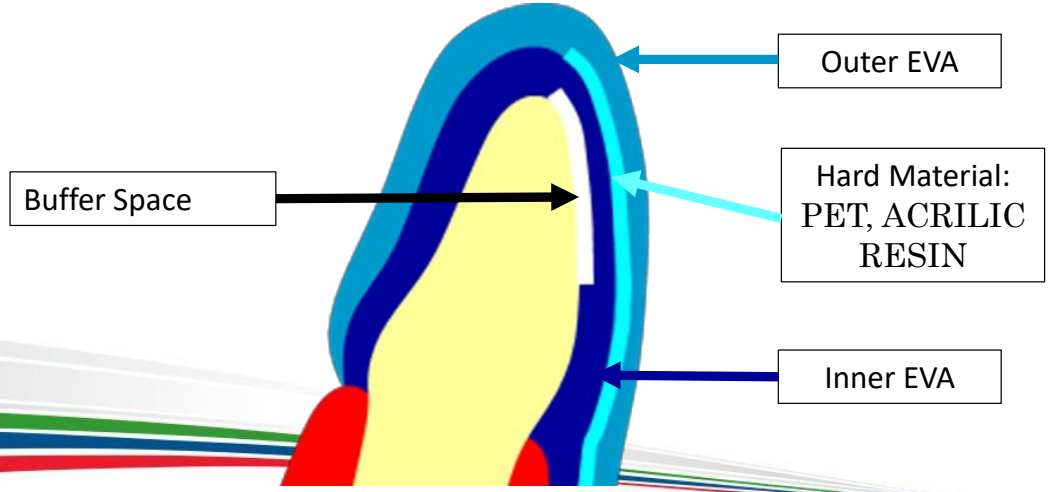






We paid an attention to a hard insertion and a buffer space to improve a shock absorption ability.

Takeda, T., K. Ishigami, et al. (2006). "Does hard insertion and space improve shock absorption ability of mouthguard?" Dent Traumatol 22(2): 77-82.



AN ALTERNATIVE DESIGN

Bottom Line: Heat Pressure Lamination Allows for a variety of innovations





WHAT ABOUT CLASS III UNDERBITES?



Use a mandibular guard

BUT I DON'T WANT TO MAKE MY OWN….

- Dental Labs from a dentist made cast
- Dental labs from an athlete made cast

ALTERNATIVE WAYS TO OBTAIN A CUSTOM FITTED MOUTHGUARD

- GLADIATOR MOUTHGUARDS

H

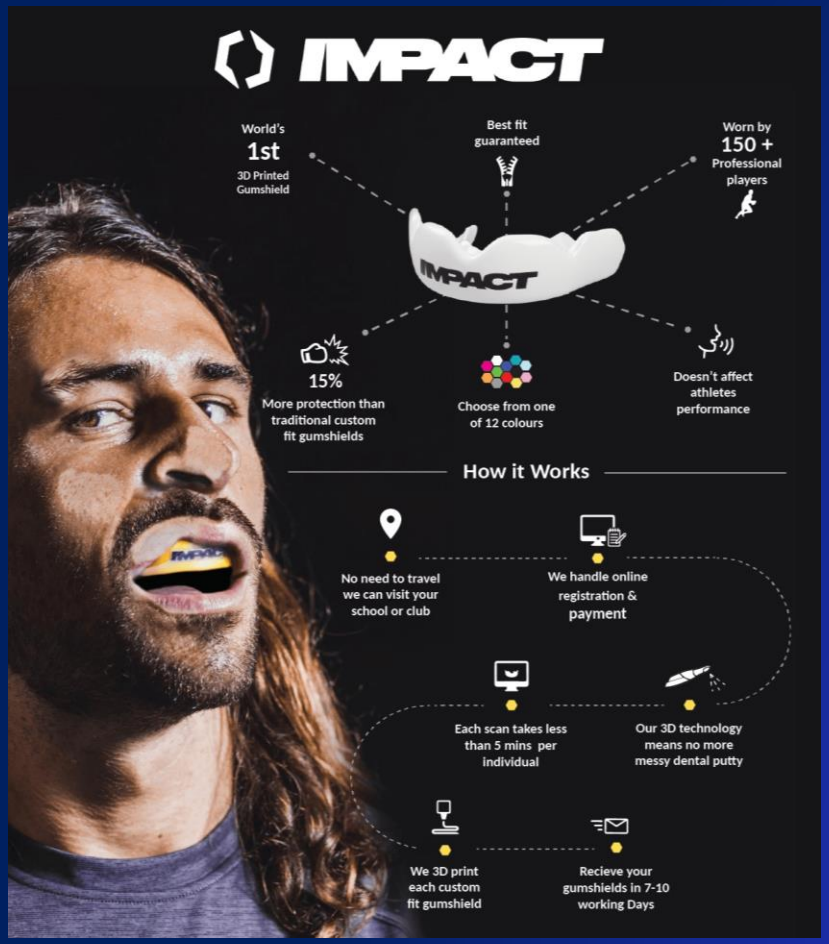
•

A new world
is beginning!!

- GUARDLAB HTTPS://WWW.GUARDLAB.COM
- SPORTS GUARD LABORATORIES

WWW.SPORTSGUARD.COM

STAY TUNED FOR THIS: CUSTOM FITTED MOUTHGUARDS "PRINTED" DIRECTLY FROM A SCAN





Dublin, Ireland





International Journal of
Environmental Research and Public Health

MDPI

Case Report

Multi-Material 3D Printing of a Customized Sports Mouth Guard: Proof-of-Concept Clinical Case

Alexey Unkovskiy [1,2,*], Fabian Huettig [3], Pablo Kraemer-Fernandez [3] and Sebastian Spintzyk [4,5]

***Int. J. Environ. Res. Public Health* 2021, *18*, 12762.**





How clean are these??

FULL TEXT LINKS

SpringerLink FULL-TEXT ARTICLE

Curr Microbiol. 2020 Feb;77(2):246-253. doi: 10.1007/s00284-019-01834-1. Epub 2019 Dec 7.

Microbial Contamination and Disinfection of Sport Mouthguard: In Vitro Study

Simonetta D'Ercole [1], Marco Tieri [2], Diego Martinelli [2], Clarissa Ciaravino [2], Domenico Fulco [2], Domenico Tripodi [2]

SIMPLEST RECOMMENDATION

"For effective hygienic storage of dental devices made of EVA, washing with sterilized water is important to remove absorbed salivary components along with storage in a ventilated environment "

mechanical brushing showed a rapid decrease. Additionally, bacterial identification using polymerase chain reaction (PCR) revealed that *Streptococcus oralis* was dominantly detected on salivary samples after 14 days of storage among both two subjects. For effective hygienic storage of dental devices made of EVA, washing with sterilized water is important to remove absorbed salivary compounds along with storage in a ventilated environment.
International Journal of Oral Science (2012) **4,** 14–18; doi:10.1038/ijos.2012.13; published online 16 March 2012

Keywords: EVA sheet; bacterial contamination; bacterial survival; salivary streptococci

NOW THERE ARE LOTS OF CHOICES







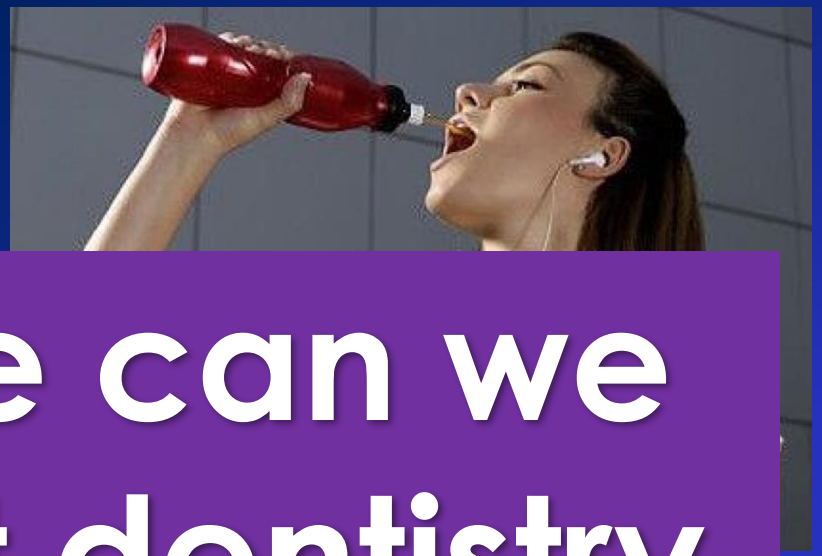
Especially With the Explosion of Positioners and Clear Braces

WHAT RULES ARE THERE NOW?

- Mouthguards are mandated for Lacrosse, Ice Hockey, Football, Field Hockey
- Wrestlers who are wearing orthodontic appliances
- Boxing is the only professional sport which mandates mouthguards
- And Rugby is increasing a lot!!!!

AND NOW, OTHER STUFF…





How else can we connect dentistry And sports?





SPECIAL OLYMPICS/SPECIAL SMILES



STARTED IN 1996



Eunice Shriver



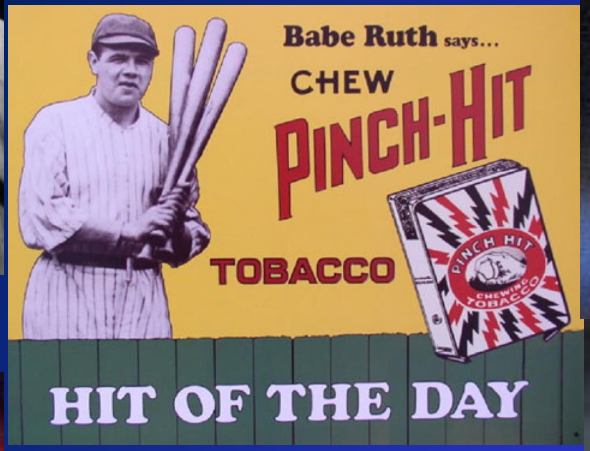
Steve Perlman

KEY FUNCTIONS

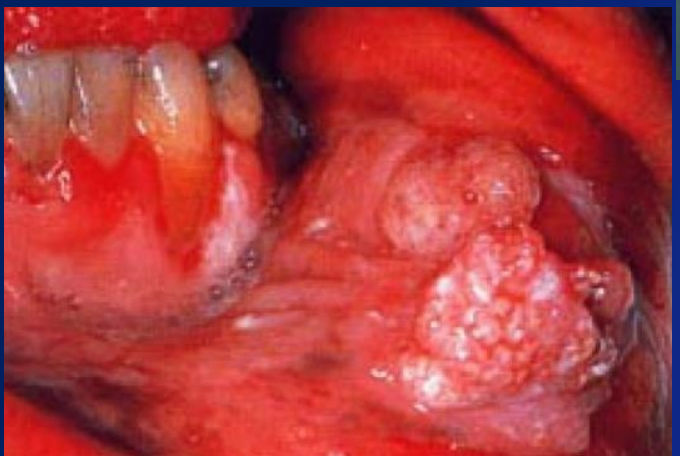
- "ONE OF THE PRIMARY GOALS OF THE PROGRAM HAS BEEN TO COLLECT STANDARDIZED DATA ON THE ORAL HEALTH OF SPECIAL OLYMPICS ATHLETES."
- "THIS PROGRAM IS DESIGNED TO HELP ATHLETES IMPROVE THEIR HEALTH AND FITNESS AND IMPROVE THEIR ABILITY TO TRAIN AND COMPETE IN SPECIAL OLYMPICS AS WELL AS LIFE."
- "AS THE PROGRAM HAS SIGNIFICANTLY EXPANDED, TENS OF THOUSANDS OF ATHLETES HAVE BEEN SCREENED AND ACCESSED INTO THE HEALTH CARE SYSTEM WHERE THEY HAVE RECEIVED TREATMENT THAT MAY NOT HAVE BEEN AVAILABLE TO THEM PREVIOUSLY."
- STEVE PERLMAN,2004

A WORD ABOUT SMOKELESS TOBACCO









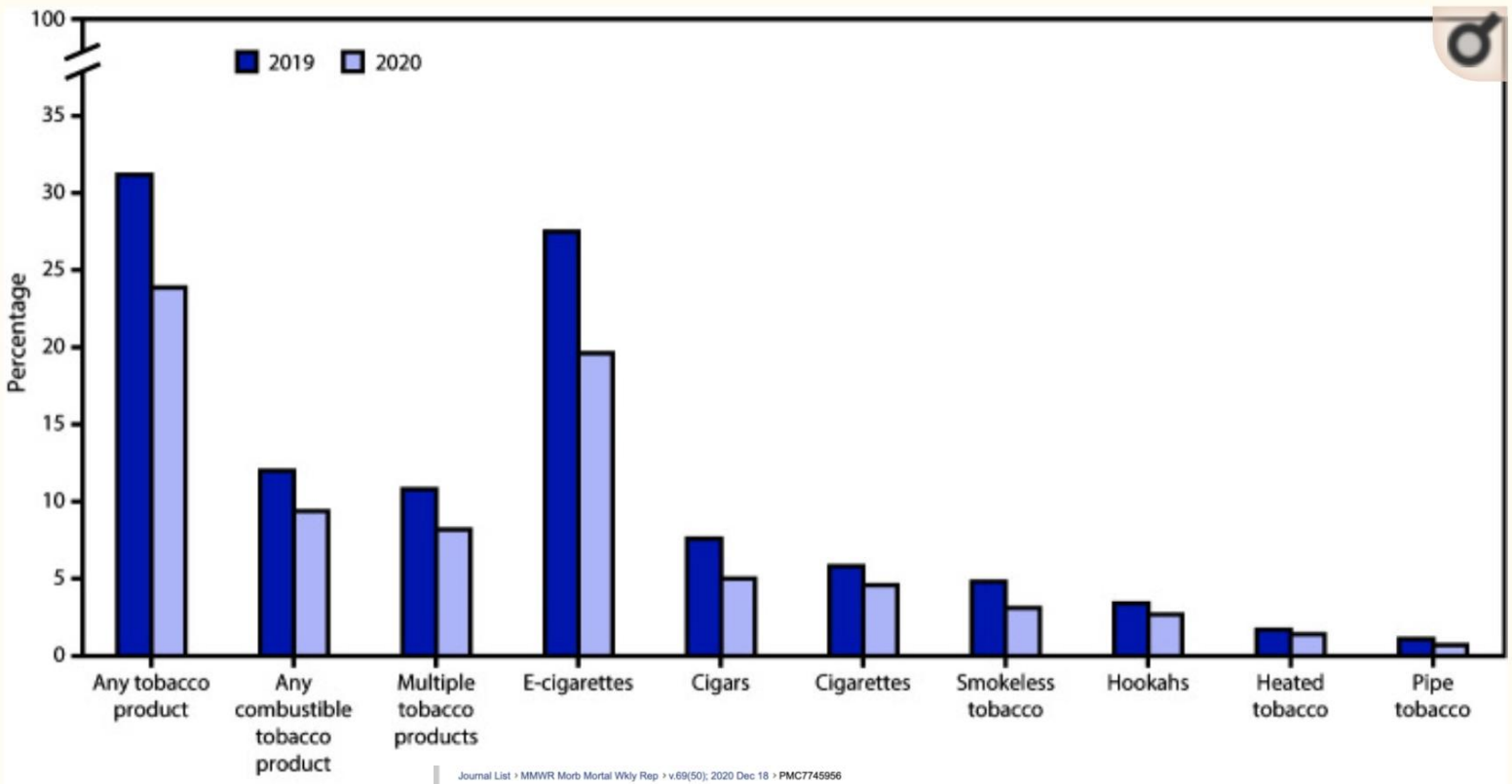


CDC Centers for Disease Control and Prevention

2019



BUT KIND OF GOOD NEWS….



Journal List › MMWR Morb Mortal Wkly Rep › v.69(50); 2020 Dec 18 › PMC7745956

MMWR Morbidity and Mortality Weekly Report

MMWR Morb Mortal Wkly Rep. 2020 Dec 18; 69(50): 1881–1888. PMCID: PMC7745956
Published online 2020 Dec 18. doi: 10.15585/mmwr.mm6950a1 PMID: 33332300

Tobacco Product Use Among Middle and High School Students — United States, 2020

Andrea S. Gentzke, PhD,[1] Teresa W. Wang, PhD,[1] Ahmed Jamal, MBBS,[1] Eunice Park-Lee, PhD,[2] Chunfeng Ren, PhD,[2] Karen A. Cullen, PhD,[2] and Linda Neff, PhD[1]

WHAT IS THE EXTENT OF THE PROBLEM IN HIGH SCHOOLS?

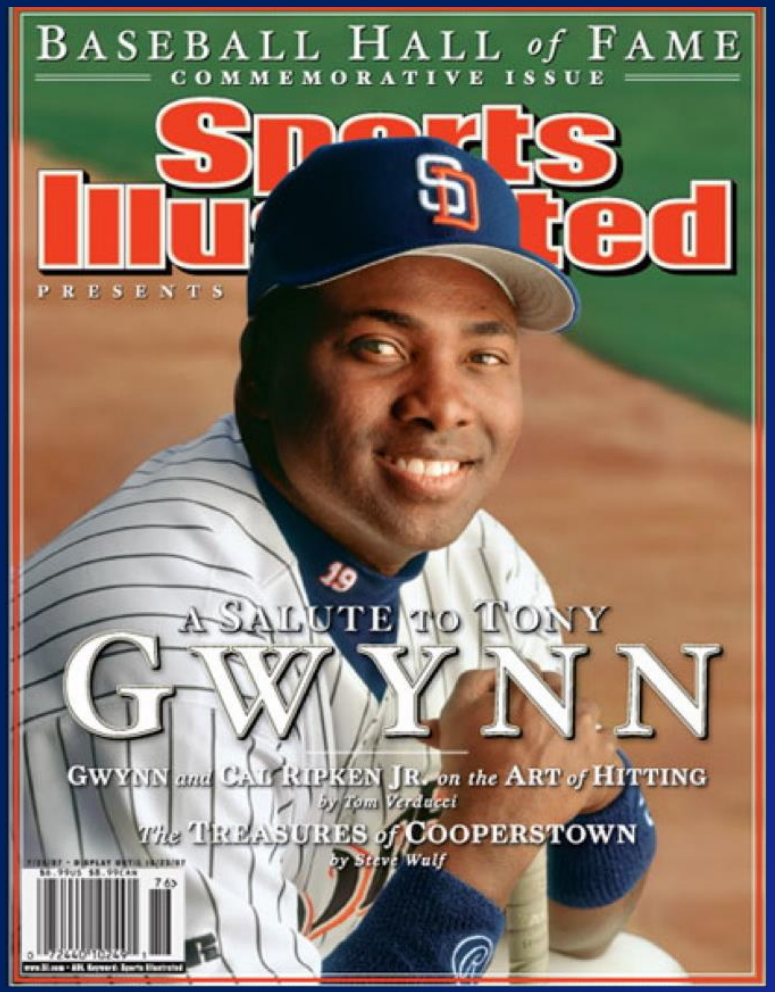
SMOKELESS TOBACCO PRODUCT USE AMONG HIGH SCHOOL STUDENTS

High School Students in 2021[3]	Current Use of Smokeless Tobacco
Overall	1.2%
Males	1.7%
Females	—
White non-Hispanic	1.5%
Hispanic	—

NOTE:
In the table above—

- Percentages represent approximately how many people in every 100 people use smokeless tobacco products. For example, 7 represents nearly 8 in every 100 people.
- "Current use of smokeless tobacco" means using chewing tobacco, snuff, dip, snus, or dissolvable tobacco on 1 or more of th

HOW SAD AND TRAGIC IS THIS?



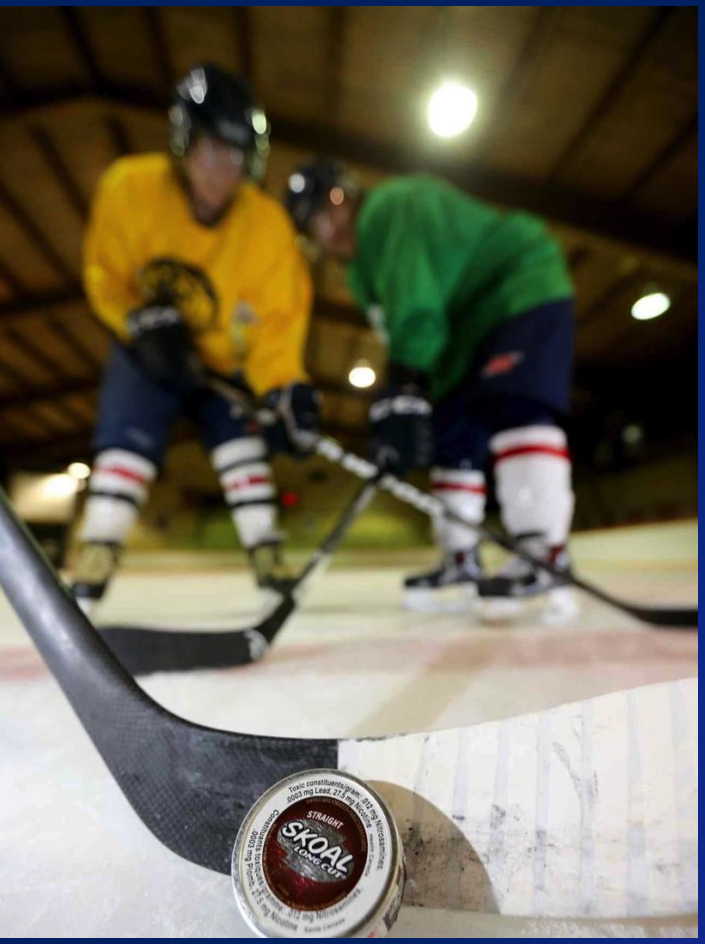


BUT IT'S NOT GOING AWAY…
2021





AND, IT'S NOT JUST BASEBALL
AND IT'S NOT JUST THE USA



"Hockey's disgusting little secret"



MANITOBA JUNIOR HOCKEY LEAGUE

When it comes to chew, there's no reason to be coy. Kriellaars, who has worked with the MJHL for the past seven years, has conducted surveys, in conjunction with the Sport Medicine and Science Council of Manitoba, which reveal 50 per cent of all MJHL players regularly use smokeless tobacco. Upwards of 75 per cent have tried tobacco at some point.

AND STILL THE EFFORTS CONTINUE



August 23, 2021

Robert D. Manfred Jr., Commissioner
Major League Baseball
245 Park Avenue, 31st Floor
New York, NY 10167

SPORTS NUTRITION, PERFORMANCE AND ITS EFFECT ON ORAL HEALTH



Nutrition

Academy of General Dentistry

Do current sports nutrition guidelines conflict with good oral health?

Elizabeth M. Broad, BSc, DipNutrDiet, MAppSc, PhD ▪ Leslie A. Rye, DDS, MST, FASD, FAGD, FICD

For optimal athletic performance, an athlete requires good oral health to reduce the risk of oral pain, inflammation, and infection and thereby minimize the use of analgesics and antimicrobial agents. Increased intake, frequency, and dental contact time of carbohydrate-rich foods, sports nutrition products, and acidic carbohydrate-containing sports and energy drinks may contribute to risks of dental erosion, caries, and inflammatory periodontal conditions in the athlete, especially when he or she also exhibits dehydration and poor oral hygiene habits. Examining the athlete before he or she begins participating in a sport allows the dental care provider to determine the patient's existing oral health, hygiene, and susceptibility to risk factors for erosion, caries, and inflammatory periodontal disease. This oral profile, in conjunction with the individual athlete's dietary needs, can be used to establish a treatment and preventive program, including oral health education. Good oral hygiene practices and application of topical fluoride, especially via fluoridated toothpastes and topical fluoride varnishes, must be available to the athlete. Rinsing with water or a neutral beverage after exposure to carbohydrates or acidic sports nutrition products may reduce carbohydrate contact time and bring oral pH levels back to neutral more quickly, reducing the risk of caries and erosion. Finally, the dentist should encourage the athlete to consult with an experienced sports dietitian to ensure that principles of sports nutrition are being appropriately applied for the type, frequency, and duration of exercise in consideration of the individual's oral health needs.

Received: May 19, 2015
Revised: July 7, 2015
Accepted: July 28, 2015

Key words: carbohydrate, caries, dental erosion, diet, sports nutrition

November/December 2015 *General Dentistry*

KEY TAKEAWAYS…

- Athletes especially at the elite levels have specific dietary requirements that dentists can help with.
- Dentists should recognize the importance of hydration and use water as the first source
- limitation of adhesiveness, frequency, and duration of exposure to carbohydrates and acidic foods and fluids;
- Water rinsing after consumption of cariogenic foods and beverages

SSB TYPES





For now we will just focus on sports drinks



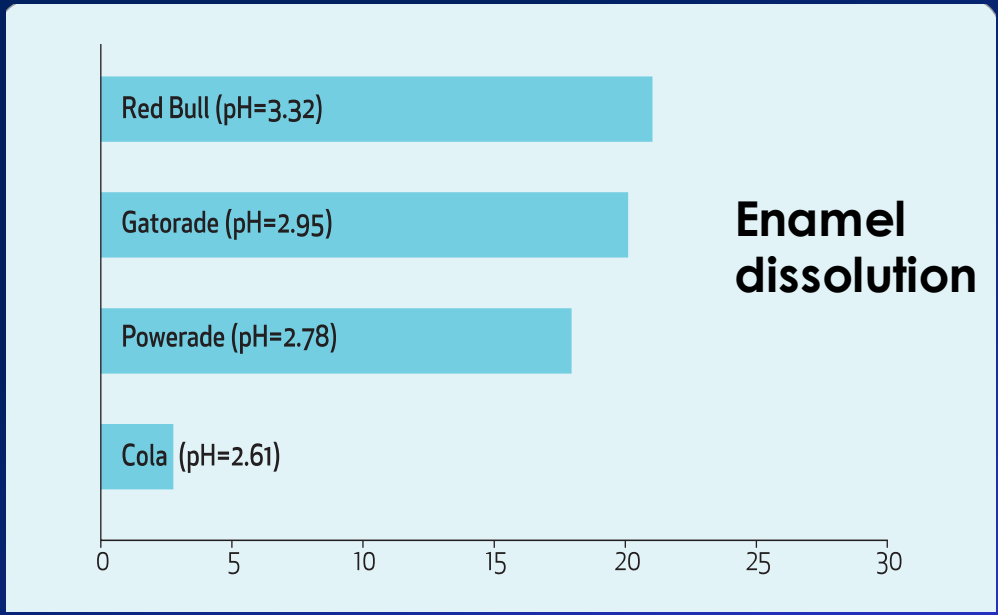
This is a Good Resource



The Erosive Process

Dental erosion is a complicated, multifactorial process.

At the tooth surface level, it is basically a balance of the forces of demineralization and remineralization. As the pH level at the tooth surface drops, calcium and phosphate ions are released from the tooth, resulting in demineralization.[12]



Factors Related to Erosive Potential in Sports Drinks

Causes	Results
High acidity (low pH)	↑ Time of low pH = ↑ Demineralization
High buffering (citric acid)	↑ Buffering of tooth surface = ↑ Duration of low pH
Dehydration (xerostomia)	↓ Saliva = ↓ Dilution + slower clearance of acid
Thickness of biofilm	↓ Biofilm thickness = ↓ Protection from acids
Manner of intake	Sipping or swishing = ↑ Time of acid contact
Modifying agent	Calcium can ↓ acidity and rematerialize tooth structure

TABLE 2

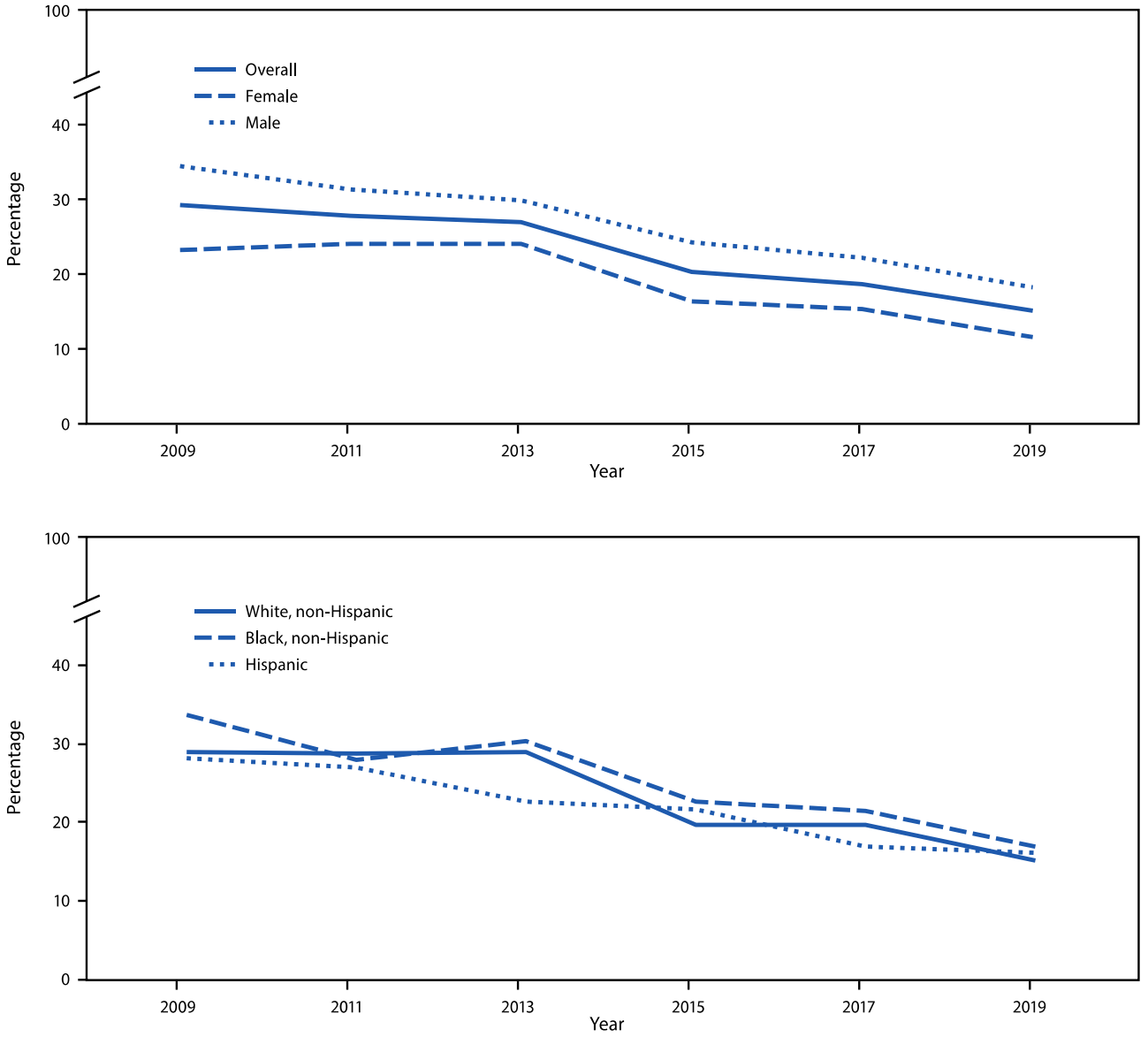
Preventive Measures for Acidic Erosion From Sport Drinks During Exercise

Reduce frequency of intake	Use only for rehydration with exercise
Remain hydrated	Dehydration = less saliva - prolonged low pH
Modify manner of drinking	Swallow - do not sip or swish in mouth
Avoid abrasion after acidic challenge	No toothbrushing for at least 30 minutes
Modify pH of acid attack	Use drinks with added calcium = ↓Demineralization
Provide protection from acids and abrasions	Fluoride products, ACP, bonding agents

B

BUT THERE IS (SORT OF) GOOD NEWS HERE

FIGURE 1. Percentage of high school students who had drunk sugar-sweetened soda or pop ≥1 time per day during the 7 days before the survey, overall and by sex and race/ethnicity* — Youth Risk Behavior Survey, United States, 2009–2019

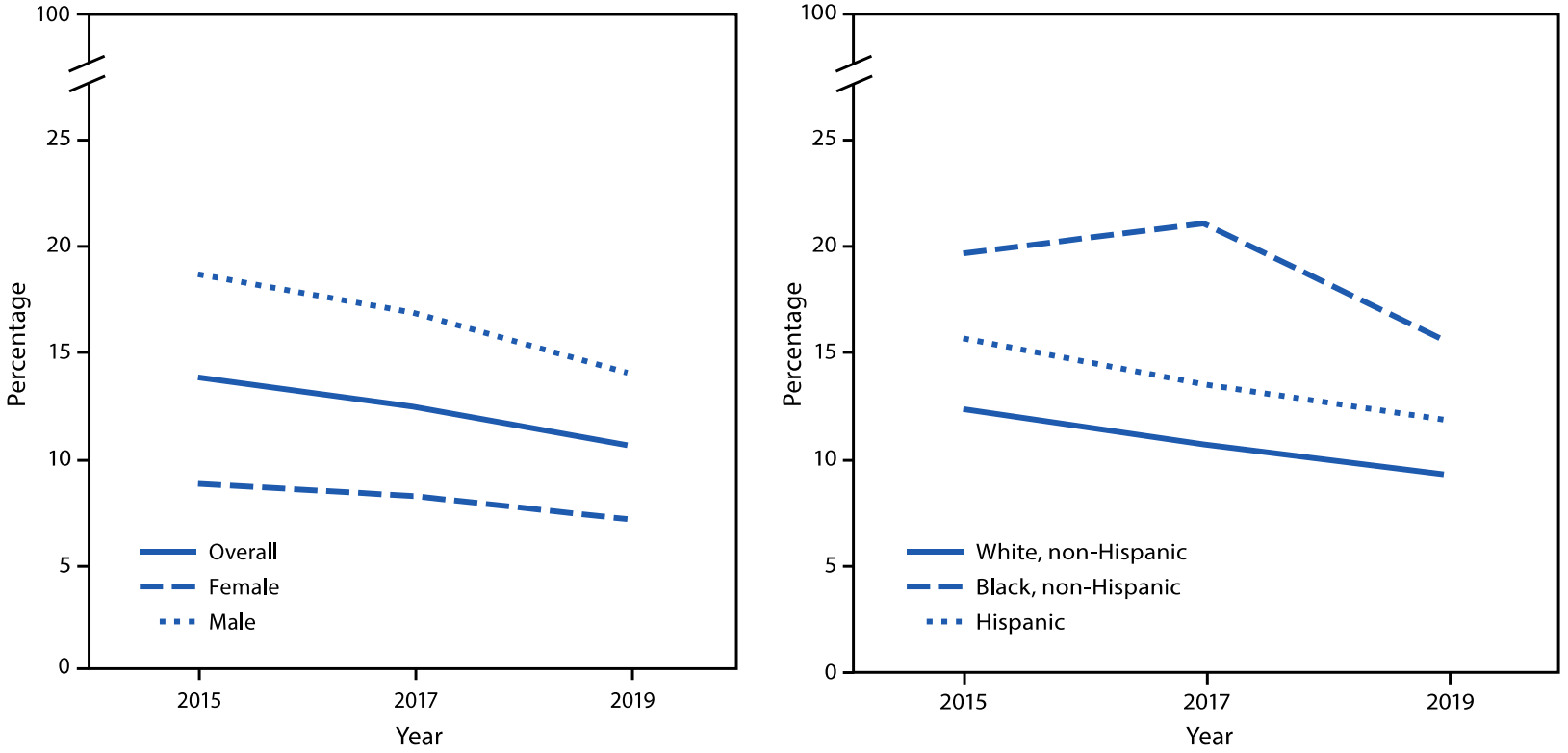


* During 2009–2019, a significant linear decrease was observed in the percentage of students who had drunk sugar-sweetened soda or pop ≥1 time/day overall and among female, male, white, black, and Hispanic students. Based on trend analyses by using a logistic regression model controlling for sex, race/ethnicity, and grade ($p<0.05$).

Merlo CL, et al
MMWR/ August 21, 2020
69 (1):64- 76

AND THIS……

FIGURE 2. Percentage of high school students who had drunk a sports drink ≥1 time per day during the 7 days before the survey, overall and by sex and race/ethnicity* — Youth Risk Behavior Survey, United States, 2015–2019



* During 2015–2019, a significant linear decrease was observed in the percentage of students who had drunk a sports drink ≥1 time/day overall and among male, white, and Hispanic students. Based on trend analysis by using a logistic regression model controlling for sex, race/ethnicity, and grade ($p<0.05$).

BY THE WAY, DID YOU SEE THIS?



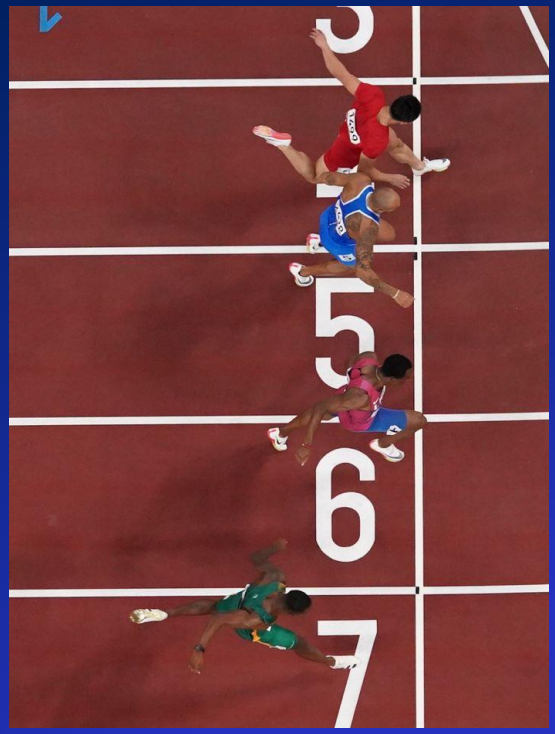
AND A COUPLE OF FINAL SNEAK INS……

- "Oral Health and Performance in Sport" 4 April 2014 University College London, Eastman Dental Institute
- Based on findings of the 2012 London Olympic games
- "The accumulation of marginal gains"
- "the difference between elite athletes at the very top is small. Then oral health, amongst other aspects, could make a difference."
- Ian Needleman and Paul Ashley

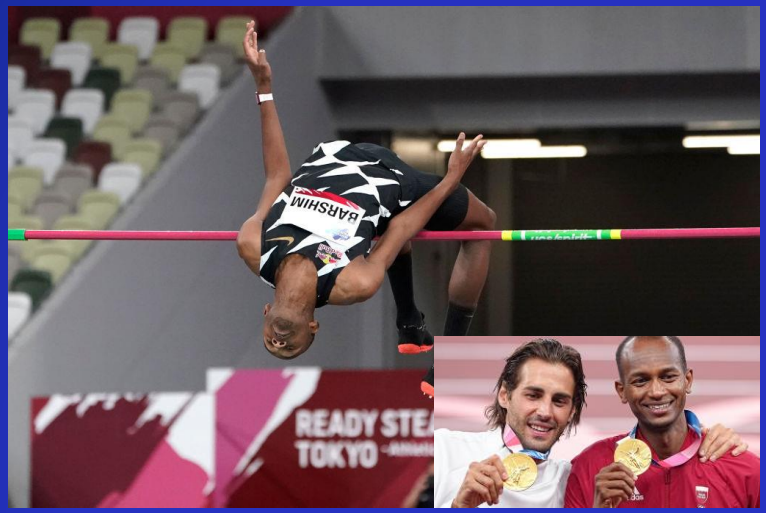
At the elite level, the margin of victory is *very* small

Tokyo Olympics
2021









IT IS A HOT TOPIC NOW…..



OPEN ACCESS

Oral health and impact on performance of athletes participating in the London 2012 Olympic Games: a cross-sectional study

I Needleman,[1] P Ashley,[2] A Petrie,[3] F Fortune,[4] W Turner,[4] J Jones,[4] J Niggli,[4] L Engebretsen,[5,6,7] R Budgett,[7] N Donos,[1] T Clough,[8] S Porter[9]

Needleman I, et al. Br J Sports Med 2013;47:1054–1058

- "Oral Health and Performance in Sport" 4 April 2014 University College London, Eastman Dental Institute
- Based on findings of the 2012 London Olympic games
- "The accumulation of marginal gains"
- "the difference between elite athletes at the very top is small. Then oral health, amongst other aspects, could make a difference."
- Ian Needleman and Paul Ashley

QUICK PUBMED SEARCH SHOWS 14 ARTICLES SINCE 2013 BY THIS TEAM

Ian Needleman





Julie Gallagher

Paul Ashley



AND EVEN MORE SPECIFICALLY



Sustainability 2021 13:7282

- **HIGH PERFORMANCE ATHLETES IN INDIVIDUAL SPORTS SEEM TO HAVE LOWER ORAL HEALTH THAN TEAM SPORT PARTICIPANTS**
- **BASICALLY EVERYONE SHOULD INCREASE AWARENESS OF THE INFLUENCE OF ORAL HEALTH FOR ATHLETES**

WE NEED TO BE PART OF THIS!!!



ELITE ATHLETE HEALTH PROFILE

WHAT IS AN EAHP?

The Elite Athlete Health Profile (EAHP) serves as comprehensive profile of an athlete's current health status.

If significant findings are present, the EAHP may serve as an **entry point for specialized medical care.** The EAHP also serves as a tool for **longitudinal health monitoring**.

The primary goal of the EAHP is to determine whether an athlete is **safe to participate in sport**, with a secondary goal of identifying **future risks or areas of improvement** regarding the athlete's health.

WHAT DOES AN EAHP PROVIDE?

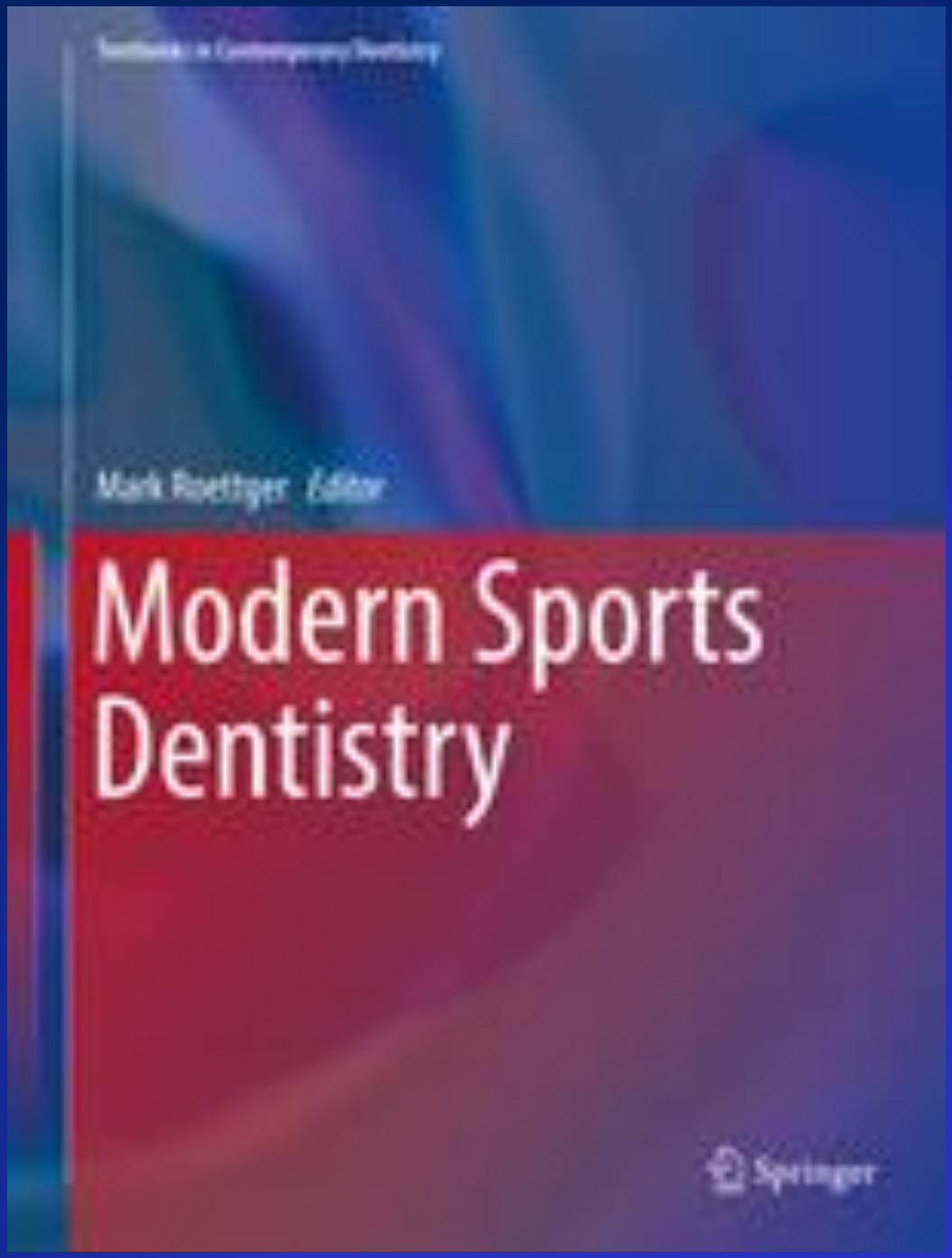
An EAHP provides each NGB team and athlete with a **comprehensive profile** of the **athletes' health status** as well as a summary of **trends** identified by USOPC Sports Medicine in support of high performance.

The team summary is used by the NGB, USOPC Sports Performance and USOPC Sports Medicine as **a guide for creation of high performance training plans**, the **development of future policies** and **prevention programs**. Individual EAHP's should be used as an update of each athlete's current health status, and as a guide for sports performance, sport medicine and NGB coaching staff.

USOPC SPORTS MEDICINE

TEAM USA

AND MY SECOND… THE FIRST TEXTBOOK ON SPORTS DENTISTRY



Let's sum up…

- Sports is an important area in the lives of many, many of our patients
- Orofacial injuries do occur in sports
- The incidence and severity of injuries can be reduced with athletic mouthguards
- Not all mouthguards are created equal
- Being a Sports Dentist entails more of People's lives than just fixing teeth.

ALWAYS REMEMBER TO HAVE FUN!!



Thanks so much!!!



THANK YOU!!!!!











lmills5977@aol.com

OKAY, LET'S MAKE SOME MOUTHGUARDS

















