



**Trinity College Dublin**  
Coláiste na Tríonóide, Baile Átha Cliath  
The University of Dublin



**DUBLIN DENTAL  
UNIVERSITY HOSPITAL**  
OSPIDÉAL DÉADACH  
OLLSCOILE ÁTHA CLIATH

# The Invisible Burden: Oral Health Crisis in Elite Athletes

HPX Performance Nutrition October 2025

**Michael Crowe BDentSc, PhD**  
Associate Professor Food Science, Nutrition and Oral Health

*"The body is your instrument in sport. If you don't take care of it, the music stops."*

— Martina Navratilova

"There is no health without oral health."

— Dr. David Satcher, U.S. Surgeon General

So what happens when elite athletes neglect the foundation of health?



Trinity College Dublin  
Coláiste na Tríonóide, Baile Átha Cliath  
The University of Dublin



DUBLIN DENTAL  
UNIVERSITY HOSPITAL  
OSPIDEÁL DEÁDACH  
OLLSCOILE ÁTHA CLIATH



90% prevalence untreated dental caries

Roettger, M., Mills, S. (2018). Introduction to Sports Dentistry



**Trinity College Dublin**  
Coláiste na Tríonóide, Baile Átha Cliath  
The University of Dublin



**DUBLIN DENTAL  
UNIVERSITY HOSPITAL**  
OSPIDEÁL DEÁDACH  
OLLSCOILE ÁTHA CLIATH

# The Perfect Storm - What factors put athletes at higher risk?

- Physiological
- Dietary
- Behavioural
- Economic



Trinity College Dublin  
Coláiste na Tríonóide, Baile Átha Cliath  
The University of Dublin



DUBLIN DENTAL  
UNIVERSITY HOSPITAL  
OSPIDEÁL DEÁDACH  
OLLSCOILE ÁTHA CLIATH

# Elite athlete study- Diet and Oral Health

Sports Ireland, DCU, DDUH-TCD, UCD

## Discover Public Health

### Research

#### Digital data collection protocols and template design for an oral health survey of elite athletes in Ireland

Annie Hughes<sup>1</sup> · Michael O'Sullivan<sup>1</sup> · Lewis Winning<sup>1</sup> · Oscar Cassetti<sup>1</sup> · Aifric O'Sullivan<sup>2</sup> · Sharon Madigan<sup>3,5</sup> · Brendan Egan<sup>4</sup> · Michael Crowe<sup>1</sup>

Received: 20 March 2024 / Accepted: 23 September 2024



- 88 Irish elite athletes across 7 sports
- Advanced ICDAS assessment
- Multiple 24-hour dietary recalls
- Digital data collection protocols
- Diet, behaviour, and clinical findings

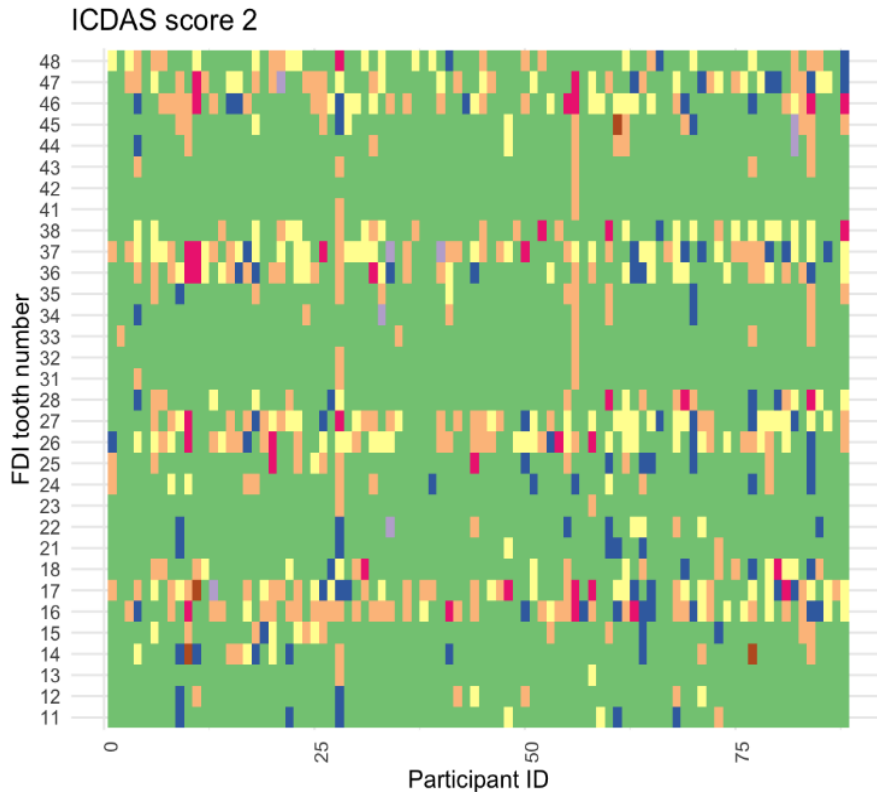


Trinity College Dublin  
Coláiste na Tríonóide, Baile Átha Cliath  
The University of Dublin



DUBLIN DENTAL  
UNIVERSITY HOSPITAL  
OSPIDEÁL DEÁDACH  
OLLSCOILE ÁTHA CLIATH

# The Invisible Burden



- 99% have visual enamel changes (ICDAS  $\geq 2$ )

- 90% localised enamel breakdown

- 60% have underlying dentine involvement (ICDAS  $\geq 4$ )

- 28% distinct cavity



Trinity College Dublin  
Coláiste na Tríonóide, Baile Átha Cliath  
The University of Dublin



DUBLIN DENTAL  
UNIVERSITY HOSPITAL  
OSPIDEÁL DEÁDACH  
OLLSCOILE ÁTHA CLIATH



# Case: Intercounty hurler



- Training compromised by chronic dental pain and sensitivity
- Multiple active carious lesions throughout dentition
- High consumption of energy drinks and sports bars
- Required extensive treatment: root canals, restorations, prescription fluoride, crowns, implant

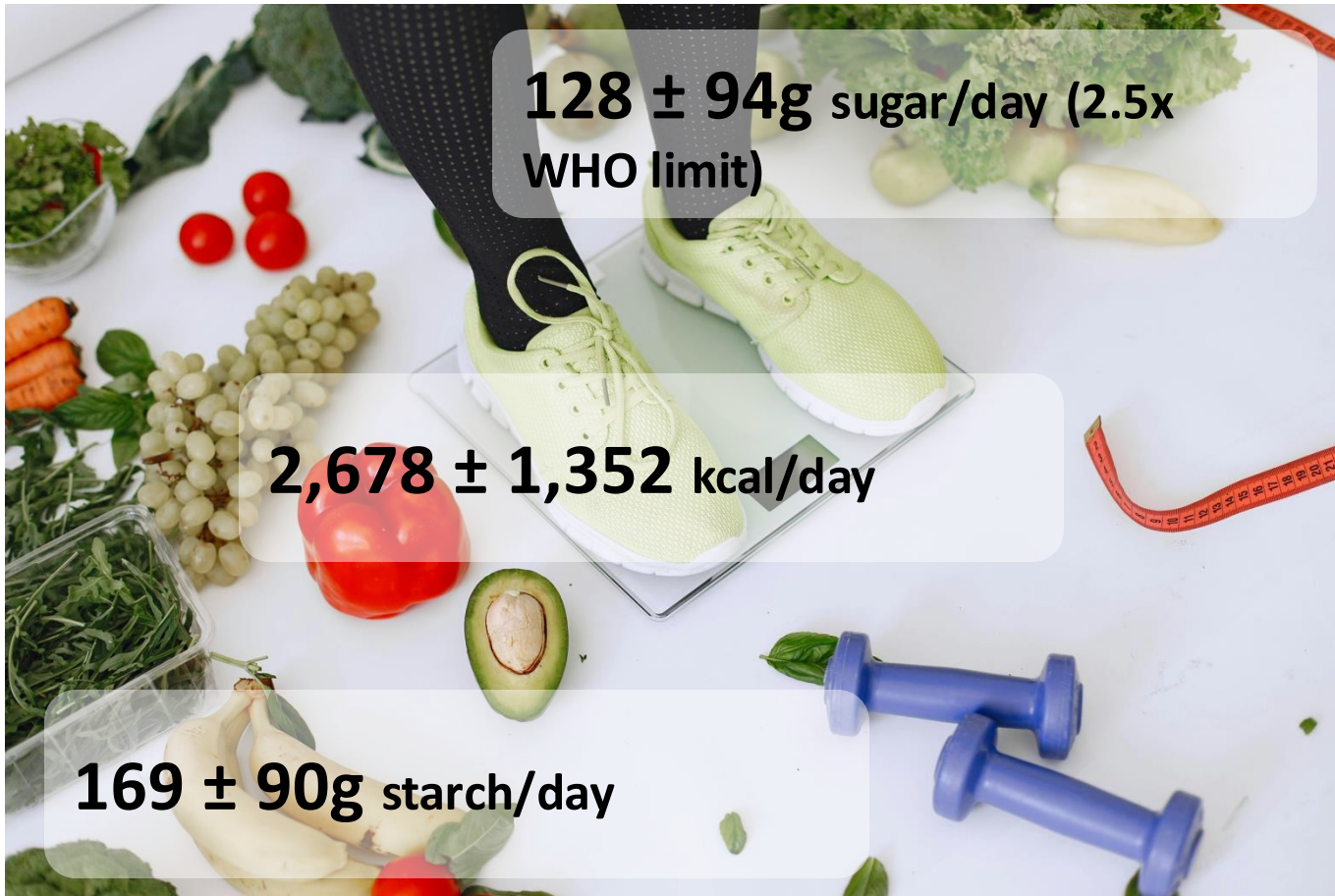


Trinity College Dublin  
Coláiste na Tríonóide, Baile Átha Cliath  
The University of Dublin



DUBLIN DENTAL  
UNIVERSITY HOSPITAL  
OSPIDEÁL DEÁDACH  
OLLSCOILE ÁTHA CLIATH

# The Dietary Reality- Elite Athlete Intake



Trinity College Dublin  
Coláiste na Tríonóide, Baile Átha Cliath  
The University of Dublin

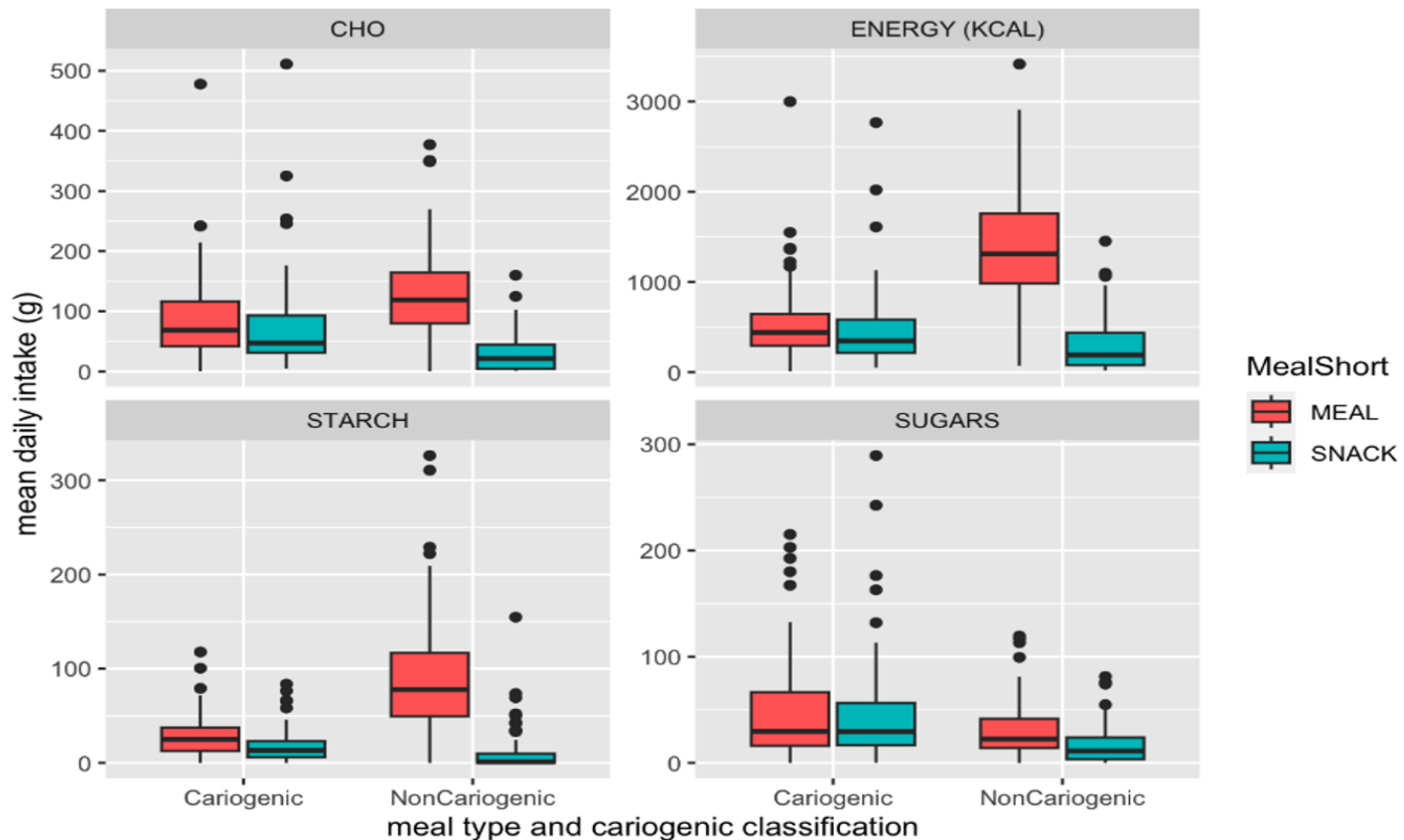


DUBLIN DENTAL  
UNIVERSITY HOSPITAL  
OSPIDEÁL DEÁDACH  
OLLSCOILE ÁTHA CLIATH



# The Starch Surprise - Beyond Sugar

Cariogenic starch intake during snacking predicts high-caries cluster membership



Traditional sugar-focus overlooks cariogenic starch as primary predictor of high-caries cluster

# Public Health vs Performance Guidelines



## Public Health Guidelines

- Limit free sugars to <10% total energy
- Minimise between-meal snacking
- Regular dental check-ups every 6 months

## Athletic Performance Needs:

- Carbohydrates: 5-12g/kg body weight daily
- Frequent fueling during training sessions
- Rapid energy availability for performance
- Strategic timing for glycogen replenishment



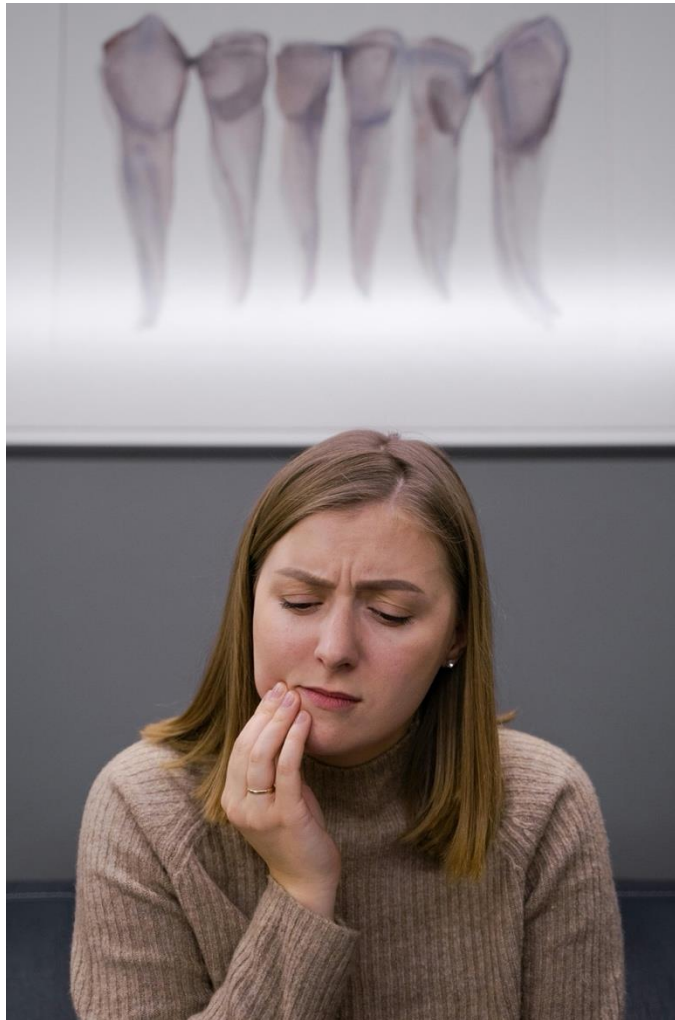
Trinity College Dublin  
Coláiste na Tríonóide, Baile Átha Cliath  
The University of Dublin



DUBLIN DENTAL  
UNIVERSITY HOSPITAL  
OSPIDEÁL DEÁDACH  
OLLSCOILE ÁTHA CLIATH

# Warning Signs *(What Support Staff Should Watch For)*

**Tooth sensitivity  
during/after  
training**



**Visible White  
spots/brown lesions**

**Avoiding cold  
drinks**

**Bad breath  
Bleeding gums**



**Trinity College Dublin**  
Coláiste na Tríonóide, Baile Átha Cliath  
The University of Dublin



**DUBLIN DENTAL  
UNIVERSITY HOSPITAL**  
OSPIDEÁL DEÁDACH  
OLLSCOILE ÁTHA CLIATH

# Evidence-Based Strategies

## TIMING STRATEGIES

**Consume sports nutrition during training**

**Strategic timing with meals**

**Post-training oral hygiene**

## PRODUCTS SELECTION

**Select low-acid sports drinks (pH >5.5)**

**Minimise sugar exposure frequency**

**Choose products with lower cariogenic potential**

**Xylitol-based alternatives**

## INTEGRATION PROTOCOLS

**Interdisciplinary collaboration**

**Pre-season oral health screening**

**Athlete & coach education**

**Evidence-based nutrition-oral health guidelines**



**Trinity College Dublin**  
Coláiste na Tríonóide, Baile Átha Cliath  
The University of Dublin



**DUBLIN DENTAL  
UNIVERSITY HOSPITAL**  
OSPIDEÁL DEÁDACH  
OLLSCOILE ÁTHA CLIATH

# Healthy athletes, peak performance



**Healthy athletes achieving peak performance without compromising oral health**



**Trinity College Dublin**  
Coláiste na Tríonóide, Baile Átha Cliath  
The University of Dublin



**DUBLIN DENTAL  
UNIVERSITY HOSPITAL**  
OSPIDEÁL DEÁDACH  
OLLSCOILE ÁTHA CLIATH



# Key Takeaways

## 1. The Problem

**90% of elite athletes have untreated dental caries**

## 2. The Insight

**Cariogenic starch timing, not just sugar quantity,  
predicts high-caries cluster membership**

## 3. The Solution

**Evidence-based interdisciplinary collaboration between  
sports nutrition and dental providers**



**Trinity College Dublin**  
Coláiste na Tríonóide, Baile Átha Cliath  
The University of Dublin



**DUBLIN DENTAL  
UNIVERSITY HOSPITAL**  
OSPIDEÁL DEÁDACH  
OLLSCOILE ÁTHA CLIATH

# Next Steps

## Future Research Directions:

- Intervention studies testing evidence-based protocols
- Long-term oral health outcomes in elite athletes
- Targeted oral health screening

## Resources:

- **FDI** <https://www.fdiworldddental.org/sports-dentistry>
- [Practical guide sports staff](#)
- [michael.crowe@dental.tcd.ie](mailto:michael.crowe@dental.tcd.ie)



Trinity College Dublin  
Coláiste na Tríonóide, Baile Átha Cliath  
The University of Dublin



DUBLIN DENTAL  
UNIVERSITY HOSPITAL  
OSPIDEÁL DEÁDACH  
OLLSCOILE ÁTHA CLIATH

# Practical guide for Sports Support Staff

Scan to download:

- Complete implementation protocols
- Daily oral hygiene schedules
- Product recommendations
- Warning signs checklist
- Evidence-based food choices

Download Complete Guide



<https://bit.ly/oral-health-guide>



Trinity College Dublin  
Coláiste na Tríonóide, Baile Átha Cliath  
The University of Dublin



DUBLIN DENTAL  
UNIVERSITY HOSPITAL  
OSPIDEÁL DEÁDACH  
OLLSCOILE ÁTHA CLIATH