Practical Guide for Sports Support Staff

Oral Health Protection Strategies for Elite Athletes

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INTRODUCTION

Elite athletes face unique oral health challenges due to high carbohydrate intake, frequent fueling, and training demands. This guide provides evidence-based strategies to protect oral health while maintaining athletic performance.

Key Finding from Research

- **90% of elite athletes have untreated dental caries**
- **Cariogenic starch intake during snacking—not just sugar—is a significant predictor of high-caries risk**

SECTION 1: UNDERSTANDING THE RISK

Why Elite Athletes Are at Higher Risk

Physiological Factors: - Reduced saliva flow during intense exercise - Mouth breathing during training - Decreased saliva pH during exertion

Dietary Factors: - High carbohydrate requirements (5-12g/kg body weight daily) - Frequent fueling and snacking throughout the day - Regular consumption of sports drinks and energy products

Behavioural Factors: - Training schedules that conflict with dental appointments - Fatigue affecting oral hygiene routines - Travel demands disrupting preventive care

Economic Factors: - Performance prioritised over preventive health - Delayed treatment due to training commitments

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SECTION 2: THE THREE-PILLAR APPROACH

PILLAR 1: TIMING STRATEGIES:

When athletes consume carbohydrates matters as much as what they consume.

RECOMMENDED:

- Consume sports nutrition DURING training only

- Limit sports drinks/gels to actual training and competition
- Avoid continuous sipping throughout the day

Strategic timing with meals:

- Consume carbohydrate-rich foods with meals rather than as isolated snacks
- Meal consumption stimulates more saliva production than snacking

Post-training oral hygiene protocols:

- Rinse mouth with water immediately after training
- Wait 30-60 minutes before brushing (avoid brushing acid-softened enamel)
- Use fluoride mouthwash for post-training rinse

Minimise snacking frequency:

- Reduce number of eating occasions per day where possible
- Cluster nutrient intake rather than continuous grazing

PILLAR 2: PRODUCT SELECTION

Not all sports nutrition products carry equal oral health risk.

RECOMMENDED PRODUCTS Sports Drinks:

- Choose low-acid options (pH greater than 5.5)
- Look for products with added calcium
- Consider diluting standard sports drinks by 25-50%

Recovery Nutrition:

- Milk-based recovery drinks (natural sugars + protective proteins + calcium)
- Chocolate milk as cost-effective alternative
- Protein shakes with lower sugar content

Snacks:

- Fresh fruits over dried fruits (less concentrated sugars)
- Nuts and seeds for sustained energy (low cariogenic potential)
- Cheese (protective effect on teeth)

Hydration:

- Water as primary hydration outside training
- Strategic water intake after consuming sports products

Gum:

- Sugar-free gum during training sessions
- Xylitol-containing gum (actively protective)
- Stimulates saliva flow

MINIMISE/AVOID High-Risk Products:

- Sticky energy bars (prolonged oral contact)
- Acidic sports drinks consumed outside training (enamel erosion)
- Frequent snacking on processed carbohydrates
- Sugary drinks between meals
- Chewable energy products that stick to teeth

PILLAR 3: INTEGRATION PROTOCOLS

Effective oral health protection requires team coordination.

For Nutritionists

Timing strategies for fuel intake:

- Build carbohydrate periodisation that considers oral health
- Cluster nutrient intake where performance allows

Product selection guidance:

- Recommend tooth-friendly alternatives when performance impact is minimal
- Educate athletes on pH and sugar content of products

Collaborate with dental providers:

- Share nutrition plans with dental team
- Coordinate on high-risk periods (competition seasons)

For Coaches

Recognise oral health warning signs:

- Tooth sensitivity during/after training
- Visible white spots or brown lesions on teeth
- Complaints of dental pain or discomfort
- Athletes avoiding cold drinks or foods
- Bad breath or bleeding gums
- Performance inconsistencies or concentration issues

Consider dental health in scheduling decisions:

- Allow time for dental appointments during off-season
- Build recovery time for dental procedures into training plans

Support protocol adherence:

- Encourage post-training oral hygiene
- Model good oral health behaviours
- Provide access to tooth-friendly products

For Medical Staff

Conduct regular oral health screening:

- Visual inspection during routine medicals
- Ask about dental pain, sensitivity, bleeding

Establish preventive care protocols:

- Bi-annual dental check-ups minimum
- Pre-season comprehensive dental examinations
- Rapid referral pathways for dental issues

Create clear referral pathways:

- Identify sports dentistry specialists in your region
- Establish communication protocols with dental providers

SECTION 3: SIMPLE PREVENTIVE INTERVENTIONS

Travel Oral Health Kit

Every athlete should have access to:

- Toothbrush (electric or manual, replaced every 3 months)
- Fluoride toothpaste (1450ppm fluoride minimum)
- Fluoride mouthwash for post-training rinse
- Sugar-free gum for training sessions
- Dental floss or interdental brushes

Daily Oral Hygiene Protocol

Morning:

- Brush for 2 minutes with fluoride toothpaste
- Do NOT rinse after brushing (leave fluoride on teeth)
- Spit out excess only

Post-Training:

- Rinse mouth with water immediately
- Use fluoride mouthwash if available
- Wait 30-60 minutes, then brush if needed

Evening:

- Brush for 2 minutes with fluoride toothpaste

- Floss or use interdental brushes
- Do NOT rinse after brushing

During Training:

- Chew sugar-free gum if needed
- Rinse with water after consuming sports drinks
- Avoid continuous sipping; drink, then rinse

Education and Messaging

Key Messages for Athletes:

1. **"Healthy mouth = healthy body"**
    - Oral infections can affect systemic health and performance
    - Dental pain impacts training quality and sleep
2. **"Timing matters as much as content"**
    - When you consume carbs affects caries risk
    - Strategic timing protects teeth without compromising performance
3. **"Your teeth are part of your training equipment"**
    - Neglecting oral health compromises athletic investment
    - Prevention is faster and cheaper than treatment

SECTION 4: THE SCIENCE BEHIND THE STRATEGIES

Understanding the Oral-Gut Microbiome Connection

Emerging research shows links between:

- Oral microbiome composition and systemic inflammation
- Periodontal disease and athletic recovery
- Oral bacteria and gut health

Implications:

- Poor oral health may impact recovery and performance
- Oral infections can contribute to systemic inflammation
- Good oral hygiene supports overall health optimisation

The Starch Surprise

Recent Research Finding:

Traditional sports nutrition focuses on limiting sugars, but research on Irish elite athletes revealed:

- Cariogenic starch intake during snacking was the strongest predictor of high-caries cluster membership
- Sugar intake was similar at meals (48g) and snacks (45g), creating continuous acid exposure
- It's not just WHAT athletes eat, but WHEN and HOW OFTEN

What This Means:

- Focus on reducing frequency of refined carbohydrate/sugars exposure
- Time sugars/modified starch intake strategically (with meals, during training)
- Don't assume "sugar-free" energy products are safe for teeth

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SECTION 5: PERFORMANCE FOODS THAT PROTECT

TOOTH-FRIENDLY OPTIONS

RECOMMENDED Recovery and Refueling:

- Milk-based recovery drinks (natural sugars + protective proteins)
- Plain or chocolate milk
- Greek yogurt with fresh fruit
- Smoothies with milk/yogurt base

Energy Sources:

- Fresh fruits vs dried fruits (less concentrated sugars)
- Bananas (quick energy, less acidic)
- Rice cakes with nut butter
- Oatmeal with milk

Sustained Energy:

- Nuts and seeds (low cariogenic potential)
- Cheese (protective calcium and protein)
- Hard-boiled eggs
- Nut butters

Hydration:

- Water (primary hydration)
- Strategic use of low-acid sports drinks during training only
- Coconut water (less acidic than many sports drinks)
- Diluted fruit juice with added water

AVOID/MINIMISE High-Risk Foods and Drinks:

- Sticky energy bars consumed outside training
- Acidic sports drinks (pH less than 5.5) consumed continuously
- Frequent snacking on processed foods
- Sugary drinks between meals
- Dried fruits as snacks (concentrated sugars, stick to teeth)
- Energy gels used unnecessarily (only during long training/competition)

SECTION 6: PUTTING IT INTO PRACTICE

Sample Daily Schedule for an Elite Athlete

6:30 AM - Morning

- Brush teeth with fluoride toothpaste (no rinse)
- Breakfast with training fuel (clustered intake)

9:00 AM - Training Session

- Water as primary hydration
- Sports drink consumed during training only
- Rinse mouth with water immediately after training

9:45 AM - Post-Training

- Fluoride mouthwash rinse
- Recovery nutrition (milk-based drink + food)

12:30 PM - Lunch

- Balanced meal with carbohydrates timed with meal

3:00 PM - Afternoon snack (if needed)

- Tooth-friendly option (nuts, cheese, fruit)
- Water to drink

5:30 PM - Evening Training

- Sports nutrition during training
- Water rinse after training
- Post-training recovery nutrition

7:30 PM - Dinner

- Main meal with carbohydrates

10:00 PM - Before bed

- Brush teeth with fluoride toothpaste (no rinse)
- Floss or interdental cleaning

KEY: Refined carbohydrate/sugars intake clustered around meals and training, not continuous throughout day

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SECTION 7: WARNING SIGNS - WHEN TO REFER

Support Staff Should Watch For

Immediate Referral Needed:

- Visible tooth decay (brown/black spots)
- Broken or chipped teeth
- Swelling in face or gums
- Persistent bad breath despite good hygiene
- Loose teeth

Non-Urgent but Important:

- Tooth sensitivity during/after training
- Visible white spots on teeth (early decay)
- Bleeding gums when brushing
- Complaints of dental pain or discomfort
- Avoiding cold drinks or foods
- Performance inconsistencies or concentration issues

Action: Establish referral pathway to sports dentistry specialist or general dentist experienced with athletes

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SECTION 8: RESOURCES AND FURTHER READING

Professional Organisations

FDI World Dental Federation - Guidelines for Oral Health in Athletes - Website: https://www.fdiworlddental.org

British Association of Sport and Exercise Medicine - Consensus statement on oral health in sport

Evidence-Based Guidelines

- Ashley, P. et al. (2015). "Oral health of elite athletes and association with performance." British Journal of Sports Medicine, 49(1), 14-19.
- Needleman, I. et al. (2015). "Oral health and impact on performance of athletes participating in the London 2012 Olympic Games." British Journal of Sports Medicine, 47(16), 1054-1058.
- Gallagher, J. et al. (2018). "The impact of poor oral health on the life quality of forensic psychiatric patients." Community Dentistry and Oral Epidemiology, 46, 146-152.
- Hughes, A., O'Sullivan, M., Winning, L., Cassetti, O., O'Sullivan, A., Madigan, S., Egan, B., & Crowe, M. (2024). "Digital data collection protocols and template design for an oral health survey of elite athletes in Ireland." Discover Public Health, 21(1), 114. https://doi.org/10.1186/s12982-024-00239-1

SECTION 9: CONTACT AND COLLABORATION

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Interdisciplinary Collaboration Opportunities

We welcome collaboration with:

- Sports nutritionists developing athlete meal plans
- Strength and conditioning coaches
- Sports medicine physicians
- Athletic trainers and physiotherapists
- High-performance directors

Together we can develop evidence-based protocols that protect both performance and oral health.

KEY TAKEAWAYS

- **90% of elite athletes have untreated dental caries** - this is a hidden crisis
- **Starch timing matters** - not just sugar quantity but when and how often carbs are consumed
- **Strategic solutions exist** - timing, product selection, and team collaboration can protect teeth without compromising performance
- **Interdisciplinary approach essential** - nutritionists, coaches, medical staff, and dental providers must work together

- **Prevention is faster and cheaper than treatment** - invest in oral health as part of athlete development

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This guide is based on research conducted with 88 Irish elite athletes across 7 sports. For the full research findings, please contact Dr. Michael Crowe.

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Citation Requirements

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