

# EXERCISE MANAGEMENT IN DIABETES



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The logo features the word "EPIC" in large, orange, outlined letters. The letter "C" is replaced by a circular icon containing stylized blue and orange figures of people. Below "EPIC" is the word "DIABETES" in large, bold, black letters, and "CONFERENCE" in slightly smaller, bold, black letters.

# EPIC DIABETES CONFERENCE

MAY 3, 2025 CU ANSCHUTZ MEDICAL CAMPUS

EMPOWERING PATIENTS  
FOR  
INDIVIDUALIZED CARE



# CONFLICTS OF INTEREST

## Dessi Zaharieva

**Speaker's Bureau:** Dexcom Inc., Ascensia Diabetes, Insulet Corporation, Medtronic

**Advisory Board:** Diabetes Research Hub, Enhance-d, Tidepool (advisory member)

**Research Support:** Leona M. and Harry B. Helmsley Charitable Trust



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# Are Individuals with T1D Meeting Exercise Recommendations?

Youth with diabetes vs. peers without diabetes:

- Less physically active
- More sedentary
- Lower fitness

Adults with diabetes also often not meeting guidelines:

- 68% well below recommended guidelines
- 50% participants doing <60 mins activity/week

Huerta-Urbe N, et al. *Diabetes Res Clin Pract.* 2023; Finn M, et al. *Irish J Med Sci*, 2022



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# FACTORS THAT MAY AFFECT GLUCOSE LEVELS AROUND EXERCISE





# PROFESSIONAL ATHLETES WITH TYPE 1 DIABETES

Gary Hall Jr



Katie Bone



Jay Cutler



Kate Hall



Phil Sutherland



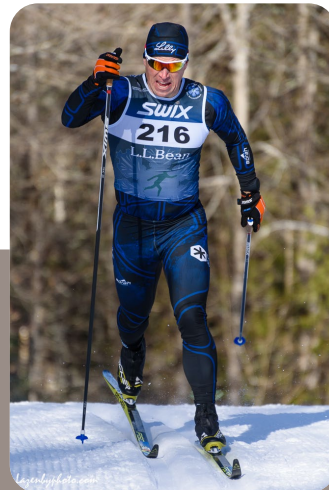
Mandy Marquardt



Max Domi



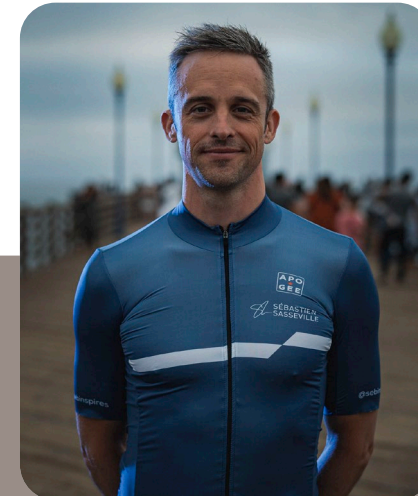
Dessi Zaharieva



Kris Freeman



Missy Foy



Sebastien Sasseville



Chris Jarvis



# WHAT CAN WE DO TO PREVENT LOWS DURING EXERCISE?

Carbohydrate Feeding



Adjust Insulin Doses



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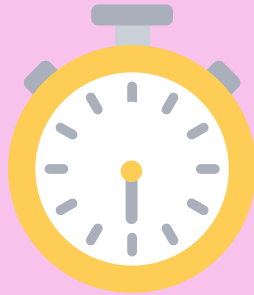


# CARBOHYDRATE FUELING BEFORE EXERCISE



## Brief Exercise (soon after a meal)

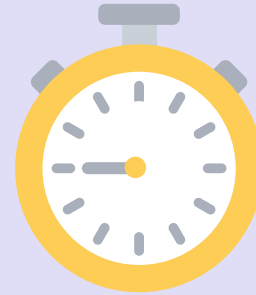
Less than  
30 mins



Usually, no extra snack needed

## Prolonged Exercise

30-45  
mins



Small (10-20 grams) snack

## Endurance Exercise

Longer  
than 1 hour

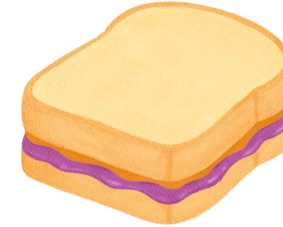
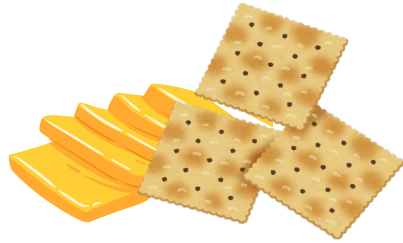


Larger (20-40 grams) snack



# CARBOHYDRATES TO PREVENT VS. TREAT LOWS DURING EXERCISE

## Prevent Hypoglycemia



## Treat Hypoglycemia



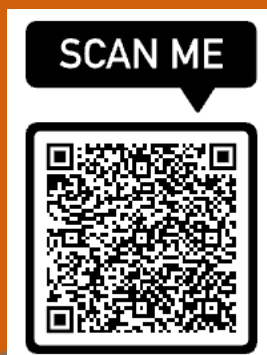
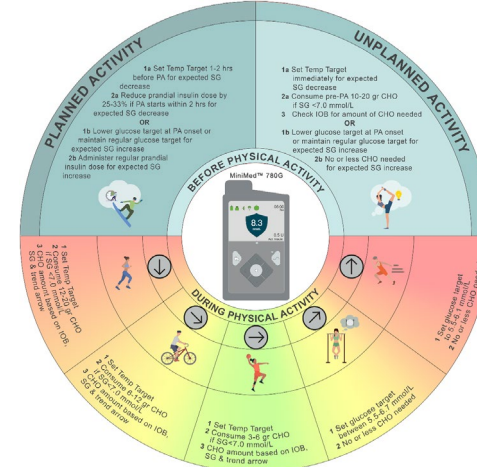
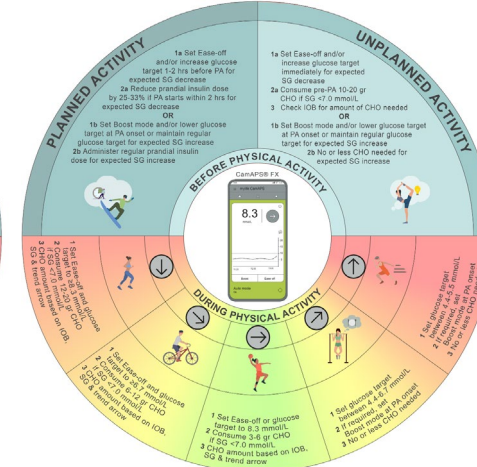
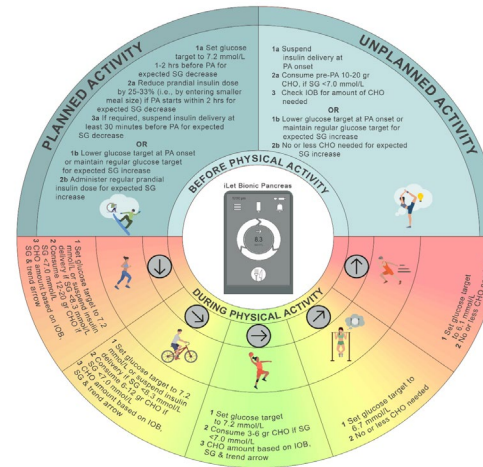
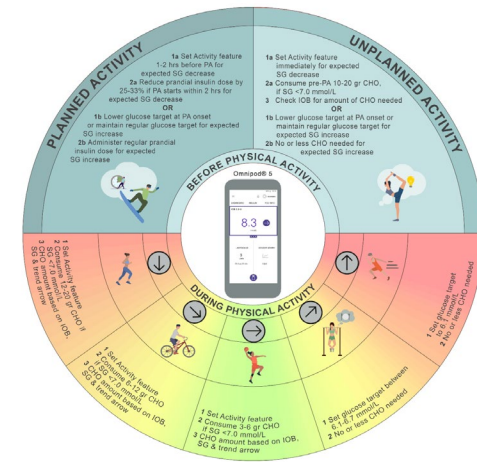
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# EXERCISE STRATEGIES FOR EACH COMMERCIAL AID SYSTEM

1. iLet Bionic Pancreas
2. CamAPS FX
3. DBLG1
4. Omnipod 5
5. MiniMed 780G
6. t:slim X2 Control-IQ / Mobi



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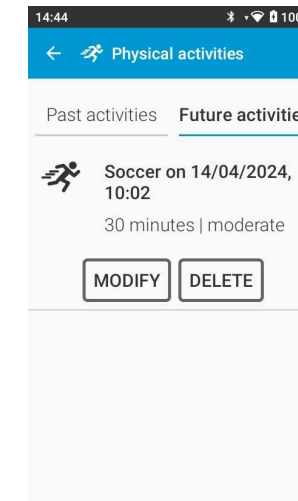
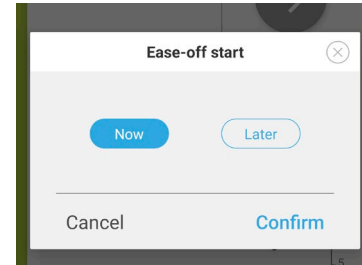
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# GET INTO THE HABIT OF PLANNING AHEAD FOR EXERCISE

Planning around exercise when decrease in glucose levels expected:

1. Set higher glucose target 1-2 hours before exercise
2. Supplement with carbs if:
  - Glucose <126 mg/dL: 5-10 g
  - Glucose <90 mg/dL: 10-20 g
3. Reduce mealtime insulin dose by 25-33% if exercise starts within 2 hours
  - For MDI, may reduce mealtime insulin dose **more** than AID



Moser O and Zaharieva D, et al. Position statement of the EASD and ISPAD. Diabetologia, 2025; 68(2): 255-280.



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# NAVIGATING UNPLANNED OR SPONTANEOUS EXERCISE

Spontaneous activity still poses challenges to AID, largely because:

- IOB may be too elevated for exercise
- Glucose can change rapidly with exercise
- CGM lags behind blood glucose



## Practical summary for unplanned exercise:

1. If using AID system, still recommend setting higher glucose target asap
2. More carbohydrates typically needed before and during exercise due to higher IOB



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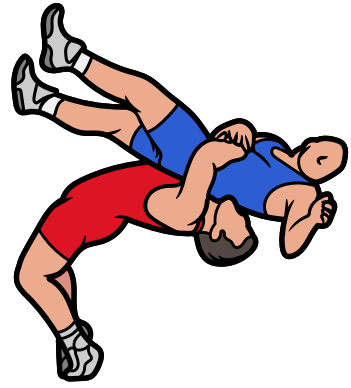
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# SPECIAL CIRCUMSTANCES WITH AID AND EXERCISE: EASD AND ISPAD POSITION STATEMENT

1. Long duration PA events
2. Prolonged pump disconnect during PA
3. Competition stress during PA
4. Water-based activities
5. Contact sports
6. High and low ambient temperature
7. High altitude environments



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# WATER-BASED ACTIVITIES

## Considerations

- Lack of device communication between devices (little to no automation)
- Hypoglycemia must be strictly avoided for safety



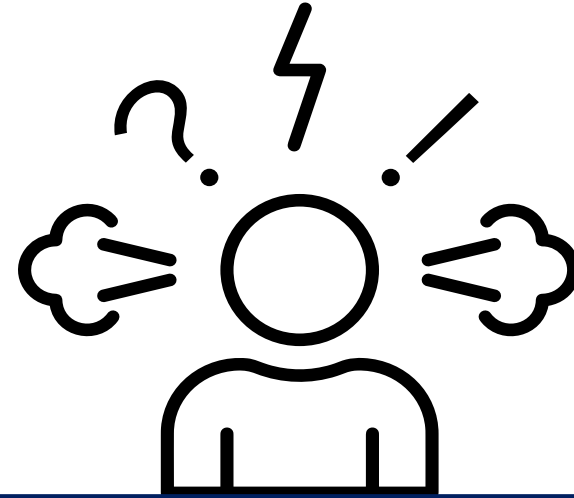
## Possible Strategies

- Avoid high IOB at start of exercise
- Consider insulin suspension with or without disconnecting the AID system, where possible
- If disconnected, consider reconnecting pump and deliver ~50% of “usual basal” every hour

# COMPETITION STRESS WITH EXERCISE

## Considerations

- Stress response
- Hyperglycemia before and during event
- Delayed hypoglycemia following event



## Possible Strategies

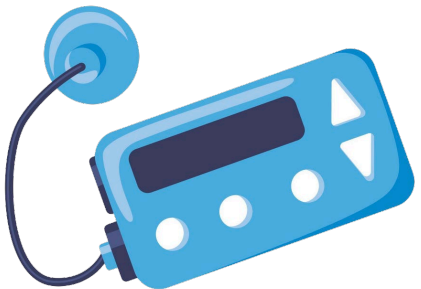
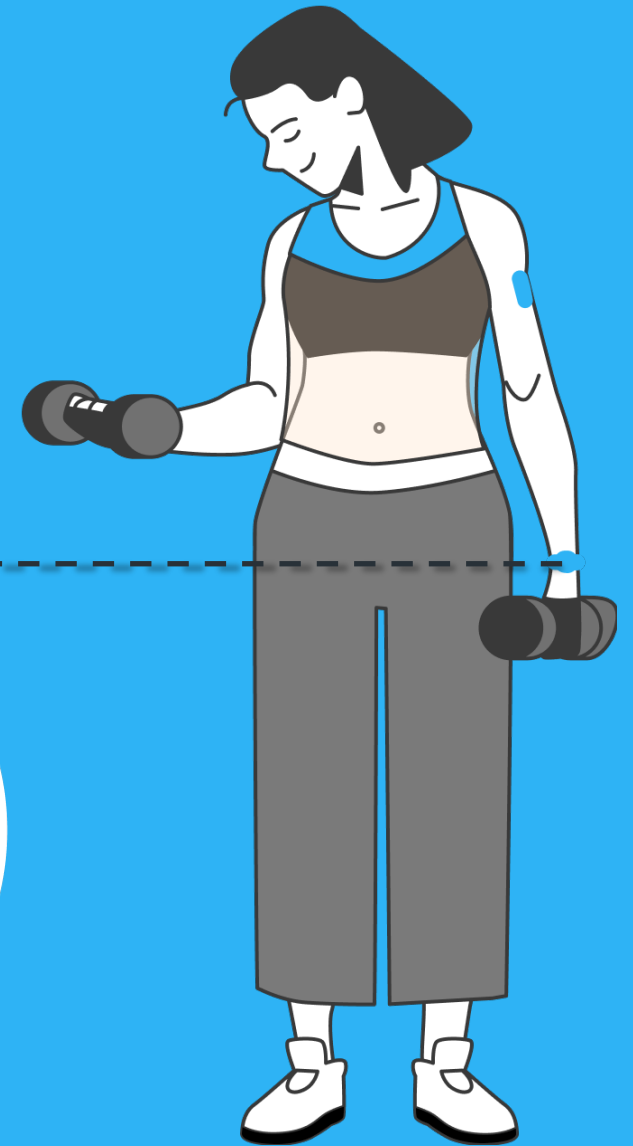
- Monitor IOB: AID system likely increasing insulin delivery with stress response and rising glucose
- Stay hydrated
- May avoid setting higher glucose target before competition
- If glucose rises  $>270$  mg/dl, consider manual correction (example: 50% of usual correction)

# Exercise Resources for Individuals with Diabetes

## DiabetesWise for Exercise



[DiabetesWise.org](https://DiabetesWise.org)





# Website Content Updates



Scuba Diving & T1D



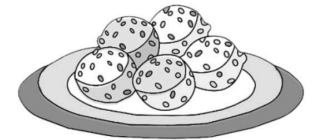
Nutrition for Physical Activity  
with T1D



Some important things to consider:

- Check glucose levels before starting an activity. For more information on preventing lows during physical activity, click [here](#). For more information on how to decide how many grams of carbohydrates you may need, visit [The Glucose Never Lies<sup>\[2\]</sup>](#).
- Hydration is very important with physical activity. Remember that some sports drinks have carbs and may require insulin<sup>[1]</sup>.
- Remember that if you eat before an activity, you may still have insulin on board by the time you start that activity <sup>[3]</sup>.
- Timing is **key** when it comes to pre-activity snacks. Examples to consider include.
- Slower foods, like oatmeal, may need to be eaten about 25 to 30 minutes before physical activity.
- Faster foods, like a banana, may need to be eaten about 15 minutes before physical activity.

Examples of foods to consider **trying before** physical activity:



# NEW: ACTIVITY TRACKERS FOR DIABETES

## Activity Tracker Table:

- 24 watches included
- Brand
- Model
- Image
- Price range
- Age
- Phone requirement
- Battery life
- Insurance eligibility
- CGM compatibility
- Activity features

Device Brand	Device Model	Device Image	Price (USD)	Age	Phone Required	Battery Life	FSA/HSA Eligible	Continuous Glucose Monitoring (CGM) Compatible	Activity Features
Apple	Series 6/7/8/9/10/SE (2 <sup>nd</sup> Generation)		-\$169.00- \$749.00  -From \$249.00 (SE)	N/A	Yes	Up to 18 hours	No	Dexcom (G6 or G7)***  Freestyle Libre 2 and 3****	<b>Activity Tracking:</b> Monitors steps, calories, distance, heart rate, sleep, GPS, blood oxygen, fall detection. Supports a variety of workouts like running, cycling, yoga and swimming. <b>Temperature Sensor:</b> Added on Series 8 and 9 <b>Notifications:</b> Displays notifications from your phone. <b>Water Resistant:</b> Yes
Garmin	vivosmart 5		\$149.99	13+ years	Yes	Up to 7 days	Possibly with Letter of Medical Necessity (LMN)*	No	<b>Activity Tracking:</b> Monitors steps, calories, distance, heart rate, sleep tracking, blood oxygen, stress tracking, GPS, energy levels, hydration and women's health. Tracks activities like walking, running, cycling, and cardio. <b>Notifications:</b> Displays notifications from your phone. <b>Water resistant:</b> Yes
Garmin	Venu Sq 2		From \$249.99	13+ years	Yes	Up to 11 days	Possibly with Letter of Medical Necessity (LMN)*	Dexcom (G6 or G7) •  Freestyle Libre +	<b>Activity Tracking:</b> Monitors steps, calories, distance, heart rate, sleep tracking, blood oxygen, stress tracking, GPS, energy levels, hydration and women's health. Tracks running, cycling, swimming, yoga, and more. Also has sports apps for workouts modes and guided exercises. <b>Water resistant:</b> Yes
Garmin	Venu 3		\$449.99	13+ years	Yes	Up to 14 days	Possibly with Letter of Medical Necessity (LMN)*	Dexcom (G6 or G7) •  Freestyle Libre: +	<b>Activity Tracking:</b> Monitors steps, calories, distance, heart rate, sleep tracking, blood oxygen, stress tracking, GPS, energy levels, hydration and women's health. Tracks running, cycling, swimming, yoga, and more. Also has sports apps for workouts modes and guided exercises. <b>Water resistant:</b> Yes
Garmin	vivoactive 5		\$299.99	13+ years	Yes	Up to 11 days of battery life	Possibly with Letter of Medical Necessity (LMN)*	Dexcom (G6 or G7) •  Freestyle Libre +	<b>Activity Tracking:</b> Monitors steps, calories, distance, heart rate, sleep tracking, blood oxygen, stress tracking, GPS, energy levels, hydration and women's health. Tracks running, cycling, swimming, yoga, and more. Also has sports apps for workouts modes and guided exercises. <b>Water resistant:</b> Yes



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# DiabetesWISER Online Community

- DiabetesWISER launched August 2024
- Over 140 active users
- Over 3,000 views across all exercise topics
- “Ask the Expert” monthly series

## TOP ATTENDANCE:

1. Ask the Expert with Dessi
2. Ask Our Team about Devices
3. G6 vs G7 Discussion



Sign Up Here!



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# TAKE HOME POINTS



Set **SMART** goals and get moving:  
Activity should be **enjoyable!**



Take it **one day at a time** and use these tips as simply a **starting point** for exercise



**Individualize** and don't change too many things at once



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# THANK YOU!

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