

Last Week High Impact Follow-up Question

What lab tests help to distinguish
diabetes types?



What lab tests help to distinguish between T1D and T2D?

Type 1-autoimmune- and insulin deficiency (A+/B-)

- Measure insulin production
 - C-peptide (coupled with glucose)
- Measure autoimmunity
 - GAD-65, Islet Cell Autoantibody, Insulin autoantibody, Zinc transporter 8 antibody

Type 2- insulin resistance (1 of 8 pathophysiologic mechanisms) (A+/B-)

- Testing is rarely needed
- C-peptide (with coupled glucose)
 - Early- normal to high
 - Late or severe hyperglycemia- can be low
- Autoimmune markers- typically negative

What lab tests help to distinguish between T1D and T2D?

Diabetes Type	Type 1 Diabetes	Latent Autoimmune Diabetes Adult (LADA)	Type 2 Diabetes	Monogenic (MODY)
Etiology	Autoimmune	Autoimmune	Insulin resistance	Autosomal dominant defect
Autoimmunity	Present	Present	Not present (GAD can be elevated in obesity)	Not present
Insulin deficiency C-peptide	Low to absent	Normal to low on way to absent	Normal to high at first	Normal to low depending on subtype (> 10 subtypes)
Family History	90% no FH (1:17 risk for siblings of T1D)	Not common	Strong	Strongest 50% penetrance
Testing Resources	TrialNet			MODY Probability Calculator



Diabetes & Exercise in Time of COVID-19

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July 29, 2020

Financial Disclosures

Dessi Zaharieva, PhD:

No relevant financial relationships to disclose

Learning Objectives

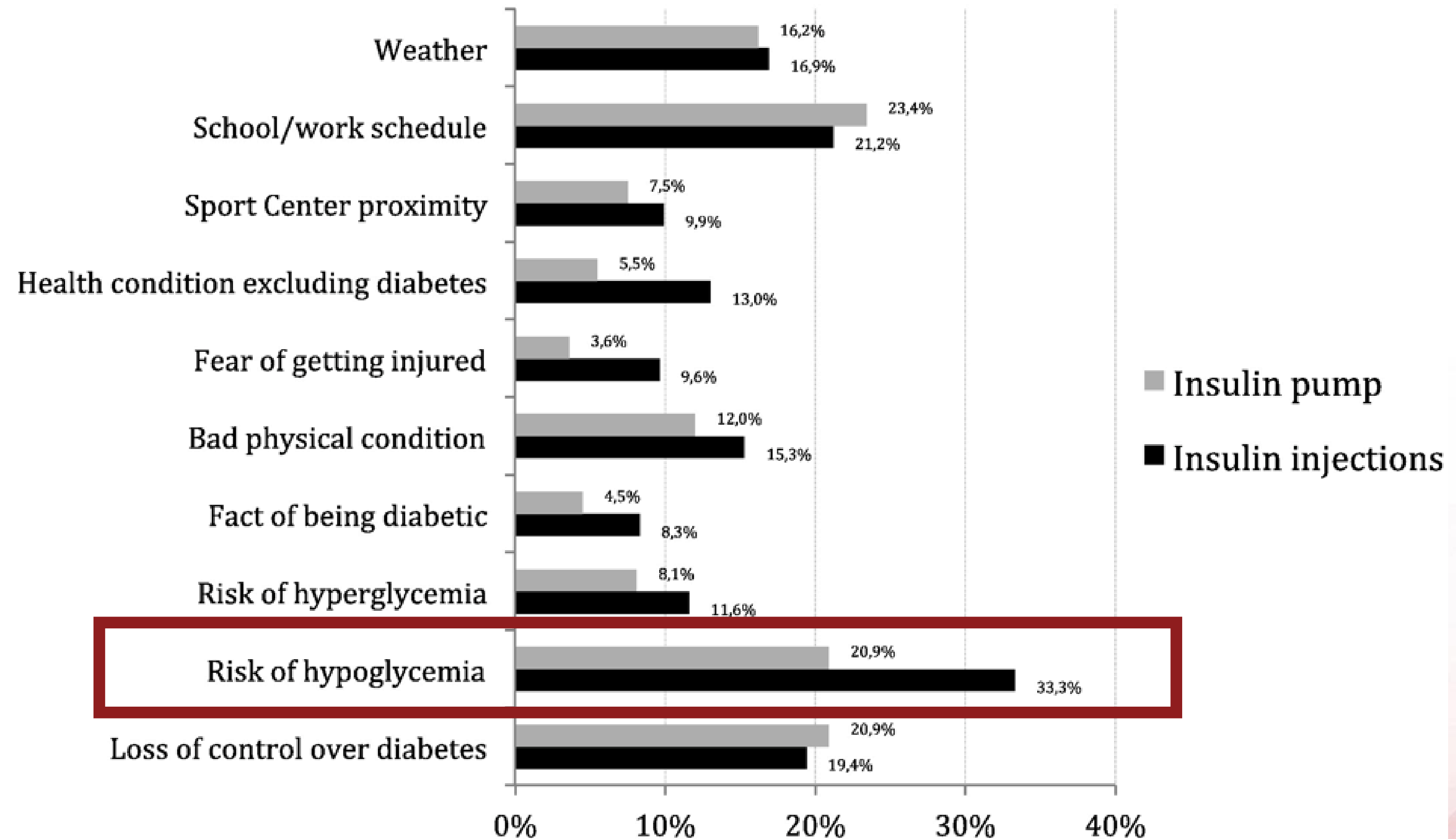
- Utilize exercise guidelines for T1D and T2D
- Describe glucose trends with various exercise modalities
- Recommend diabetes management strategies during and after exercise
- Provide patients with exercise options during shelter-in-place

Exercise Recommendations & Adherence

- 150 min of accumulated physical activity (PA) each week (30 min per day) with no more than 2 consecutive days w/o PA
- Resistance exercise 2-3x per week
- Children and adolescents:
 - 60+ mins per day
- **< 20% patients with T1D exercise more than 2x per week**
- **> 60% patients with T1D are inactive**
- **Adherence to recommendations generally:**
 - **↓ with age**
 - **↓ in women**
- **Study of ~7,000 US adults with T2D estimate that ~85% do not achieve physical activity recommendations**

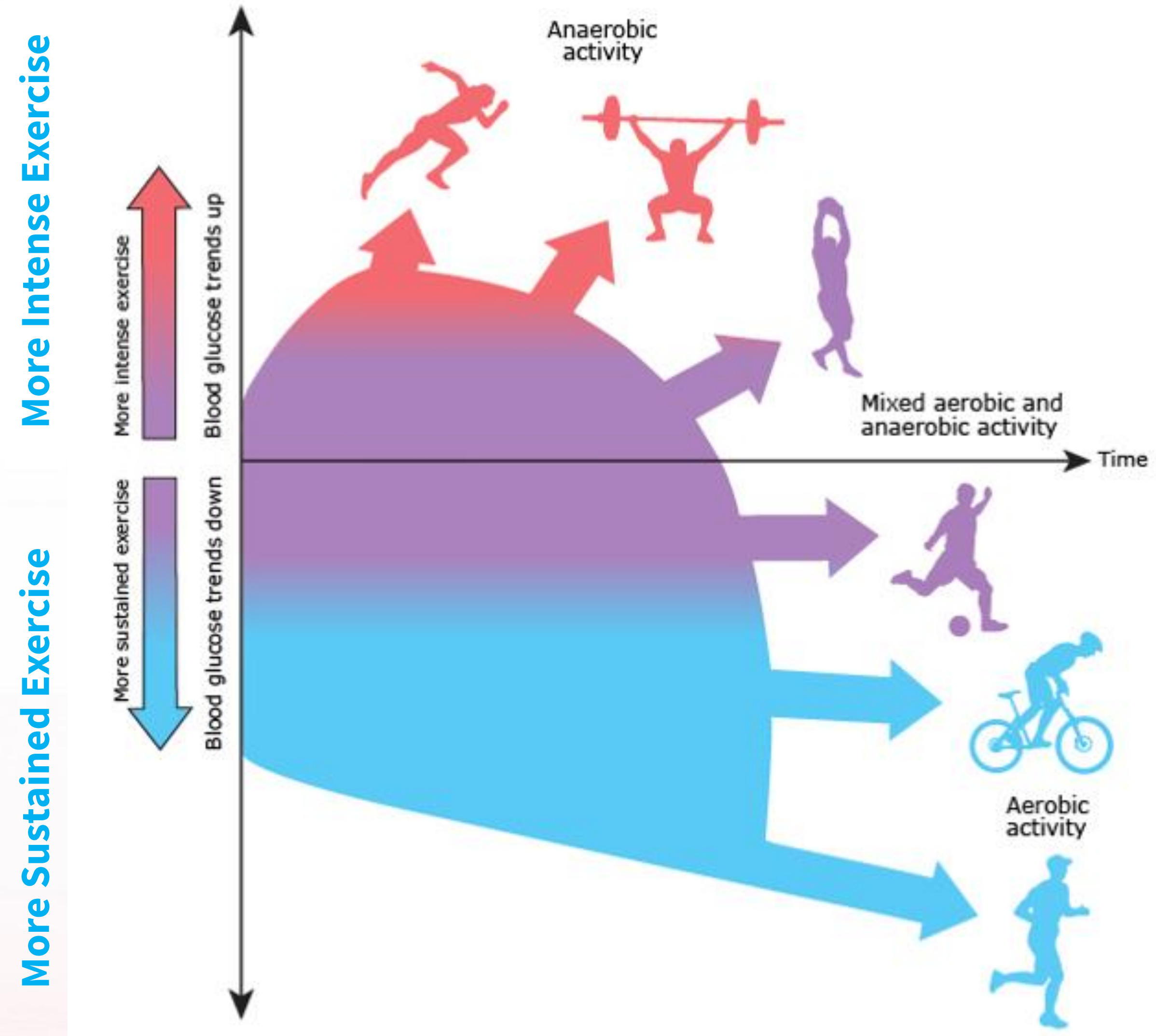
Perceived Barriers to Physical Activity

Despite strategic modifications to avoid hypoglycemia, many individuals with T1D reported **low blood glucose levels** after exercise



Note: There were no significant differences between the two groups for any of the barriers listed

Glucose Variability in Response to Various Exercise Modalities in T1D

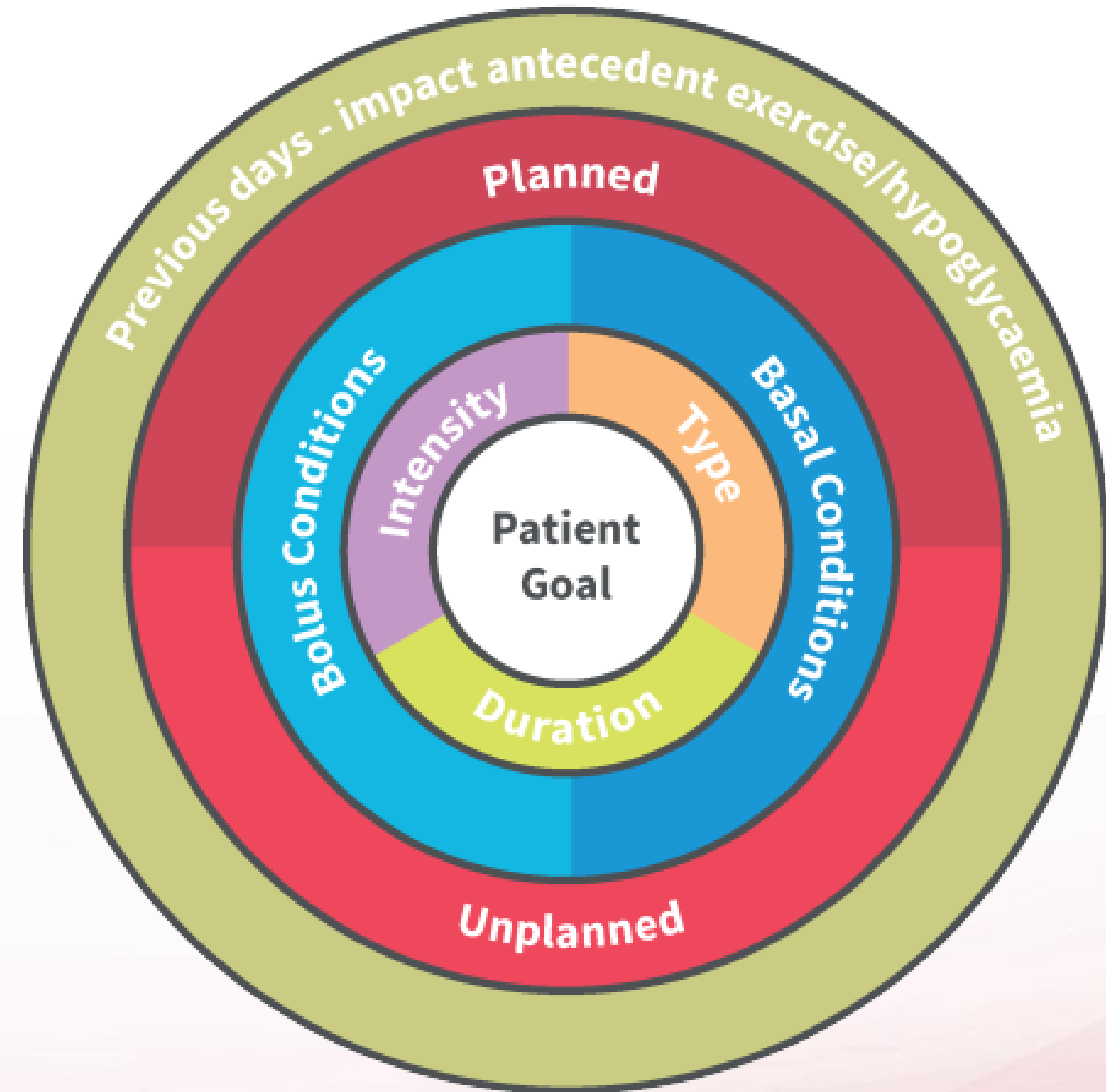
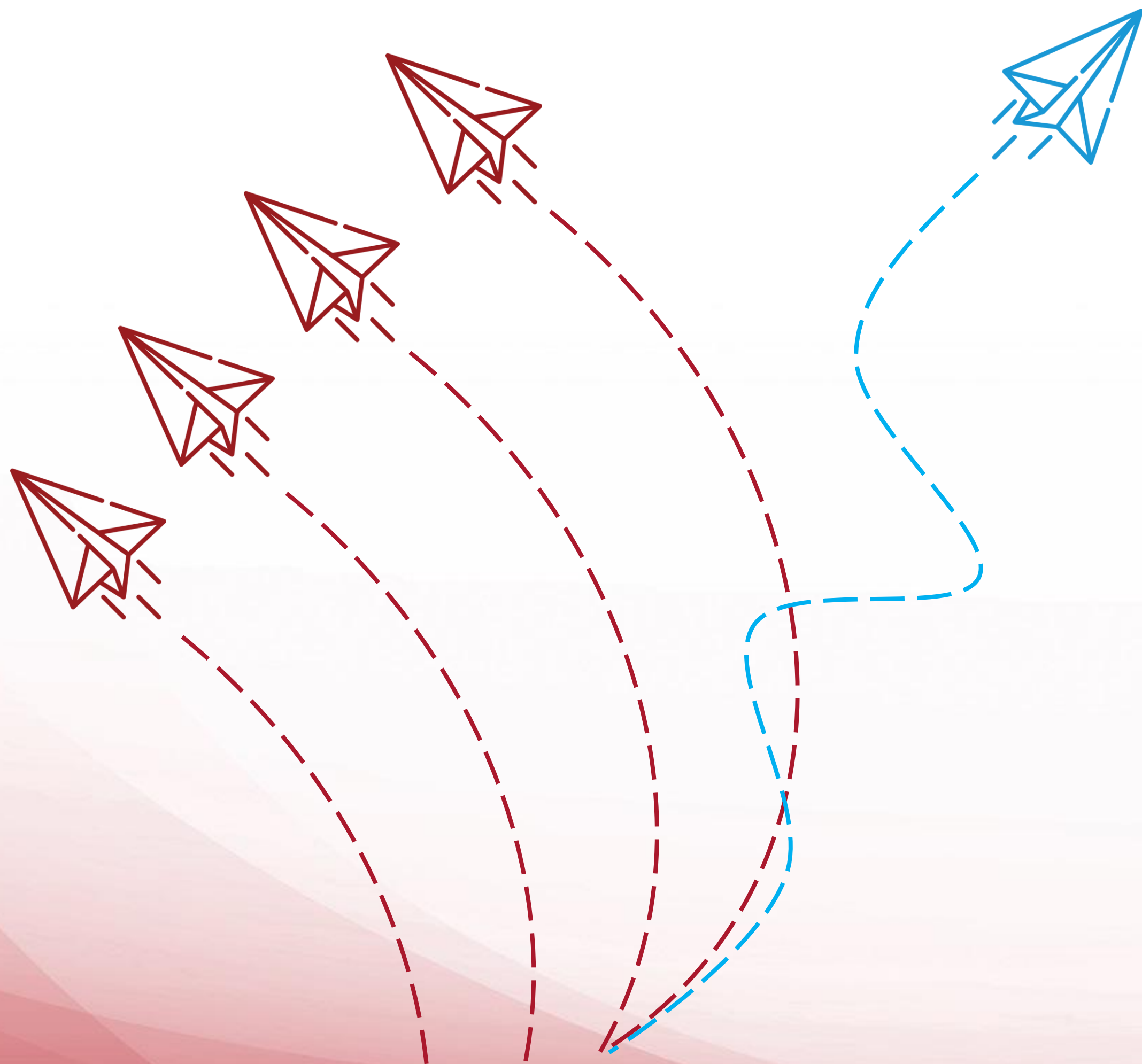


Suggested Blood Glucose Starting Points for Exercise

Blood Glucose Level	Aerobic/Low Intensity	Anaerobic/High intensity
>270 mg/dL	Check ketones If small-to-moderate levels, then light intensity is OK – Consider a 50% correction bolus	Avoid exercise
182-270 mg/dL	OK to start	OK to start, but glucose may ↑ further
126-180 mg/dL	OK to start	OK to start, but blood glucose may ↑
90-124 mg/dL	10g CHO then start Consider insulin adjustments	OK to start
<90 mg/dL	Major hypoglycemia risk 10-20g CHO and re-check before starting Consider insulin adjustments	May be OK to start if predictable rise seen before 10-15g CHO

Modified from Riddell MC, Gallen IW, Smart CE, et al. Exercise management in type 1 diabetes: A consensus statement. The Lancet: Diabetes and Endocrinology, 5(5), 377-390. [https://doi.org/10.1016/S2213-8587\(17\)30014-1](https://doi.org/10.1016/S2213-8587(17)30014-1)

Structured Approach to Exercise Consultation

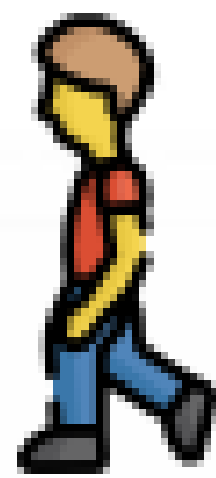


No Equipment at Home? No Problem

Many activities require
no equipment:



Yoga



Walking



YouTube

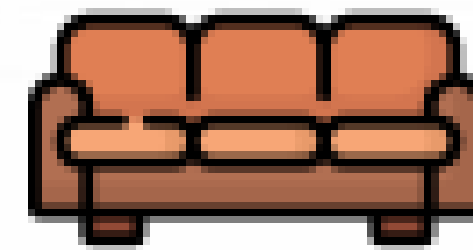


Running



Biking

If prefer resistance-training, can
modify “weights” and use:



Furniture



Backpack



Soup Cans



Water Bottles



Free YouTube Exercise Channels

CorePower Yoga - https://www.youtube.com/playlist?list=PL4z1_0UdNR70GZE9eGuDY_VlQBE78ebQ8&

Free pre-recorded classes

Range from 30-75 mins

Free guided breathing and meditation

Tara Stiles Yoga - <https://www.youtube.com/channel/UCa5OCJkZgtblkaB1sA86XVA>

Low impact modifications

Modifications for small workout space

Yoga with Adriene - <https://www.youtube.com/user/yogawithadriene>

Yoga for weight loss

Yoga for self love & meditation

Yoga for pain management

Yoga with Kassandra - <https://www.youtube.com/user/yogawithkassandra>

Offers short 10 minute videos

Also offers classes from beginner to advanced





Free YouTube Exercise Channels

Fitness Blender - <https://www.youtube.com/user/FitnessBlender>

>500 at-home workouts (HIIT, strength, pilates, stretching, etc.)

Bodyweight (no equipment) workouts

Discounted workout plans during pandemic (<https://www.fitnessblender.com/workouts-programs>)

BodyProject - <https://www.youtube.com/channel/UCFjc9H89-RpWuIStDqhO7AQ/featured>

Activities for everyone

High-intensity cardio, resistance training, pilates, and yoga

Can create a free account for other videos not on YouTube

The Body Coach TV - <https://www.youtube.com/c/TheBodyCoachTV/videos>

Weekly workout videos

Beginner to advanced, plus seniors specific workout

PopSugar Fitness - <https://www.youtube.com/user/popsugartvfit>

Hundred of free workout videos

Dance routines, beginner exercises, full-body routines, no equipment

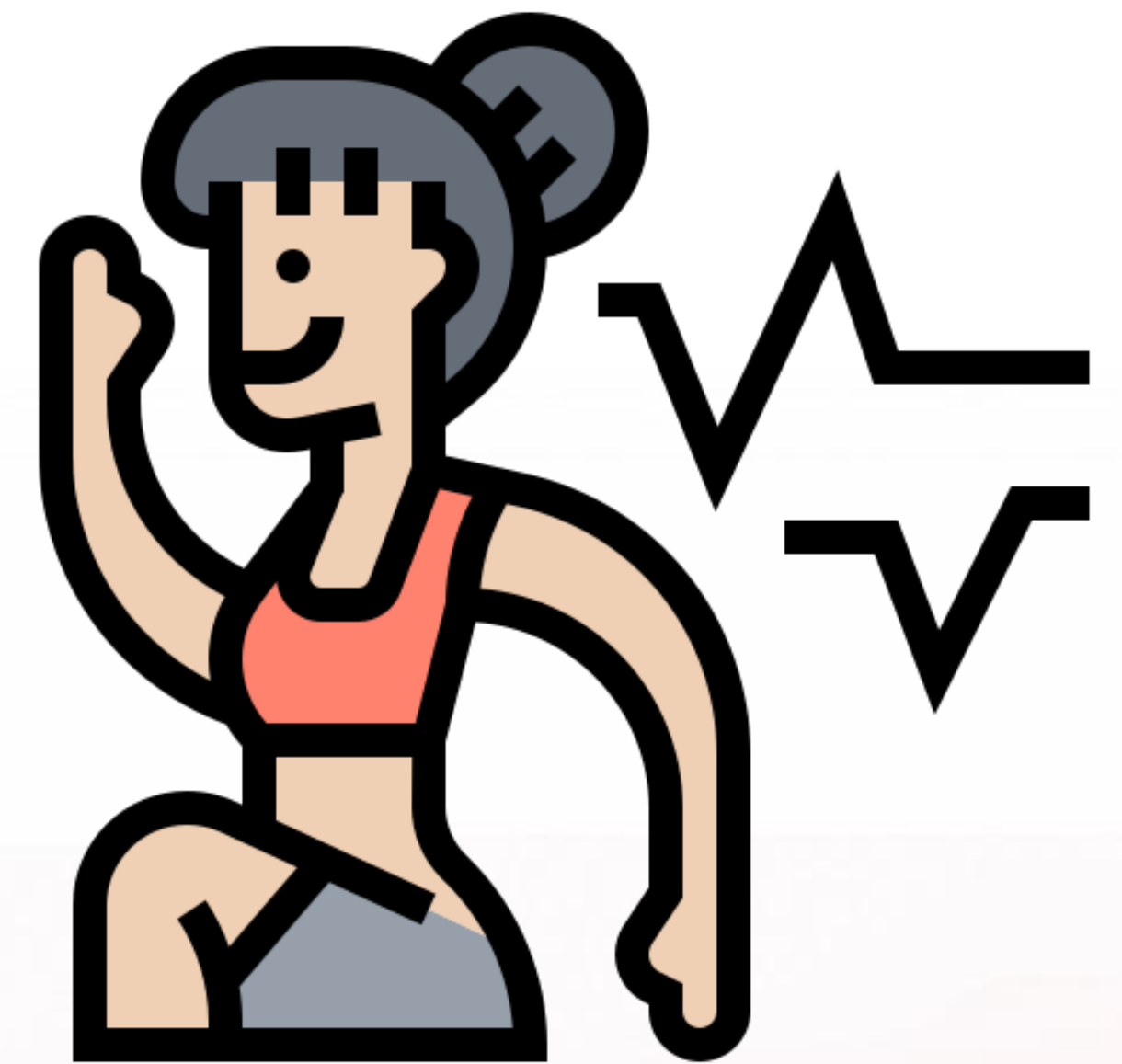


Free Exercise Apps or Websites

Need to **create an account** (for some)

No credit card information required

- Nike Training Centre (NTC)
- Nike Run Club (NRC)
- ToneitUp
- FitOn
- 7 Minute Workout
- **GlucoseZone (for T1D and T2D)**



Free Exercise Apps or Websites

(But, Need Credit Card Info to Sign-Up)

Need to create an account (credit card information required)

Make sure to cancel before trial ends

- **LesMills**

- Free for 14 days
- Variety of activities, even for kids

- **Strava**

- Free for 30 days
- For cyclists and runners
- Share activities with friends and followers
- Designed by athletes, for athletes

- **Peloton**

- Free for 30 days
- Yoga, meditation, strength, etc.



Additional Patient Resources

Exercise Videos for Kids:

- **Cosmic Kids Yoga:** <https://www.youtube.com/c/CosmicKidsYoga/videos>
- **Pancake Manor:** <https://www.youtube.com/playlist?list=PL1ZLcq6glzORs-7WxZ08vtgDn4TN5DIjV>
- **GoNoodle:** <https://www.gonoodle.com/>

Exercise for Limited Mobility or Exercise Beginners:

- **C25K:** Couch to 5K app
- **Body Project:** Beginner videos
- **Kaiser Permanente Thrive (Limited Mobility) YouTube**
 - E.g. Seated upper body exercise video

Digital Health Technology & Diabetes Management

Table 1. Highlights of some apps that assist with lifestyle management in type 1 & type 2 diabetes

Application/Website	Diabetes Target Population	Active Coaching Function for Exercise	Personalized Feedback, Reminders, Logbook	Free Version/With Costs
T1Exercise www.syzible.com	Type 1	-	+	+/-
DiaBits www.diabits.com	Type 1	+	+	+/-
Glucose Buddy www.glucosebuddy.com	Type 1 & Type 2	-	+	+/-
One Drop www.onedrop.com	Type 1 & Type 2 <i>(insulin dependent)</i>	-	+	+/+
Bant www.bantapp.com	Type 1	-	+	+/-
MySugr www.mysugr.com	Type 1 & Type 2	-	+	+/+
GlucoseZone www.glucosezone.com	Type 1 & Type 2	++	+	+/-



Thank you!

Questions?

On-Demand Webinars

- COVID-19 Leveraging Telehealth and Remote Monitoring to Support Patients with Diabetes
 - <https://stanford.cloud-cme.com/LeveragingTelehealthRecorded>
- Diabetes Patient Needs in the Time of COVID-19
 - <https://stanford.cloud-cme.com/DiabetesPatientNeedsRecorded>
- Continuous Glucose Monitoring (CGM) & Beyond A1c Targets in the Time of COVID-19
 - <https://stanford.cloud-cme.com/CGMrecorded>
- Platforms to Support Remote Diabetes Monitoring in your Practice in the Time of COVID-19
 - <https://stanford.cloud-cme.com/RemoteDiabetesMonitoringRecording>
- COVID-19 & Sick Day Management for People with Diabetes
 - <https://stanford.cloud-cme.com/SickDayManagementRecorded>
- Identifying High-Risk Diabetes Patients for COVID-19 Triage
 - <https://stanford.cloud-cme.com/HighRiskPatientsTriageRecorded>
- Insulin Dosing & Therapeutic Inertia in the Time of COVID-19
 - <https://stanford.cloud-cme.com/InsulinDosingRecorded>
- Tackling Therapeutic Inertia: American Diabetes Association Standard of Care Updates
 - <https://stanford.cloud-cme.com/DiabetesTherapeuticInertiaRecorded>
- DPP-4 Inhibitor, GLP-1 Receptor Agonist, & SGLT Inhibitor Therapies in the Time of COVID-19
 - <https://stanford.cloud-cme.com/InhibitorTherapiesRecorded>

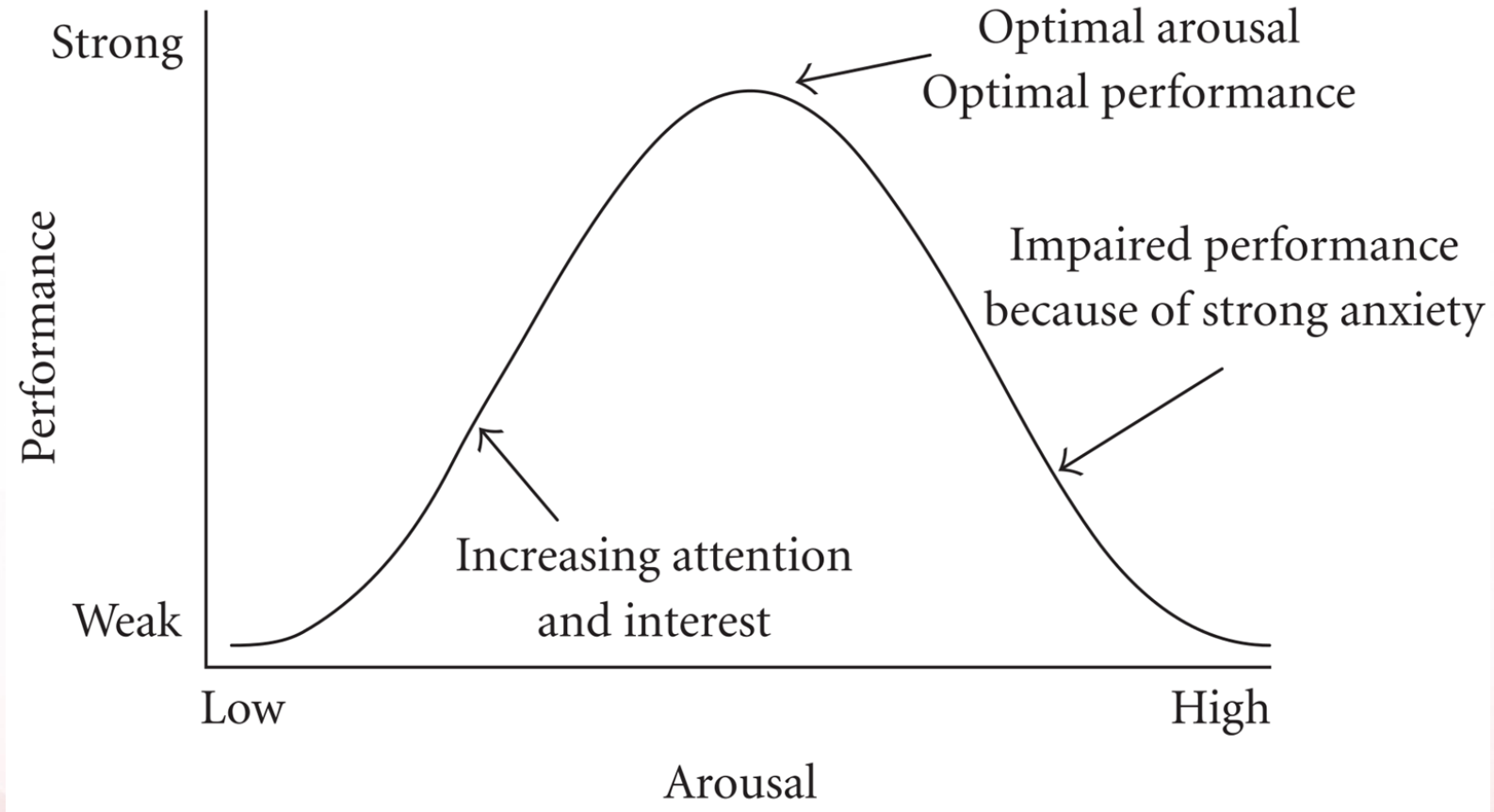
Submitted Question:

07/29/20

What strategies can be used to manage anxiety during COVID-19?



Yerkes-Dodson Law



Anxiety Management Strategies

- First step: Be aware of your stress levels
- Temper expectations of yourself and others
 - Cut down on daily objectives at work and home
 - Re-evaluate your priorities on a regular basis
- Take care of your body
 - Sleep, eat balanced meals, stretch/exercise
- Take care of your mind
 - Schedule time to unwind/take breaks
 - Connect with others; discuss stressors
- Connect with mental health services if functionally impaired and/or anxiety symptoms do not improve

Online Resources

- CDC recommendations for managing anxiety:
<https://www.cdc.gov/coronavirus/2019-ncov/prepare/managing-stress-anxiety.html>
- MedPage article on Staying Sane and Current on COVID-19:
<https://www.medpagetoday.com/infectiousdisease/covid19/85660?>
- SAMHSA handout on social distancing, quarantine, and isolation:
<https://www.samhsa.gov/sites/default/files/tips-social-distancing-quarantine-isolation-031620.pdf>