


# WALK A MILE AFTER A MEAL WITH A SMILE – CAN THE OLDER ADULT WITH DIABETES DO?



DR.SHEELAVATHI N,  
PRINCIPAL  
SRI SHANMUGHA COLLEGE OF NURSING FOR  
WOMEN  
SANKARI,SALEM



“Exercise is the best insulin sensitizer on the market; better than any medication we currently have available”

Bartol

# OBJECTIVES

- Principles of exercises for diabetes
- Screening criteria for diabetes
- Benefits of exercise for older adults
- Safe exercise for older adults
- Guidelines for exercise
- Benefits of walking after a meal



# INTRODUCTION

As the general population continues to age, the number of adults 65 years or older affected by diabetes is also increasing.

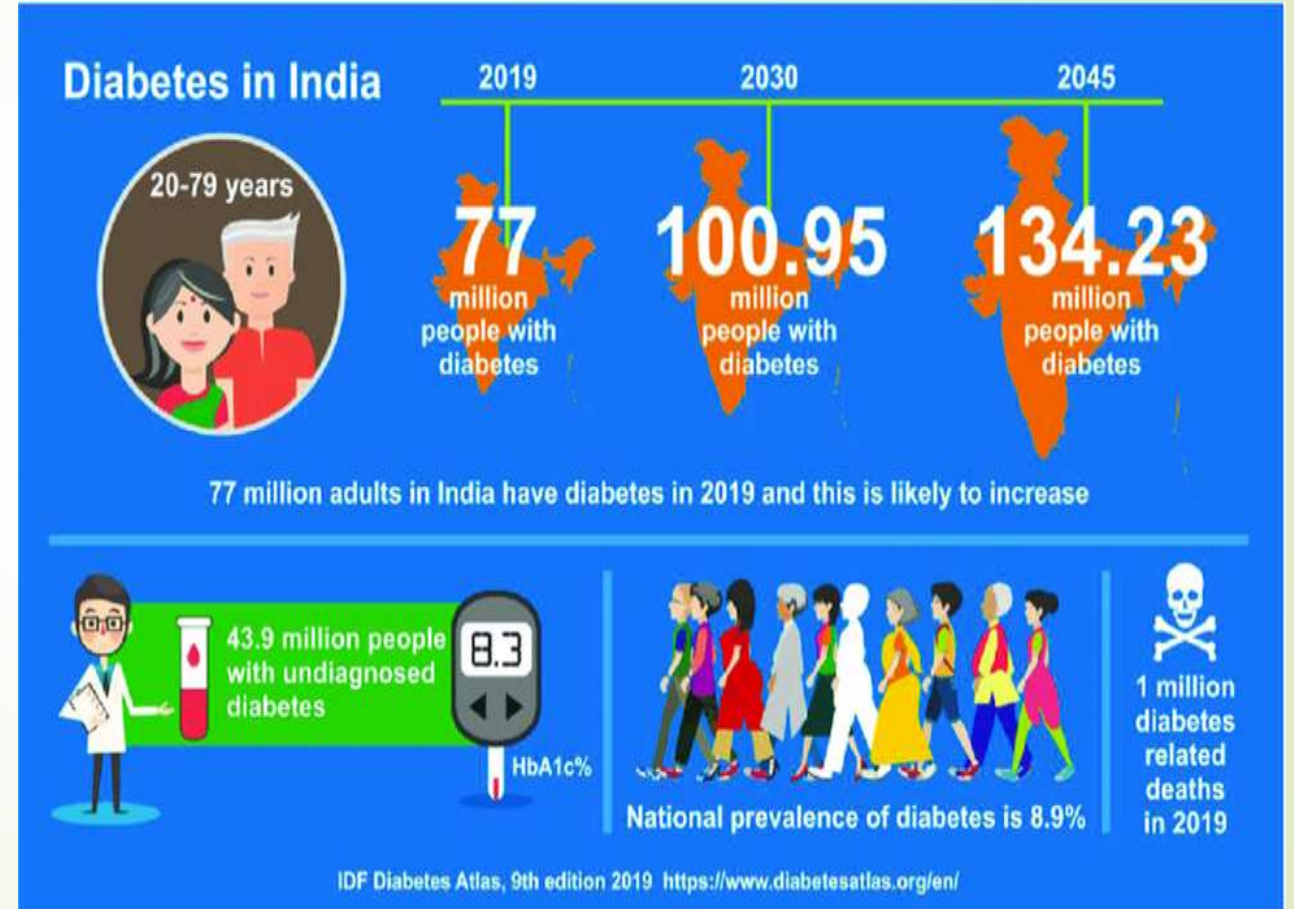
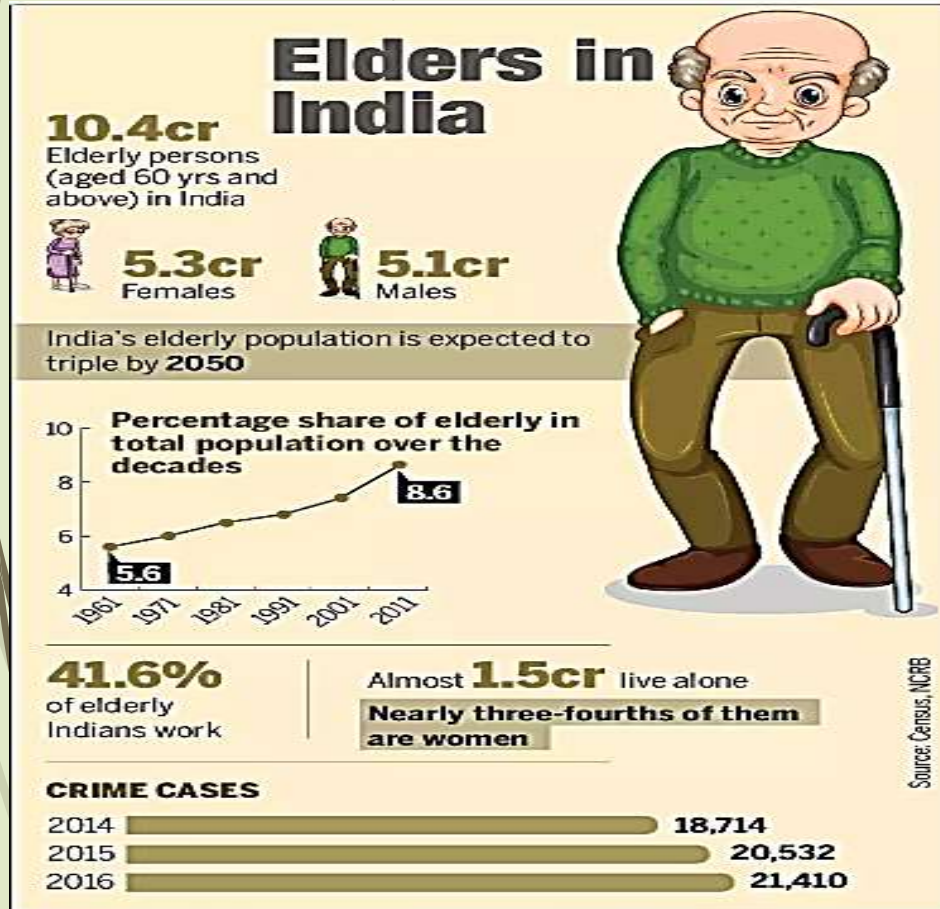
An estimated 33% of adults aged 65 or older have diabetes.

This population is more at risk of developing diabetes-related complications like hypoglycemia (low blood sugar), kidney failure, and heart disease than younger people living with diabetes. (**Endocrine Society**-January 24, 2022)





# PREVALENCE OF DIABETES IN OLDER ADULTS



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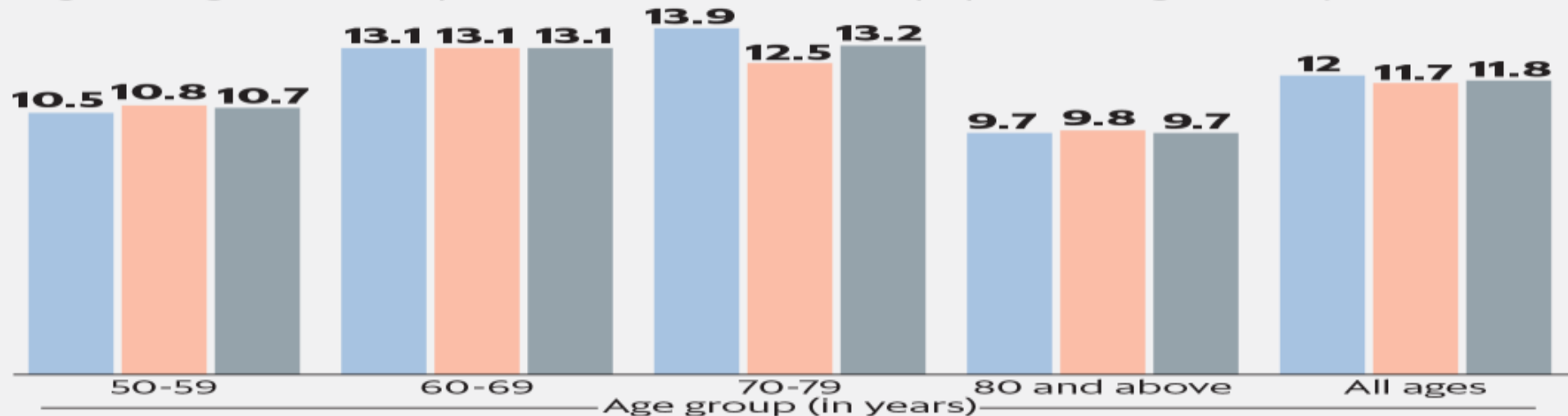
## MINT GRAPHITI

### Health risks

The prevalence of diabetes is 11.8% in people aged above 50, according to a govt survey. Highest prevalence of diabetes was observed in the 70-79 years age group at 13.2%.

Male Female Total (in %)

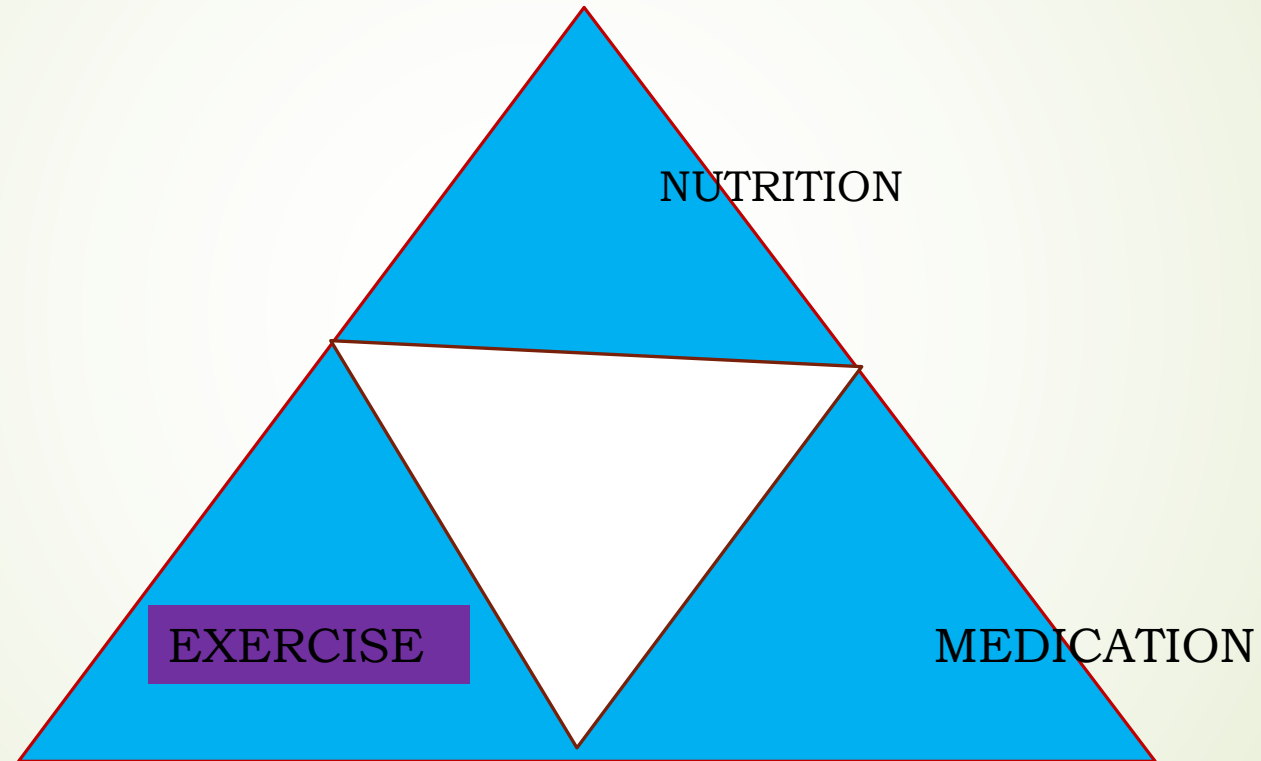
Age- and gender-wise prevalence of diabetes in population aged  $\geq 50$  years



Source: National Diabetes and Diabetic Retinopathy Survey report 2019



# DIABETES TRAIID



# EXERCISE & DIABETES

<https://www.activateclinic.com.au/exercise-insulin-diabetes/>

**PHASE-I**  
**Eating**

**PHASE-II**  
**Digestion**

**PHASE-III**  
**Release of nutrients to blood stream**

**PHASE-IV**  
**Nutrients travels via blood available for use**

**Insulin released to prompt tissue to take in glucose from blood**

**Without exercise no change in glycogen stores**

**Muscles cannot respond to insulin as glycogen stores are still full**

**Blood glucose remains elevated -insulin continues to release**

**Sustained insulin release can lead to type 2 DM**

**After exercising glycogen storage depleted**

**Muscle responds to insulin and take glucose to replace glycogen stores**

**Blood sugar decreases Insulin release stopped**





# PRINCIPLES TO FOLLOW WHILE EXERCISE

## FITT PRINCIPLES

- **F-Frequency** - Exercising 4 to 6 times a week
- **I-Intensity** -30 to 40 min of exercise at 50 -60 % of target heart rate
- **T-Time** –Morning is a ideal- Type -1 diabetes, afternoon/ evening for Type -2 diabetes
- **T-Type**- SAFE exercises are recommended



# SCREENING CRITERIA TO DETERMINE RISK FOR EXERCISE

- ✓ Greater age
- ✓ Presence of type I diabetes for >15 years
- ✓ Presence of type II diabetes for >10 years
- ✓ Additional risk factor for cardiovascular disease
- ✓ Foot wounds or neuropathy, retinopathy.



benefits of

# SENIOR EXERCISE



## IMMUNE SYSTEM

a strong, healthy body can fight off infections and diseases more quickly



## HEART HEALTH

exercise lowers the risk of heart disease and high blood pressure



## BONE DENSITY

exercise helps prevent bone loss, which reduces the risk of osteoporosis and accidental falls



## HEALTHY BRAIN

studies have shown that exercise can reduce the risk of Alzheimer's disease and other dementias



## SLEEP BETTER

you'll fall asleep quicker and sleep better throughout the night



## DIGESTION

exercise aids in waste elimination and the functioning of your gastro-intestinal tract



# BENEFITS OF EXERCISE ON DIABETES

- ❖ Improves insulin sensitivity
- ❖ Reduces the risk of cardiac disease, hypertension, orthotic diseases, and unhealthy weight gain
- ❖ Keeps one flexible and agile
- ❖ Helps relieve stress, anxiety and prevents depression
- ❖ Increases strength and stamina
- ❖ Promotes sound sleep
- ❖ Increases metabolic rate and digestion





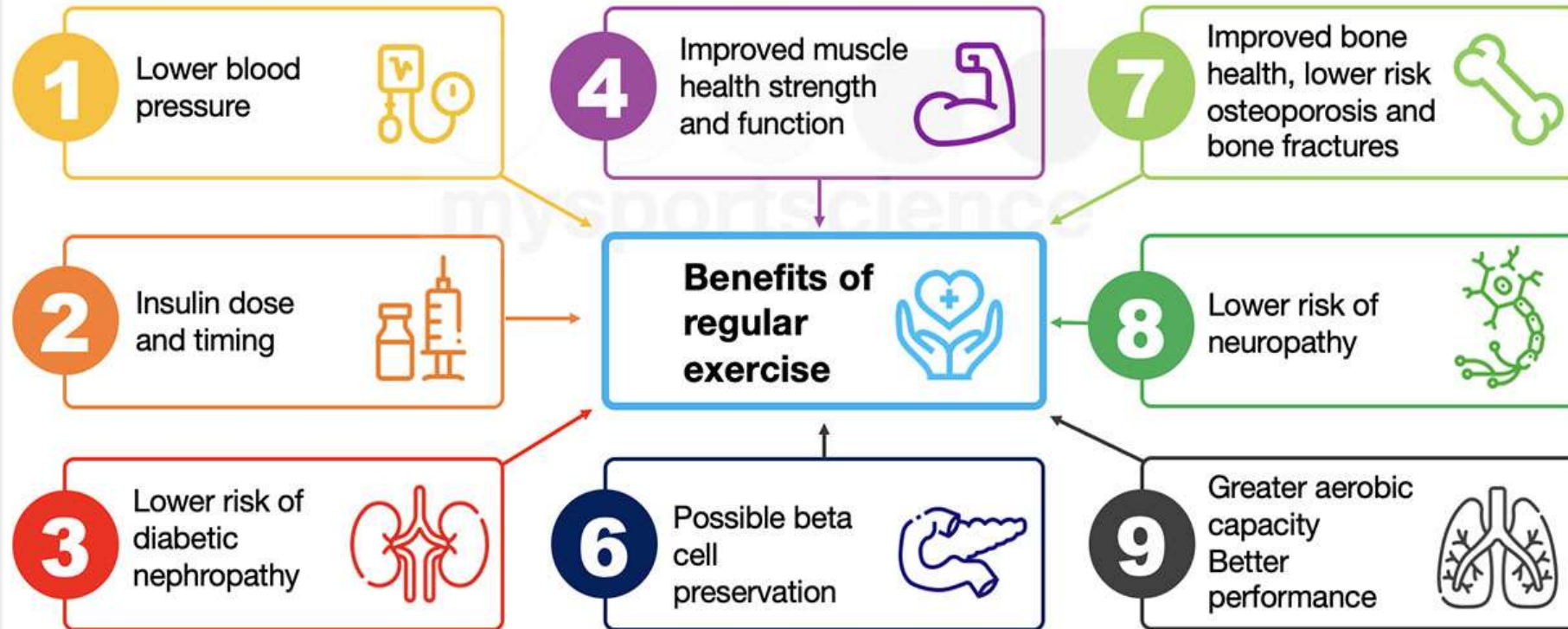
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- ❖ Lowers lipids
- ❖ Delays the process of aging
- ❖ Recommendation is about 150 minutes of aerobic activity or its equivalent/week along with some resistance training at least twice a week and flexibility exercises. People with diabetes need an extra quick acting carbohydrate snack before the exercise and during the exercise, if the exercise period extends the daily-recommended routine.





# Benefits of exercise in individuals with Type 1 diabetes



# EXERCISE & TYPE-1 DIABETES

- Improve physical fitness
- Increase self confidence
- Improve CV function & CHD profile
- It has no direct effect on glucose control
- Proper timing of exercise & insulin
- Avoid strenuous exercise before bed time



# EXERCISE & TYPE-2 DIABETES

- Improve physical fitness & reduce fat %
- Increase self confidence
- Improve CV function & CHD profile
- Improve glucose control
  - Improving insulin sensitivity
  - Improving Glu T4(Glucose transporters)

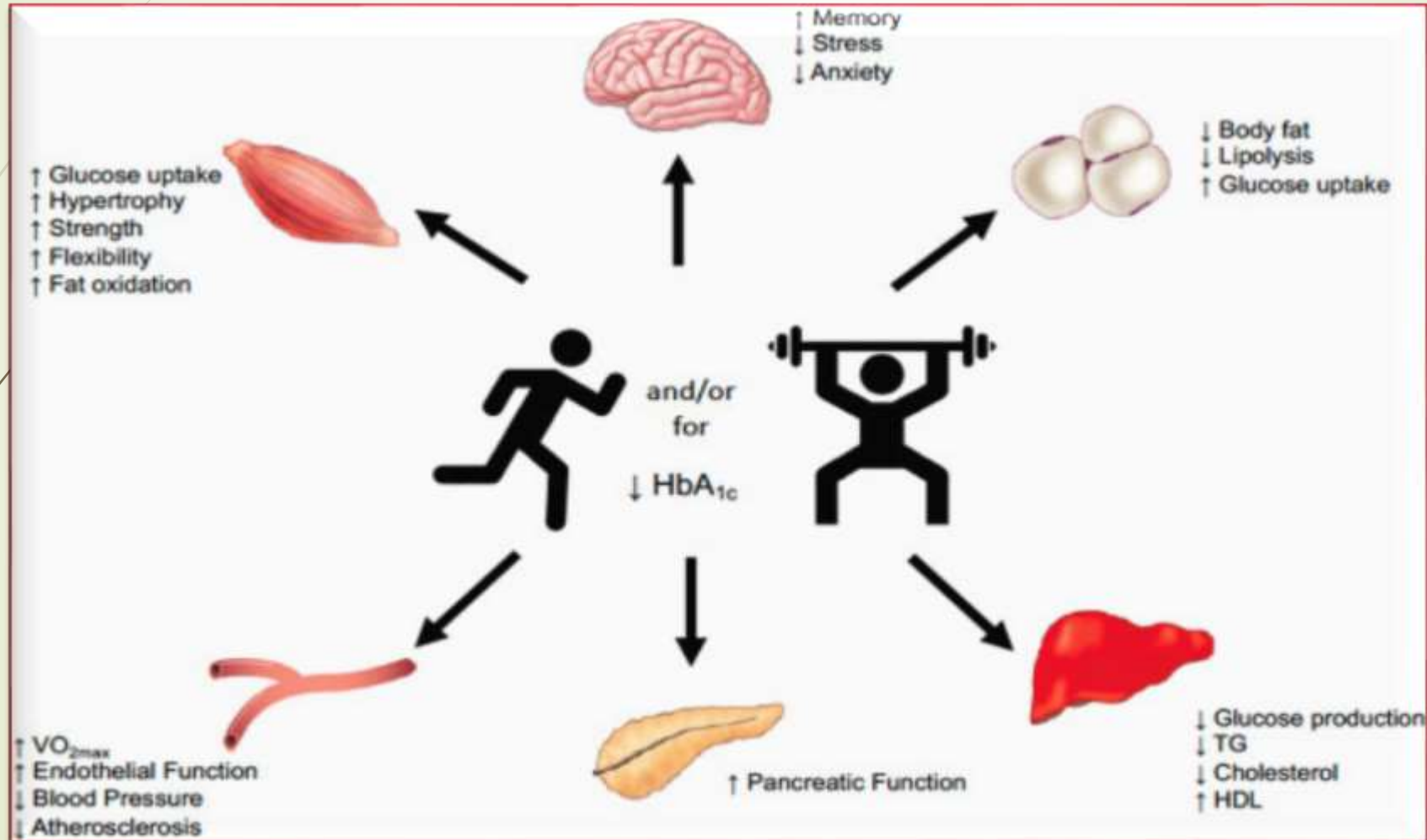


## Contd--

- Habitual aerobic exercise helps manage blood glucose.
- Resistance exercise benefits insulin sensitivity in those with type 2 diabetes.
- Movement throughout the day by breaking up sitting time benefits blood glucose and insulin.
- Physical activity after meals reduces blood glucose.
- Performing exercise later in the day can benefit glycemic control and insulin sensitivity.



# IMPORTANCE OF EXERCISE FOR GLYCEMIC CONTROL





# Mnemonics of SAFE exercise



**S-Strengthening Exercises**



**A-Aerobic Exercises**



**F-Flexibility Exercises**



**E-Endurance Exercises**



# STRENGTH BUILDING EXERCISES

- ✓ These exercises, also referred to as resistance exercises, can help seniors build muscle around their legs and arms.
- ✓ Strength training provides other benefits to seniors with diabetes such as:
  - ❖ Weight loss
  - ❖ Better response to insulin
  - ❖ Helping the body improve the way it uses blood sugar
  - ❖ Reducing the risk of heart disease



# ENDURANCE EXERCISES

- Endurance exercises, boosts the health of various organs within the body such as the heart, brain, and lungs.
- In addition to keeping these systems healthy, it also helps overall health and delay the progress of diabetes by helping with blood sugar control and increasing the body mass index.
- Examples of endurance exercises seniors with diabetes can do include:
  - ✓ Swimming
  - ✓ Biking
  - ✓ Yard work (digging, mowing, or raking)
  - ✓ Dancing
  - ✓ Jogging or brisk walking





# STRETCHING EXERCISES

- Seniors who have diabetes or want to prevent diabetes should do stretching and flexibility exercises on a regular basis.
- Stretching and flexibility exercises burn calories and increase muscle tone, helping slow down the progress of diabetes. Since stress can make diabetes worse, stretching should be done regularly to help reduce these feelings.
- These exercises also help build muscle to prevent slips or falls.
- Some stretching and flexibility exercises
  - Pilates
  - Yoga
  - Side bends
  - Arm bends
  - Toe touches



# AEROBIC EXERCISES

- ▶ Activities such as walking, cycling, jogging, and swimming rely primarily on aerobic energy-producing systems
- ▶ benefits for people with diabetes: exercise lowers blood glucose levels and boosts your body's sensitivity to insulin, countering insulin resistance
- ▶ In type 1 diabetes, aerobic training , decreases insulin resistance
- ▶ In type 2 diabetes, regular training reduces A1C, triglycerides, blood pressure, and insulin resistance

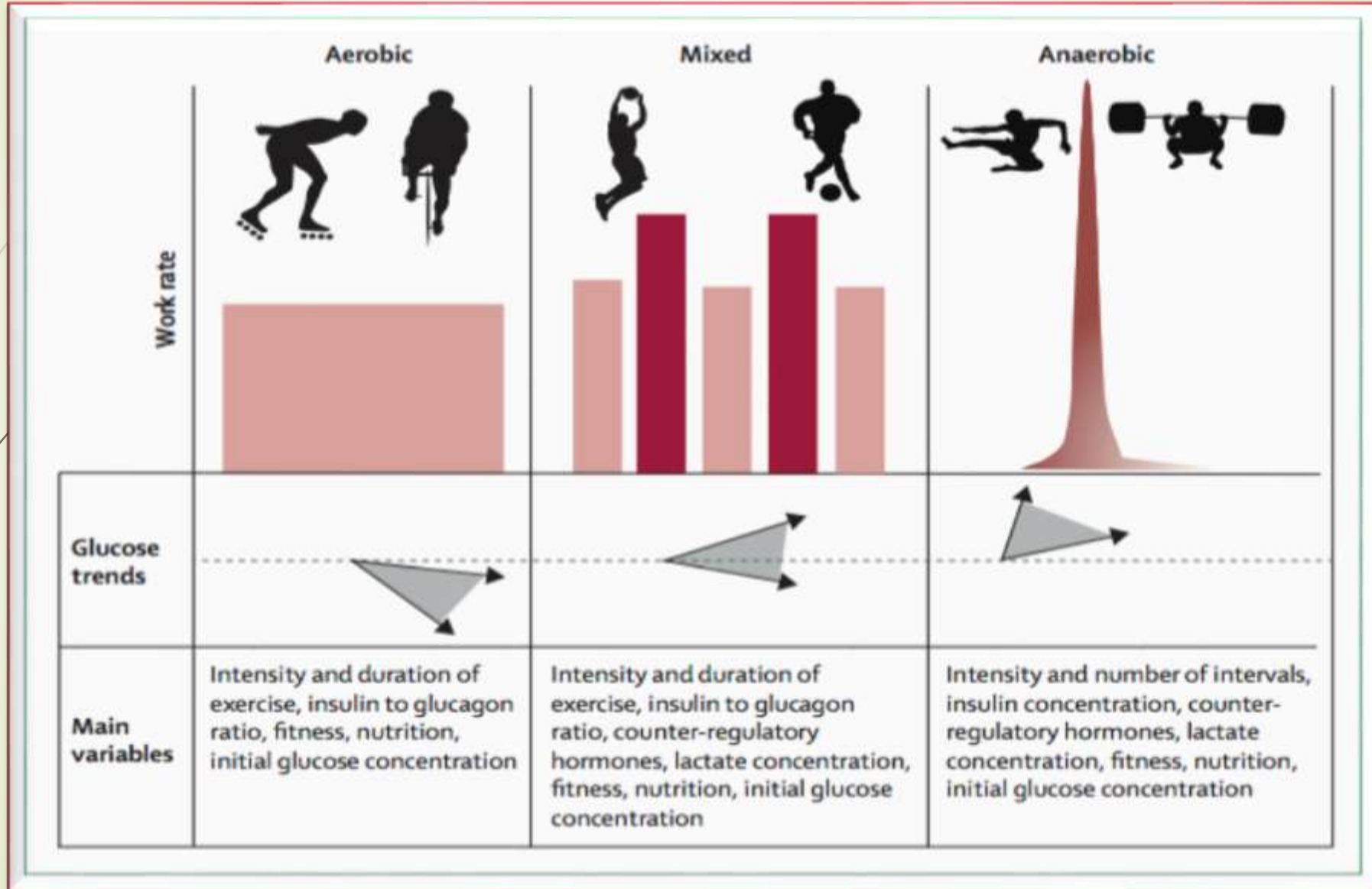




# BALANCING EXERCISES

- These exercises can help seniors with diabetes boost the health of specific body parts. For instance, some balancing exercises increase a senior's overall balance, while others build muscles in the arms or legs. These fluid movements can strengthen your loved one's balance, lower stress levels, reduce blood sugar, and boost nerve function.
- Some balancing exercises your loved one with diabetes can do are:
  - Chair exercises
  - Walking around the room
  - Marching in place
  - Rock around the clock exercise





# EXERCISE GUIDELINES FOR OLDER ADULTS

- Start slow
- Set realistic goals
- Find an activity you enjoy
- Get a partner
- Choose Low-Impact Activities
- Wear The Proper Clothing, Well fit shoes
- Drink Plenty Of Fluids
- Inspect The Feet
- Eat Healthy Carbohydrates
- Speak With The Doctor Ahead Of Time
- 3 days/week for aerobic exercise
- 2 days/week for resistance activities



# GUIDELINES FOR TO BE FOLLOWED BEFORE EXERCISE

<b>Starting BG below target (&lt;90 mg/dL)</b>	<b>Ingest 10–20 grams of glucose before starting exercise</b>
	Delay exercise until blood glucose is more than 5 mmol/L (>90 mg/dL) and monitor closely for hypoglycemia
Starting BG near target (90–124 mg/dL)	Ingest 10 g of glucose before starting aerobic exercise Anaerobic exercise and high-intensity interval training sessions can be started
Starting BG at target levels (126–180 mg/dL)	Aerobic exercise can be started Anaerobic exercise and high-intensity interval training sessions can be started, but beware that BG levels could rise
Starting glycaemia slightly above target (182–270 mg/dL)	Aerobic exercise & Anaerobic exercise can be started, but beware that BG levels could rise





# GUIDELINES FOR TO BE FOLLOWED BEFORE EXERCISE

Starting glycemia above target (>270 mg/dL)

If the hyperglycemia is unexplained (not associated with a recent meal), check blood ketones. If blood ketones are modestly elevated (up to 1.4 mmol/L), exercise should be restricted to a light intensity for only a brief duration (<30 min) and a small corrective insulin dose might be needed before starting exercise. If blood ketones are elevated ( $\geq 1.5$  mmol/L), exercise is not recommended and you should be treating your high with the help of your HCP

Mild to moderate aerobic exercise can be started if blood ketones are low (<0.6 mmol/L) or the urine ketone dipstick is less than 2+ (or <4.0 mmol/L). BG should be monitored during exercise for further increases. Intense exercise should be initiated only with caution as it could promote further hyperglycemia





# Guidelines for adjusting food during exercise

If your exercise is unplanned	Increase your food intake
If your blood glucose level is less than 100 - 120 mg/dl, or if about 90 minutes have passed since your last meal.	Pre-exercise snacks are recommended.
For mild to moderate exercise of less than 30 minutes...	Eat a snack of approximately 15 grams carbohydrate, such as an 8 oz. glass of low fat milk, half of a banana or a small apple.
For moderate intensity exercise longer than 60 minutes...	Eat a snack containing roughly 20 - 30 grams carbohydrate approximately every 45 minutes. <b>Note:</b> If you are exercising longer than 60 minutes, it is advised that you check your blood glucose level every 45 - 60 minutes. This will allow you to make food or medication adjustments as needed. If your blood glucose is 180 or more, you may not need an extra snack for that hour of exercise.
If your exercise is of moderate intensity and longer than 60 minutes...	Sip on a carbohydrate replacement drink.

<p>To offset post-exercise, late onset hypoglycemia...</p>	<p>Remember to eat foods that contain slow-releasing, complex carbohydrates to offset post-exercise, late-onset hypoglycemia.</p>
<p>If you are exercising to lose weight. . .</p>	<p>Limit the amount of extra food you need to keep your blood glucose from dropping too low. If you take insulin or oral diabetes medication, check with your health care team for guidance on how best to adjust your medication instead of increasing your food.</p>
<p>Always be prepared for low blood glucose. . .</p>	<p>By carrying a concentrated form of carbohydrate, such as granulated sugar, glucose tablets, Life-Savers, etc.</p>

# EXERCISES TO STAY AWAY FOR OLDER ADULTS

- High-impact, strenuous or prolonged weight-bearing activities
- Walking/ running a long distance,
- running on a treadmill,
- jumping/hopping, exercise in heat or cold,
- weight-bearing exercise when you have a foot injury, open sore, or ulcer.
- Abdominal crunches



# BENEFITS OF WALKING AFTER A MEAL

## ➤ **Manages sugar levels**

After 30 minutes of a meal, blood sugar spikes, and so does the insulin level. However, when you walk after food, the glucose used by the body hence maintains the level of sugar and insulin. The complete process improves the sugar level and related diseases,

## ➤ **Improved digestion**

The body movement involved in walking can help the food to move quickly through your stomach and intestines.

➤ That can **improve your digestion** and help with conditions like heartburn, irritable bowel syndrome (IBS), or constipation.

## ➤ **Aids weight loss**

## ➤ **Improves sleep**

Walking needs to be complemented with dietary measures if you are looking at it as a weight loss exercise.

➤ Walking for 15 minutes after every meal can help you burn calories in your effort to lose weight.





# Contd--

- Improves your body's metabolism.
- Helps the body convert maximum nutrients into energy, thus helping your body beat fatigue.
- **Reduced risk of heart disease**
  - ☑ 3 walks of 10-15 minutes a day can help keep blood pressure in control.
  - ☐ Taking multiple short walks in a day can be more effective than walking in one continuous session.
  - ☐ Sometimes, walking after a meal can cause indigestion.
  - ☐ In such a case, it is better to take a break for 5 to 10 minutes after a meal and walk at a moderate pace.



# WHY IS WALKING AFTER MEALS GOOD FOR SENIOR CITIZENS?

- ✓ Senior citizens tend to have higher insulin resistance which only increases with age. This in turn leads to poor blood sugar control. As they grow older, the tendency to **exercise** and be physically active also reduces.
- ✓ The practice of walking for 15 minutes after every meal can be a simple way for senior citizens who are not too physically active to control their blood sugar levels. Thus, helping prevent pre diabetes and type 2 diabetes.



## HOW IS WALKING AFTER MEALS A GOOD DIABETES EXERCISE?

- ✓ Walking for 15 minutes after every meal has been proven to reduce the risk of developing type 2 diabetes.
- ✓ Short walks after a meal can be more beneficial than a 45-minute walk that you take once a day.
- ✓ A short walk after a meal done at a moderate pace can effectively reduce blood sugar levels.
- ✓ Walking after dinner can be more helpful because studies suggest that it can keep blood sugar levels in check for 24 hours.





**5 mins**

**WALK AFTER MEALS  
CAN LOWER THE RISK  
OF TYPE 2 DIABETES**

*Dr. V. N. N. N.*







# COLLABORATIVE CARE IS VERY IMPORTANT FOR ALL PEOPLE LIVING WITH DIABETES

- ❖ The prescription of exercises tailored for each patient's preferences and limitations are highly effective not only for glycemic control, but also for improving independence, self-esteem and quality of life.

Some important care considerations include:

- Supporting “at home” needs
- Monitoring interactions between medications
- Preventing falls
- Family or community support
- Access to proper medications and food

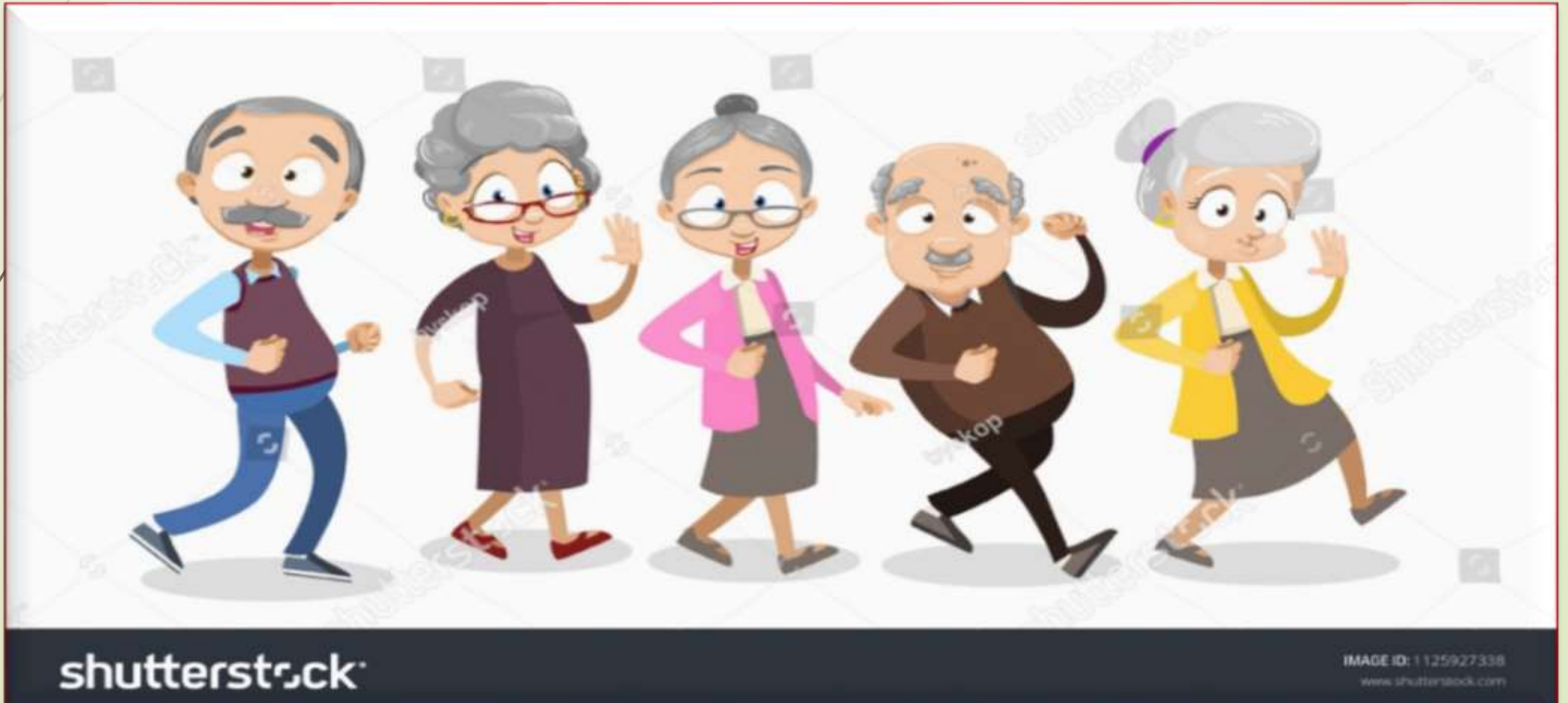
- ❖ Your primary care doctor, geriatrician, diabetes educator, endocrinologist, nutritionist, and social worker work together to make sure all aspects of care are carefully developed to achieve personal goals and to prevent short and long-term complications.



# REFERENCES

- ▶ <https://www.activateclinic.com.au/exercise-insulin-diabetes/>
- ▶ <https://www.webmd.com/diabetes/news/20220809/short-walks-after-meals-cut-diabetes-heart-risk-study>
- ▶ <https://www.everydayhealth.com/type-2-diabetes>
- ▶ <https://www.ncbi.nlm.nih.gov/pmc/articles/PM10182965>
- ▶ <https://www.surreyphysio.co.uk>
- ▶ <http://diabetesindia.com/diabetes-causes-prevention>

**Every mile that you jog, you add  
one minute to your life.**







**THANK YOU**

