# Moving for Life - Harness the power of Physical Activity

## 1. *Mindfulness During Exercise*

a. Being mindful during exercise can:
   - Relieve **stress**
   - Make you **feel good**
   - **Boost** your workouts

b. Specifically, mindfulness during exercise can provide:
   - A **stronger connection** to your body (you achieve more from your workouts)
   - **Better results** (you achieve a higher quality workout)
   - **More satisfaction** (you know you did your best)

c. What to do:
   - Have a **purpose** for each workout (Examples: finish your workout, strengthen specific muscles, challenge yourself)
   - Remember **WHY** you're exercising (Examples: Better sleep, feel good, manage stress
   - **Slow down** (focus on form and how your body feels)
   - Remind yourself to **breathe**
   - End on a **good note** (cool down and stretch)

   *Reference: verywellfit.com*

## 2. *History of Exercise*

a. Our ancestors who were **strong, nimble, and agile** survived to procreate future generations. We naturally selected a **species meant for movement.**

b. Anthropologists have examined patterns between brain size and endurance capacity of many animals. They noted that the **species with the highest innate endurance capacity** also had the **highest brain volumes relative to their body size**.

c. The more animals move, the more **BDNF** (Brain-Derived Neurotrophic Factor) is created. This permits **brain growth and adaptability.**

d. There is a positive feedback loop—**movement sharpens cognitive function.**

e. As our ancestors increased movement, they also sharpened their hunting skills, became more efficient at capturing prey, foraged better, and created intelligent language to foster relationships to enhance opportunity for survival.

*Reference: D. M. Bramble and D. E. Liebermann, "Endurance Running and the Evolution of Homo", Nature 432, no 7015 (Nov 2004) 345-52.*

f. Hippocrates: "If we could give every individual the right amount of nourishment and exercise, **not too little and not too much,** we would have found the safest way to health."
g. In the 1950s interest in physical activity and exercise began to grow.
h. In 1955 President Eisenhower established the President's Council on Youth Fitness.
i. By 1966, the **U.S. Public Health Service** began advocating for increased physical activity to help Americans lose weight.
j. **Aerobics studios** began popping up all over America.
k. The Complete Book of Running by Jim Fixx became a bestselling book in 1977.
l. In the 1980s Richard Simmons and Jane Fonda became **American fitness icons.**
Reference: Dr. Jason Fung, The Obesity Code

## *3. Our Current Epidemic in the U.S.* *(Graph in Power Point)*

- Research has shown that **nationwide efforts,** including the addition of gyms and even school programs by former First Lady Michelle Obama's "Let's Move", **have NOT made a dent in the obesity epidemic…**

## *4. A REAL Solution*

a. **Mindfulness**
b. A **Keto/Low-Carb** eating style
c. Consumption of **Nutrient-Dense Whole Foods**
d. Intermittent **Fasting**
e. Regular **Physical Activity**
f. Adequate **Sleep** and **Stress Management**
g. **Focus on Human Relationships**
h. Strategies that foster **Life Balance** (Mind, Body, and Spirit)

**Question 1: What lifestyle strategies produce REAL weight loss and well-being?**

**Answer: _____, _____,**

**And _____**

## *5. The Power of Exercise*

a. When you exercise regularly, the cells in your adrenal cortex release **less cortisol,** the notorious stress hormone. This is one of the reasons why exercise promotes a feeling of calmness.

b. Exercise can **improve your mood for up to three hours** after working out and can **reduce stress reactivity.**

Exercise turns on the switch for autophagy. Remember **autophagy** is the house keeping mechanism of the cell that rids damaged molecules. *Reference: The Telomere Effect, pages 176-177, 179*

c. People who exercise regularly have **lower inflammatory cytokine levels**, respond **more successfully to vaccinations**, and enjoy a **more robust immune system.**

d. As the exercise and immunology researcher Richard Simpson has said, these and other signs "indicate that **habitual exercise is capable of regulating the immune system and delaying the onset of immunity senescence".** Consider exercise an excellent bet for keeping your immune system biologically young.

*Reference: Simpson, R.J., et al "Exercise and the aging immune system, "aging research reviews 11, no 3 (July 2012): 404-20, doI:10.1016/j.arr.2012.03.003.*

e. Exercise helps **prevent the shortening of telomeres related to emotional stress.**

f. Two forms of exercise have been shown to lengthen telomeres. Specifically **moderate aerobic endurance exercise** performed **three times a week for 45 minutes**. Also **high intensity interval training** will lengthen telomeres.

g. **Resistance exercise** does not seem to have the same impact as the other two forms of exercise.

h. All three forms of exercise lead to **improvements in telomere-associated proteins,** such as telomere-protecting protein TRF2, and reduced an important marker for cellular aging known as p16. Also, regardless of exercise type, **those who increase their aerobic fitness have the most increase and telomerase activity.** This tells us that underlying cardiovascular fitness matters most. Reference: The Telomere Effect, pages 183-185

i. Research does show that a **variety of exercise programs** results in elongation of telomeres. This means that walking in addition to biking and strength training will have a **greater impact than just walking alone.**

*Reference: Loprinzi, P.D., J.P. liwnneje, and E.H. Blackburn, "Movement based behaviors and leukocyte telomere length among US adults, "medicine and science in sports and exercise 47, no. 11 (November 2015):2347-52, doI:10.1249/MSS.0000000000695995-1001, doI: 10.1007/s11357-014-9620-9.*

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## 6. *Exercise Feeds Your Brain!* *A single workout:*

- Immediately releases **neurotransmitters** (dopamine, serotonin, and norepinephrine).
- This increases your **mood** and ability to **focus** (for at least 2 hours).
- Improves your **reaction times**.
- Exercise causes your hippocampus to produce **new brain cells** (increases your brain volume and improves your long-term memory).
- Exercise improves your **attention.**
- Exercise produces **long-lasting, positive effects on mood.**
- **Exercise strengthens your brain=protection against cognitive decline and neurodegenerative diseases.**
  Reference: Wendy Suzuki, The Brain-Changing Benefits of Exercise, TEDWomen 2017

## 7. *How Does Exercise Create Such an Impact?*

a. It reduces **Insulin Resistance** and **Inflammation.**
b. It releases growth factors, such as **BDNF**. These growth factors increase the number of new neurons, produce the growth of new blood vessels to permit greater oxygenation, and permit our existing neurons to be more adaptable to learning new skills.
*Reference: Grain Brain, David Perlmutter, MD, 2013, pg. 223*

## 8. *Exercise: A Prescription for Brain Health*

a. The American Academy of Neurology was challenged with a question: **"What is the MOST MEANINGFUL means to reduce our risk of cognitive decline?"**
b. They responded by stating that **EXERCISE** was the only meaningful recommendation that clinicians could and should make for patients diagnosed with MCI (mild cognitive impairment).
c. **Exercise is more effective than any prescription drug in preserving our cognitive function!**
*Reference: Grain Brain, David Perlmutter, MD, 2013, pg. 223*

## 9. *Exercise Combats Disease Development*

*a.* Exercise specifically turns on a protein in the nucleus of the cell called Nrf2. **Nrf2 acts as a potent antioxidant.** Nrf2's goal is to reduce free radicals. Free radicals, when left to their demise, damage our mitochondria and lead to the development of disease. Exercise creates Nrf2 to combat this damage.
*Reference: Grain Brain, David Perlmutter, MD, 2013, pg. 229*

**Question 2: Name 3 health-promoting benefits of exercise.**

**Answer: _____, _____,**

**And _____.**

## *10. Do I "NEED" to Exercise to Lose Weight and/or Improve My Well-Being on a Ketogenic or Low Carb Diet?*

a. Although you can find research on both sides of the spectrum…
b. For a healthy lifestyle incorporating movement can **dramatically improve your results** on a ketogenic/low carb diet!

## *11. Exercise and a Keto/Low-Carb Diet: A Winning Combination!*

a. Evidence shows that a ketogenic diet results in **greater loss of body mass, whole body, and visceral fat** without instructions to restrict calories.
b. Additional benefits include:
    i. Increase in relative lower (20%) and upper (9%) **body strength**
    ii. Increase in **mitochondrial protein** content (9%)
    iii. Increase in **ATP production**/oxygen (energetic efficiency)
c. **Keto-adaptation** is a highly conserved latent human ability, kept dormant by carbohydrate-rich diets, with **profound therapeutic and performance benefits:** *Slide 35*
    i. **Fat is stored in greater quantities**. (Glycogen gives the body only a day's worth of energy---2,000 kcals. Fat gives 40,000 kcal of energy--days and days of energy)
    ii. **Fat is a more efficient source of fuel than carbs**
    iii. **Decreased need to fuel during exercise**
    iv. Ketones **decrease oxidative stress**
    v. The ketone body **BHB signals less inflammation**
    vi. Enhanced **recovery**
    vii. **Bonk-proof/neuroprotected brain** in keto-adapted state
    viii. Greater ease of fat loss, not just weight loss: **Evidence shows that a low-carb diet with resistance training produces the largest amount of fat loss AND an increase in muscle mass!**
    ix. **Augments health response** to exercise
d. In the past it was thought that a **high carbohydrate diet** was required for optimal exercise performance.

e. We now know that people who have adapted to **a low-carbohydrate diet** have **similar glycogen storage levels** as those who eat a high-carbohydrate diet.
f. **What about cyclic ketogenic dieting?** (Typical 5-6 days "ketogenic" and 1-2 days "higher carb, lower fat") **This approach is not recommended (lowers blood ketone levels and reduces the amount of weight lost).**

**Question 3: What are 3 unique benefits of exercising while following a keto/low-carb diet?**

**Answer: _____, _____,**

**_____**

## *12. What Exercise Should I Do and for How long?*

### *The 3 Main Components to Your Exercise Plan*

i. **Aerobic Activity**
ii. **Strength and Resistance Training**
iii. **Stretching and Flexibility Training**

## *13. Exercise Recommendations*

a. **Guidelines: 150 minutes per week of moderate-intensity aerobic activity (or 75 minutes of vigorous aerobic activity) AND strength training at least 2 days per week** (https://www.hhs.gov/fitness/be-active/physical-activity-guidelines-for-americans/index.html).
b. Do what you can! Even **10-15 minutes** makes a difference!
c. Choose **activities that you enjoy** (remember, the key to all of this is **SUSTAINABILITY**)!

**Question 4: What are the 3 main components of an exercise plan?**

**Answer: _____, _____, and _____**

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## *14. What Does Your Exercise Routine Look Like?*

a. **Are you exercising regularly on a consistent basis?** (Take an honest look at your usual routine).
b. **Are there changes you could make to increase the AMOUNT and/or TYPE of activity you do to receive more benefits?** (Brainstorm ideas).
c. **What types of physical activities do you enjoy that you could do?** (Consider activities you may not have tried before).
d. **What is your plan of action?** (Determine what you are going to do and how you are going to do it).
e. **Remember your PURPOSE and your list of reasons WHY you want to be healthy! Look at them often!**

## *15. This week's COGNITIVE ACTION PLAN:*

a. Be **MINDFUL** before, during, and after your workouts. Connect **DOPAMINE** to your exercise efforts!
b. Use **EXERCISE** as a detour!
c. Challenge yourself with a **NEW** or **DIFFERENT** exercise routine!
d. SET A SHORT TERM AND LONG TERM FITNESS GOAL

## *16.This week's NUTRITIONAL ACTION PLAN:*

a. ***BEGIN:* *Fast for minimum of 14 hours***
    i. Do not eat past dinner
    ii. Try to eat dinner at least 2-3 hours before going to bed.

***If you are diabetic and require insulin, please do not exceed 12 hours of fasting at this time.
***Remember… If you are on BP reducing medications or diabetes medications, please monitor your BP and BG levels closely and communicate with your physician if dosing changes are needed.

b. **Follow the path right for you, Low-Carb or Ketogenic.**
c. **Follow the Macronutrient Ratio Goals.**
    Low-Carb: Carbs 15%, Fat 60%, Protein 25%
    Ketogenic: Carbs 5%, Fat 70%, Protein 25%
d. **Follow your Foundational Macronutrient Serving goals (either track).**
    Get 6-8 servings of non-starchy vegetables per day.
    Get 5-6 servings of healthy fats per day.
    Get 4-6 servings of protein per day. Your specific goals are determined by your ideal body weight.

e. **Consume at least 80-100 fl oz. of water daily.**
f. **Monitor your Micronutrient Goals.**
    i. Sodium – 3,000-7,000 milligrams per day (1-2 teaspoons of salt or 1 cup of chicken broth)
    ii. Potassium – 3,000 -4,700 milligrams per day
    iii. Magnesium – 400 mg per day
g. **Remember, you MUST get 12-15 gm of carbohydrates from green/plant sources**.
h. **Continue with your Fermented Food(s)!**
i. **Low-Carb Path- Check your blood glucose levels fasting and non-fasting.**
    i. Normal Fasting Glucose – 60-99 mg/dl
    ii. 1-2 hours After Eating Glucose - 120-140 mg/dl
    iii. See Chart Below for Optimal Blood Sugar levels
j. **Keto Path: Check your Blood Glucose levels and check to see if you are in ketosis.**
    i. Glucose as identified.
    ii. Blood Ketone goal of 1-3.5 mmol/liter
    iii. Make note of GKI if utilizing Keto-Mojo

| Value | Levels Optimal Goal | Standard Range for Normal |
|---|---|---|
| Fasting glucose | 72-85 mg/dl | <100 mg/dl |
| Pre-meal (baseline) glucose | 72-90 mg/dl | 72-90 mg/dl |
| Post meal glucose (Postprandial) | <110 mg/dl, **with <30 mg/dl increase from pre-meal levels** | <140 mg/dl |
| Mean 24-hour glucose | 79-100 mg/dl | 89-104 mg/dl |
| Recommended in app range | 72-110 mg/dl | 70-140 mg/dl |

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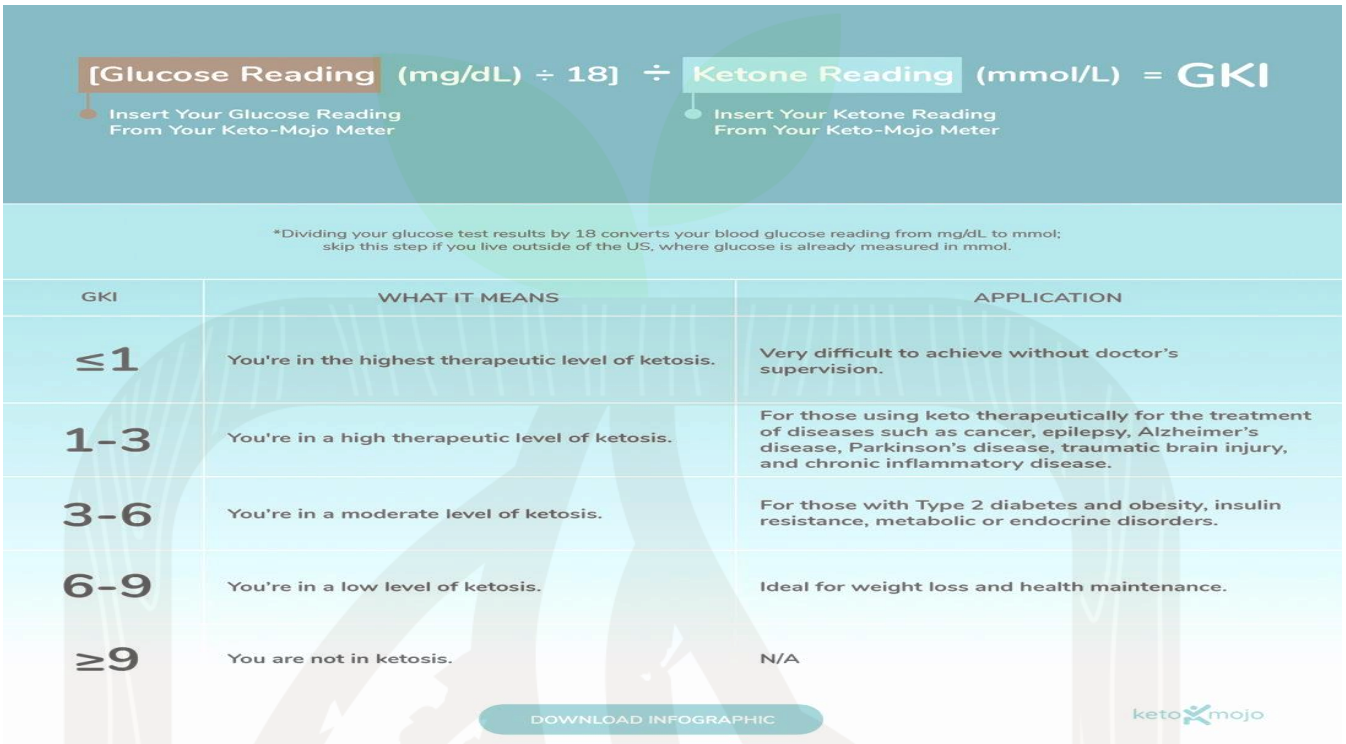


| GKI | WHAT IT MEANS | APPLICATION |
|---|---|---|
| ≤1 | You're in the highest therapeutic level of ketosis. | Very difficult to achieve without doctor's supervision. |
| 1-3 | You're in a high therapeutic level of ketosis. | For those using keto therapeutically for the treatment of diseases such as cancer, epilepsy, Alzheimer's disease, Parkinson's disease, traumatic brain injury, and chronic inflammatory disease. |
| 3-6 | You're in a moderate level of ketosis. | For those with Type 2 diabetes and obesity, insulin resistance, metabolic or endocrine disorders. |
| 6-9 | You're in a low level of ketosis. | Ideal for weight loss and health maintenance. |
| ≥9 | You are not in ketosis. | N/A |

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# Moving for Life

1. What are 3 benefits I can receive by being physically active?

_____
_____
_____
_____

2. What are 3 physical activities I would like to continue OR begin doing?

_____
_____
_____

3. What is my plan to incorporate physical activity/fitness into my life?

_____
_____
_____
_____