



PROTECT THE PLANET

Study Circle



PHYSICAL ENERGY: THE BODY

This guide has been designed to help Centres/Groups of the Sathya Sai International Organisation (SSIO) facilitate a study circle on the topic of Physical Energy in relation to the human body. It has been developed as part of a series of study circle guides that aim to look at: physical, mental and spiritual energy along with—their impact on the environment. This is Part 1 of the Module 3 study guide series, with an estimated duration of one hour.

In the interest of time, facilitator may share all the quotes in this guide to participants as pre-read material and/or may opt to conduct more than one sessions, if required.

Part 1 will cover:

- Why the human body is so precious,
- Where physical energy stems from,
- The relationship between food and physical energy,
- The impacts of disease, exercise, sleep and the environment on physical energy,
- The role of selfless service in putting physical energy to good use, and
- How a healthy body can be of benefit to the environment.

PART 1

OPENING AND INTRODUCTION			
ACTIVITY	NOTE TO FACILITATOR	RESOURCES	ESTIMATED DURATION
3 OM's or silent sitting followed by an opening prayer	Whether <i>Omkar</i> or a minute of silent sitting is used depends on the audience this study circle is being delivered to. Either way, the objective of this activity is to help settle the group and establish group dynamics. This objective is the same if a prayer or short reading is used as an alternative.		1 minute
Introduce today's topic	<p>This study circle is part of the 'Serve the Planet' initiative of the SSIO and is based on the theme 'Protect the Planet' with a focus on 'Energy'.</p> <p>The purpose of this study circle is to understand the importance of physical energy in relation to the human body and its impact on the environment.</p> <p>It is important to remain respectful and open at all times. Keep in mind that the study circle is about sharing and exploring the topic as well as inspiring each other rather than 'finding the right answers'.</p>		1 minute

TODAY'S DELIVERY			
ACTIVITY	NOTE TO FACILITATOR	RESOURCES	ESTIMATED DURATION
Introduction	<p><i>"Jantunam nara janma durlabham (out of all living beings, human birth is the rarest). It is not easy to attain human form. Man is not a mere mortal. He is verily divine. Daivam manusha rupena (God is in the form of a human being)." – Sathya Sai Baba (SSS 39.4: March 30, 2006)</i></p> <p><i>"Having got the precious human form, men must seek to live according to the true requirements of that form. No attempt is made to understand the purpose of life, despite the preciousness and sacredness of human birth. Man has to discover, as enjoined in the Bhagavatam, how he can get back to the source from which he came. This is the natural destiny of all beings. The secret of human existence is to know how to make the best use of time to realise one's Divine destiny." – Sathya Sai Baba (SSS 22.6: March 23, 1989 and SSS 22.12: June 19, 1989)</i></p> <p>If even half of the 7.6 billion people that currently populate this earth¹ were to direct their destiny to the service of this planet, imagine what a better world we would live in.</p> <p>So, over the course of the next three parts of this Module 3 study guide series, we will look at:</p> <ul style="list-style-type: none"> - How we need to serve ourselves first, before we can serve others, including the planet. - Understanding the role of physical, mental and spiritual energies in helping us to perform our daily activities as well as directing these towards the service of the planet. - How we can practice 'Ceiling on Desires' in relation to physical, mental and spiritual energies. - How to direct the energy we are endowed with to help serve the planet. 		5 minutes
<p>Physical energy and the human body</p> <p>Question1:</p> <p>How is physical energy generated in the body?</p>	<p>Physical energy is 'the strength and vitality required for sustained physical activity'.²</p> <p>There are two things that power the human body:</p> <ol style="list-style-type: none"> 1. The internal source or divinity, which is manifested as the soul or <i>atma</i> and gives life to the body 2. The external source, which comes from the food that we consume daily <p>We will look at the internal source, i.e. the soul, in the Study Guide Part 3, but for now, let us look at the role of food in providing physical energy and how the type of foods we eat impacts on the energy levels within our body.</p> <p><i>"Every activity of man is dependent on the energy he derives from the intake of food. The spiritual <i>saadhanas</i></i></p>		5 minutes

	<p>(spiritual discipline) he ventures upon depend for their success on the quantity and quality of the food taken by the <i>saadhak</i> (spiritual aspirant), even during the preliminary preparations recommended by <i>Pathanjali</i>. The most external of the five sheaths that enclose the <i>Aathmic</i> core, namely the <i>Annamaya kosha</i> (physical sheath), has an impact on all the remaining four---the <i>Praanamaya</i>, the <i>Manomaya</i>, the <i>Vijnaanamaya</i> and the <i>Aanandhamaya</i> (the vital, mental, wisdom and bliss sheaths or coverings).” – Sathya Sai Baba (SSS 14.31: September 21, 1979).</p> <p>Refer to Appendix A to find out about the amount of energy an average person requires.</p>	<p>Appendix A</p>	
<p>Question 2: What is the role of food in generating physical energy?</p>	<p>Pose the question to the group, using the following information to support your discussions.</p> <p>Food is one of the most important energy sources for the body and essential to help the body to function properly. The food we eat is composed of the following key components, some of which directly provide the body the energy it requires, but all of which are important for good health and well-being:³</p> <ul style="list-style-type: none"> ● Carbohydrates and fat – for energy ● Protein – for growth and repair ● Fibre – for a healthy digestive system ● Vitamins and Minerals – these will be present in trace amounts in the food we eat and provide essential nutrients to help the body function properly ● Water – 60% of our body weight is water, and the body uses water in all its cells, organs, and tissues to help regulate temperature and maintain other bodily functions.⁴ According to two studies conducted at the University of Connecticut's Human Performance Laboratory, ‘even mild dehydration can alter a person's mood, energy level, and ability to think clearly.’⁵ <p>Watch the video to find out more on how our digestive system works to transform the food we eat into the nutrients and energy.</p> <p>How can choosing the right food provide sustained energy levels throughout the day?</p> <p>To provide information on simple vs complex carbohydrates in support of the discussion, refer to Appendix B.</p> <p>The key to good health is to:^{6,7}</p> <ul style="list-style-type: none"> ● Limit the amount and variety of simple sugars you consume through foods such as sweet biscuits, cookies, cakes, lollies, ice cream, fizzy drinks, sweets 	<p>Video – https://www.youtube.com/watch?v=Og5xAdC8EUI (4 minutes 46 seconds)</p> <p>Appendix B</p>	<p>10–15 minutes</p>

	<p>and chocolates. This is because these are exactly the type of foods that will spike your glucose levels and boost your energy suddenly and temporarily, only to be followed by an 'energy low' shortly thereafter.</p> <ul style="list-style-type: none"> ● Instead opt for complex carbohydrates such as those mentioned in Appendix B that will release energy gradually into the body and maintain a constant energy supply. A good way to tell how quickly foods release energy into the body is to look for the glycaemic index which indicates whether a food raises blood glucose levels quickly, moderately or slowly.⁸ ● Also, avoid refined carbohydrates such as white bread, white pasta, and white sugar as the process of refinement means that these foods have been stripped of all their nutritional value. Instead opt for lean proteins, healthy fats and lots of vegetables, especially green vegetables. ● Replace fewer, big meals with more frequent, smaller meals, so that the body has a constant energy supply throughout the day. It is also important to eat breakfast to kick-start the body's metabolism after a gap of about 6–10 hours during sleep and it is important to have heavier meals earlier in the day rather than at night. ● The amount of food we eat is also very important. If we eat more than the energy supply needs of our body, the excess gets converted to fat and stored in the body. If we consume less, the body will convert fat into glucose to make up for the shortfall. However, if we consume the right amount, there is neither storage nor shortfall, which is the ideal state to aim for. ● Lastly, every human being is a combination of the three basic <i>gunas</i> (attributes, qualities) – namely <i>sattva</i> (relates to order and equilibrium, goodness), <i>rajas</i> (relates to activity, passion) and <i>tamas</i> (relates to inertness, darkness). Food too is split into these three categories, depending on their effect on the body when consumed. For spiritual growth, a <i>sathwic</i> diet is best as it promotes the quality of purity and goodness. <ul style="list-style-type: none"> ○ Sathwic – food that is capable of strengthening the mind as well as the body (pure). Examples include: nuts, seeds, oils, fruit, dairy, and vegetables. ○ Rajasic – food that excites and intoxicates (i.e. passionate - too salty, too sweet, too hot, too sour, too odorous). Examples include: caffeinated drinks such as coffee, tea, cola 		
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	<p>drinks, energy drinks, brown or black chocolate, and spicy food.</p> <ul style="list-style-type: none"> ○ Thamasic – food that promotes dullness. Examples include: meat, fish, fertilised eggs, onion, garlic, scallion, leek, chive, mushroom, and alcoholic beverages. <p>To know more about Sathya Sai Baba’s teachings in relation to the three <i>gunas</i> and food, please refer to the Study Circle Guide entitled ‘Eating to Protect the Planet’ produced as part of the STP 2017 programme –</p> <p>http://sathyasai.org/sites/default/files/pages/youth/stp-2017/study-circle-3-eating-to-protect-the-planet.pdf</p> <p>Find below what Sathya Sai Baba has to say about eating too much food than required:</p> <p>“Catering to the cravings of the tongue and swallowing heavy foods three to four times a day can only add to the heap. Only regular and limited intakes can enable a person to discharge one’s duties.” – Sathya Sai Baba (SSS 15.54: Nov 11, 1982)</p> <p>“Take another example, when you are hungry, you may decide to eat a Chapati (flat bread). When you finish it and have a feeling that you can eat one more, you must stop. Do not proceed to eat more and more. Over-eating results in chubbiness initially and gradually leads to obesity. Physical appearance also gets affected by overeating. Hence one must cultivate limits for everything – eating, walking, talking, etc. This limit should act as a warning signal to us.” – Sathya Sai Baba (Prof. R.K. Bhaskar, <i>Man Management A Values-Based Management Perspective</i>, p 240–241)</p>		
<p>Question 3: How do the following four areas increase/deplete our energy levels and what can we do about them?</p>	<p>Divide the group into subgroups, assigning one of the following topics to each group:</p> <ol style="list-style-type: none"> 1. Sleep/Rest 2. Exercise 3. Disease 4. Environment <p>Ask each subgroup to discuss how the topic they have been assigned, has an impact on the physical energy levels we experience as humans. You can share the following information to help aid the discussions:</p> <p>1. <u>Sleep/Rest</u></p> <p>Sleep, and in particular good quality sleep, is absolutely vital to our health and wellbeing. We all know from our</p>		<p>20 minutes</p>

own experience how we feel when we are sleep deprived or when we have had less or poor-quality sleep.

- Sleep offers the body and mind the opportunity to revitalise, re-energise and restore. It helps to organise long-term memory, integrate fresh knowledge, and repair and restore tissue, nerve cells and other chemical compounds.⁹
- As well as leaving us feeling tired, sluggish, and irritable, insufficient sleep can also result in drops in performance, lack of concentration, reduced reaction times, problems in grouping learned information, lapses in memory, behavioural problems and mood swings as well as accidents and injuries.⁹
- Having said that, too much sleep is also not good for the body and causes lethargy.

Here are some tips to help us get the right amount of good quality sleep:¹⁰

- Have a regular bedtime routine – that means sleeping and waking up at the same time every day. Aim to get eight hours of sleep a night.
- Dim the lights and turn off all your electronic devices an hour before bed. Those include smartphones, laptops, televisions, all of which should ideally be outside the bedroom. Bright light is one of the biggest triggers to our brains that signals it to be awake and alert, so start sending the opposite signal early.
- Cut your caffeine intake by afternoon.
- Exercise regularly – not close to bedtime though. Studies show that those who do get a better night's sleep.
- Avoid heavy meals when it is late. Your body is not meant to be digesting while you sleep, so a big meal too close to bedtime may keep you up at night. Protein is especially hard to digest, so if you have to eat late, opt for something light.
- Avoid drinking too much fluid close to bedtime, as the trips to the loo will interrupt your sleep.
- Yoga, meditation, breathing techniques, and even prayer are all helpful tactics to coax your mind to wind down. These quiet activities may help you slow your breathing and heart rate and drift off sooner.
- If something were bothering you and other relaxation tips would not work, write the issues down. Clearing your mind of this mental clutter can help you drift off more easily.

In your subgroup, discuss what prevents you from getting adequate sleep and ways in which you can overcome those. Share your tips and learnings with the wider group.

“Students and youth should not sleep during the day time. Elderly people can sleep for a while during the day. At the same time, students and youth must see to it that they do not rush to work immediately after lunch. They should recline on the chair for some time after lunch, close their eyes and take a little rest. That is why it is said, “Walk a while after dinner, rest a while after lunch”. After eating, the blood rushes from the head to the digestive system. This induces some drowsiness. It is not proper to walk at that time. It is better to close one’s eyes and take rest until the circulation to the head resumes.” – Sathya Sai Baba (Prof. R.K. Bhaskar, *Man Management A Values-Based Management Perspective*, p238–239)

2. Exercise

Though you have to expend energy during a physical workout, with regular exercise, you are likely to get more energy back than you have used. Researchers at the University of Georgia, found that regular exercise plays a role in increasing energy levels and reducing fatigue.¹¹

- Research shows that physical activity can boost self-esteem, mood, sleep quality and energy, as well as reduce your risk of stress, depression, dementia and physical disease like Alzheimer’s, cardiac/lung conditions, etc.¹²
- When you exercise, your body releases chemicals called endorphins. Endorphins also trigger a positive feeling in the body. Endorphins also interact with the receptors in your brain that reduce your perception of pain.¹³
- Apart from making us fit and healthy, exercise has many other benefits too such as strengthening the heart, lowering blood pressure, improving muscle tone and strength, strengthening and building bones, and reducing body fat.¹³

For exercise to be of benefit:

- It must be regular – Experts recommend 150 minutes of physical activity a week, which equates to 30 minutes five days a week¹⁴
- To stay healthy or to improve health, it is recommended that adults aged 19 to 64 do two types of physical activity each week: aerobic and strength exercises¹⁴
- For any type of physical activity to benefit your health, you need to be moving quick enough to raise your heart rate, breathe faster and feel warmer,

either through moderate intensity activity or vigorous intensity activity¹²

In your subgroup, discuss what prevents you from regular exercise and ways in which you can overcome those. Share your tips and learning with the wider group.

3. Disease

We have all experienced low energy levels at sometimes or another due to a variety of reasons such as stress, poor nutrition or a lack of sleep.

However, disease or a bout of illness can also be a contributor to low energy levels, either in the short-term as in the case of a common cold or seasonal flu, or longer-term as in the case of chronic conditions. What makes things worse is that illnesses often lead to a lack of appetite and poor sleep, which further adds to the feeling of tiredness or fatigue.¹⁵

So, our focus should be on preventing illness in the first place, through:

- A healthy and balanced diet
- Good quality sleep
- Enough exercise
- Being as stress-free as possible (relying on God as the 'Doer')
- Keeping good company
- Having positive thoughts, words and deeds
- Regular prayer and meditation

And if you are experiencing unusually low energy levels or chronic fatigue, it may be worth visiting your doctor, as he/she is the best person to investigate the reasons and advise you accordingly. Often times, it can just be something simple like low iron, B12 or Vitamin D levels, which are easily corrected through supplements or injections.

In your subgroup, discuss what can help each of you to stay healthier and keep illness away. Share your tips and learning with the wider group.

"Every effort should be made to keep the human body healthy. Health is wealth. Wealth cannot be enjoyed by a person with poor health. Health is more important because it gives physical and mental strength to a person." – Sathya Sai Baba (SSS 27.3: January 21, 1994)

"Students here expressed their wonder as to how Swami, though 68 years old, looks young and is energetic. Really the reason for this is the imbibing of the three P's by Me,

namely, purity, patience, and perseverance. If you follow these three tenets you will not be afflicted by any disease.”
– Sathya Sai Baba (SSS 27.6: January 31, 1994)

4. **Environment**

The environment that we are in, can also impact our energy levels. Our environment includes everything around us – both animate and inanimate, indoors and outdoors. From the air we breathe, to the water and food we consume, to the things that surround us – both moving and non-moving. It includes: the people we have around us, the furniture and lighting at work and at home, and the kind of environment we live in – be it around Nature or in a built-up city, the noise levels and the weather. The environment has a great influence on us, our behaviours, and our physical activity (sleep, exercise, recreation), diet and mood.

- In previous study circle guides for Modules 1 and 2, we have already looked at how our lifestyle and other human activities such as burning of fossil fuels, deforestation, farming practices, etc. have resulted in the increase of Greenhouse Gases (GHGs), and pollution which are now having a major impact on the quality of the air we breathe, as well as the quality of our food and water.
- Noise levels, the number of buildings/green spaces, cars and other vehicles, the weather, all have an impact on how we think and feel.
- There are other factors too, the people we live with, our neighbours, the people we spend time with outside our home and at work can also greatly influence how we feel. (Watch the **video** to find out more and read the below quotes.)

In your subgroup, discuss what changes you can make to your indoor and outdoor environments to help boost your energy levels. Share your tips and learning with the wider group.

“Once when Rama and Lakshmana were walking in the Dandakaranaya, Lakshmana suddenly felt dejected and told Rama “Dear elder brother, Why this exile in the forest for us! Why should we leave Ayodhya and undergo so many difficulties in this forest? Come, let us get back to Ayodhya and lead a comfortable life there.” Realising the reason for Lakshmana’s strange behaviour, Rama held the hand of Lakshmana lovingly and said, “Lakshmana, do not be hasty in your conclusions. Come, come along with Me.” So, saying, He brought him out of that place by walking some distance. Then Lakshmana regained his poise. He realised his mistake and begged Rama to pardon him. Then Rama pacified Lakshmana saying, “Look, these are not really your

Video –
<https://www.youtube.com/watch?v=T-HnH9YgQRg>

(3 mins 41 secs)

(*Note if no video facilities are available on-site, participants can be sent video links beforehand to watch at home prior to the study circle taking place)

	<p>thoughts. This is the effect of the place through which we passed just now. Several Rakshasas (demons) tread this forest. Their demonic qualities entered you. I know very well that your heart is very sacred and pure.” – Sathya Sai Baba (SSS 40.17: September 4, 2007)</p> <p>“If the company is good, the children’s future will also be good. Tell me your company, I shall tell you what you are. As your company, so you become. So, wherever you go, join good company.” – Sathya Sai Baba (SSS 31.34: September 29. 1998)</p>		
<p>Question 4 How can we practice ‘Ceiling on Desires’ in relation to physical energy use?</p>	<p>We have looked at the role of food, sleep/rest, disease, exercise and the environment in terms of how they increase or deplete our physical energy levels.</p> <p>Within your existing subgroups that you formed earlier, discuss how we can practice ‘Ceiling on Desires’ in relation to physical energy, using the information below to support your discussions. This exercise is based on the understanding that ‘Physiologically, we must expend energy. If we do not intentionally select a positive direction, then we will expend it in a negative way’.¹⁶</p> <p>Two aspects are important here:</p> <ol style="list-style-type: none"> 1. Maintaining a balance between using too much and too little energy for activities such as eating and sleep (as discussed above). Other examples include: <ul style="list-style-type: none"> ● Not taking on too many commitments at one go to ensure that one does not compromise on eating healthy and sleeping well. ● Maintaining a balance between talking and remaining silent. 2. Once that balance has been struck, then identifying the ways in which we can use our energy levels for higher purposes; examples include: <ul style="list-style-type: none"> ● Categorising desires into ‘want’ and ‘need’ and spending less time and energy on pursuing the ‘wants’ and instead using this energy for service activities. ● Spending less time watching television and curtailing use of technology to spend on physical activity instead, whether it be exercise, chores around the house or getting involved with the ‘Serve the Planet’ initiative at home, centre and in the community. <p>So, we see from above points and based on the previous ‘Serve the Planet’ study guides that placing a ‘Ceiling on Desires’ will not only simplify our lifestyles and help conserve energy and earth’s resources but will also benefit us as well as the environment. ‘Ceiling on Desires’ is a step</p>		<p>5 minutes</p>

	<p>towards responsible and reasonable consumerism. Reduced consumerism would lead to lower energy demands, which in turn would lead to a significant reduction in the burning of fossil fuels. Less burning of fossil fuels would lead to less carbon dioxide in the atmosphere. Less carbon dioxide in the atmosphere would mean we all would have cleaner air to breathe. More of clean air would mean lesser respiratory problems, better health and fewer medical bills, a healthier society and so on.¹⁷</p>		
<p>Discussion on:</p> <p><i>Directing our physical energy towards service of the planet</i></p>	<p>A healthy body and mind are essential:</p> <ul style="list-style-type: none"> ● To progress spiritually ● To help our community in protecting the environment <p>Pose the question below to the group, using the following information to support your discussions.</p> <p>How can a healthy and energetic body help the environment?</p> <ul style="list-style-type: none"> ● When we are healthy, we are able to take on responsibilities and contribute towards the betterment of society and the environment. ● Other means by how a healthy body can serve the planet include:¹⁸ <ul style="list-style-type: none"> - A diet of minimally processed, predominantly plant-based food and water is beneficial to everything from the land's fresh water supplies to the seas' supplies of fish. - The use of our own muscles to get around whenever possible, instead of always burning fossil fuel, promotes our own health while contributing to that of land, air, and sea. ● As discussed above, when we are healthy, we will be less prone to physical illness and disease, which means fewer healthcare resources are used. <ul style="list-style-type: none"> - By reducing our lifetime risk of all major chronic disease by as much as 80 percent, we will also be reducing our consumption of water and our carbon footprint, thereby, helping make more of the planet useable for the stunning variety of other living things who also call Earth home.¹⁸ <p><i>“The human body is for rendering service to others, otherwise it will have no meaning. I direct you to implant three ideas in your hearts; (1) Do not forget God (2) Do not put faith in the world you see around you - it is ever changing and does not last. (3) Do not be afraid.” – Sathya Sai Baba (p 151, Gems of Wisdom (Third edition), C.M. Sahni)</i></p>		<p>5 minutes</p>

	<p style="color: green;">“The body has to be exercised to keep it trim as a tool for serving your fellow men.” – Sathya Sai Baba (SSS 15.12: June 27, 1981)</p>		
Group introspection	<p>Knowing what you now know about physical energy in relation to the human body, how will you apply what you have learnt?</p> <p>Please remember that this is not a call to make drastic changes or sign-up to run a marathon, but an opportunity to self-reflect and find ways of maximising the physical energy that is available to us, to make gradual changes that can benefit the individual, families, society and the planet.</p> <p>Perhaps look at pledges or encourage each other to put changes into place through a personal spiritual diary and create regular opportunities to share progress.</p>		2 minutes
SUMMARY AND CONCLUSION			
Closing summary of today’s session and what to expect at the next session	<p>In this study guide, we have covered the following:</p> <ul style="list-style-type: none"> ● What is physical energy in relation to the human body and the role of food in providing the body with the energy it needs ● How factors such as sleep, exercise, disease and the environment can impact our energy levels ● The benefit of having a healthy body and how to use our energy to help society and those around us <p>In PART 2 of this study circle series, we will cover mental energy i.e. energy relating to the mind.</p>		1 minute
HOMEWORK	<p>Earlier, we discussed how physical activity can have impact on energy levels.</p> <p>With your family and centre members, discuss the types of regular physical activities you can undertake as a group, and keep a diary to monitor the impact of the activity to discuss as part of a future study circle. Some suggestions include:</p> <ul style="list-style-type: none"> ● Nature walks ● Walk for values ● Sports for SSE Students ● Combining service with physical activity e.g. riverside clean-ups 		1 minute
CLOSE	<p>Closing prayer or reading. Prayer for universal peace – <i>Om Shanti, Shanti, Shantihi</i></p>		1 minute

Note: Ideally there should be two facilitators in groups of ten or more participants. The first facilitator conducts the study circle. The second facilitator observes the group’s dynamics and informs the first facilitator of any lethargy and confusion from participants. The second facilitator also conducts the opening activity (e.g. *Omkar*) and shares insights at the end. This helps give variety to the participants, but also allows the first facilitator space to capture important feedback and learning points to share as insights.

Appendix A

Supplement to the segment 'Physical Energy and Human Body'

How much energy does an average person require?

The amount of energy (or 'calorie,' which is a measurement of energy content of food and drink) a person needs depends upon a number of factors, including the person's age, gender and level of activity.¹⁹ There are three main factors involved in calculating how many calories our body needs per day:²⁰

1. **Basal metabolic rate** – Our basal metabolic rate (BMR) is the amount of energy our body needs to function at rest. This accounts for about 60–70% of calories burned in a day and includes the energy required to keep the heart beating, the lungs breathing, the eyelids blinking and the body temperature stabilised. In general, men have a higher BMR than women.
2. **Physical activity** – Physical activity consumes the next highest number of calories. Physical activity includes everything from making our bed in the morning to jogging. Walking, lifting, bending and just generally moving around burns calories, but the number of calories we burn in any given activity depends on our body weight. [Click here](#) (or visit <http://www.nutristrategy.com/activitylist.htm>) to see the number of calories used in various physical activities by body weight.
3. **Thermic effect of food** – This is the amount of energy our body uses to digest the food we eat. It takes energy to break food down to its basic elements in order to be used by the body. To calculate the number of calories we expend in this process, multiply the total number of calories you eat in a day by 0.10, or 10%. [Click here](#) (or visit <https://www.calculator.net/calorie-calculator.html>) to calculate the number of calories you should be eating a day to maintain your body weight. [Click here](#) (or visit https://www.nhlbi.nih.gov/health/educational/lose_wt/BMI/bmicalc.htm) to know what your ideal body weight should be.

Appendix B

Supplement to group discussion presented in Question 2 segment above on:

The role of food that has on physical energy

How carbohydrates get broken down into energy?

When you eat carbohydrates (or 'carbs'), the body breaks them down into simple sugars, such as glucose, and absorbs them into the bloodstream. As the sugar level rises in your body, the pancreas releases a hormone called insulin. Insulin is needed to move glucose from the blood into the cells, where it provides energy. **Glucose is the energy currency of the body.**

When this process happens quickly — as with simple sugars — you are more likely to feel hungry again soon. When it happens at a slower pace, as with a whole-grain food, you will feel satiated for a longer period of time. These types of complex carbs give you energy over a longer period of time²¹ and are the best way to maintain a constant energy level throughout the day.

While all carbohydrates provide energy, the type of carbohydrates we consume can make the difference between sustained energy levels throughout the day, and those that make your energy levels fluctuate.

Choosing the right food for harnessing sustained energy levels throughout the day

Understanding Carbohydrates: Simple vs. Complex carbohydrates

Carbohydrates are made up of three components: fibre, starch, and sugar. Fibre and starch are complex carbs, while sugar is a simple carb. Depending on how much of each of these is found in a food determines its nutrient quality.⁶

Simple carbs are sugars, which can occur naturally in certain foods such as milk for example. But most of the

simple carbs in our diet are added to foods and include:⁶

- Raw sugar
- Brown sugar
- Corn syrup and high-fructose corn syrup
- Glucose, fructose, and sucrose
- Fruit juice concentrate

Complex carbs are packed with more nutrients than simple carbs because they are higher in fibre and therefore, digest more slowly. This also makes them more filling.⁶

Fibre and starch are two types of complex carbohydrates and can both be found in fruits, vegetables, nuts, beans and whole grains. Other complex carbohydrates include whole wheat bread, cereal, corn, oats, quinoa, rice and leafy greens. Fibre is important because it promotes bowel regularity and helps to control cholesterol.⁶

References

1. <http://www.worldometers.info/world-population/>
2. <https://en.oxforddictionaries.com/definition/energy>
3. http://www.bbc.co.uk/schools/gcsebitesize/science/ocr_gateway_pre_2011/ourselves/1_whats_for_lun ch1.shtml
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