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POLICLINICO DI SANT'ORSOLA



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1. Introduction

Chronic non-communicable diseases such as cardiovascular and respiratory problems, cancer, diabetes are responsible for a great percentage of mortality. For instance, in Italy the percentage reaches 91%, and the costs related to these diseases, mental health problems and physical inactivity are estimated at US \$ 1,060,803.773 per year. Type 2 diabetes, apart from genetic factors, is associated with several modifiable risk factors such as overweight, obesity, unhealthy diet and physical inactivity.

The aforementioned factors along with obesogenic foods, and limited energy expenditure are among the determinants of obesity for children and adolescents. Globally, an estimated 20% are obese, about 19% in the United States, Australia, Canada, China and the European Union. Obesity is a public health problem related to the risk of developing non-communicable diseases (type II diabetes, cardiovascular disease, hypertension, atherosclerosis) in older age, as a result of modifiable risk behaviours, adopted during adolescence.

Prevention helps to control the occurrence of chronic non-communicable diseases, overweight and obesity, and improves mental health and quality of life. Promoting healthy lifestyles is an indispensable priority to develop healthy habits for a lifetime, and to slow down the pathological and physiological processes also linked to aging. Being overweight can be a cause of discrimination and contribute to inequality, leading to a negative effect that will be detrimental to the social engagement and psychological well-being of children.

Research reports (OECD/WHO, 2023) show that data have not improved, and that one in three European adults does not meet the physical activity recommendations. According to HBSC data, only 53.5% of adolescents achieve the recommendations, with a decreasing trend with increasing age, and regional data align with the national average of more than three hours in front of screens (PCs, smartphones and devices). It is estimated that by 2050 there will be 11.5 million new cases of non-communicable diseases, reducing life expectancy by 3 years. Undoubtedly, physical inactivity affects negatively health and well-being (Manzano et al., 2020).

However, achieving physical activity recommendations would add seven and a half months to the life expectancy of inactive people, and two months to those who exercise properly. In addition, it would help prevent 10,000 premature deaths per year. Physical activity can have positive and holistic effects; physiological such as cardiorespiratory capacity, body composition, muscular strength, cardiovascular capacity, glucose metabolism, quality of sleep, reduced risk of injury, motor factors such as basic skills, psychosocial factors such as self-esteem and social interactions, and cognitive factors such as concentration, space and time organisation, academic achievement, and attitudes toward school. Specifically, there is growing evidence that regular physical activity enhances learning and school achievement. Apart from benefits for the muscles, heart, lungs, and bones, regular physical activity fuels the brain with oxygen, enhances neurons' connections, and assists memory.

In recent guidelines (Istituto Superiore di Sanità, 2021) for physical activity, it is referred that *"In the context of health promotion and prevention of chronic non-communicable diseases, the promotion of physical activity is a priority public health goal that requires a multi-disciplinary and multi-sectoral approach, through actions aimed at strengthening the individual's skills and capacities and initiatives aimed at creating opportunities in a physical, social and cultural environment that can make healthy choices easy"*.

Apart from physical activity, the Mediterranean diet is considered one of the healthiest dietary patterns and is associated with better health with beneficial effects on arterial stiffness, school performance and health. Research shows that adolescents with high overall physical fitness and high adherence to the Mediterranean diet have better health-related quality of life (HRQoL) (Faigenbaum, Lloyd & Oliver, 2023). Adolescents' self-perceived health is increasingly recognised as a relevant outcome in public health research (López-Gil et al., 2020).

The benefits of the Mediterranean diet include protection against cognitive impairment, dementia or depression incidence. The diet concerns daily consumption of whole grains in combination with legumes, fruit, vegetables, low glycaemic index carbohydrates and fibre, sources of vitamins and minerals that can slow the digestion of starches, delay the absorption of sugars, reduce postprandial elevation of blood sugar, improve insulin sensitivity, and reduce the absorption of cholesterol.

The school environment seems to be ideal for enhancing physical activity, providing all children and adolescents with opportunities to be physically active during physical education (PE) classes (Verrotti et al., 2014). Moreover, since children usually consume meal(s) in school, it could improve appropriate food consumption (Khambalia et al., 2012).

A great number of systematic reviews on school physical activity programs found that these interventions are associated with increased physical activity among students (Norris et al, 2015). Reviews also found evidence that these interventions are associated with positive effects on BMI (Demetriou & Höner, 2012) and obesity prevention (Wang, CaiL, Wu, et al. (2015).

Several policies, actions and activities have been developed and implemented aiming and increasing knowledge or habits of nutrition and physical activity. For instance, the Global Action Plan on Physical Activity (WHO, 2018) is a practical action plan to promote the development and implementation of policies and strategies for increasing physical activity globally, to promote active living and lifestyles, and create promotion systems for this reason. The goal is to study the relation among physical activity, sedentary behaviour and health-related outcomes for children and adolescents aged 5-17 years, in response to growing concerns linked to the non-communicable chronic diseases.

Although studies focused separately on physical activity, dietary habits and sedentary behaviors, they showed positive effects on adiposity outcomes (Amini et al., 2015). Integrated and multi sectorial planning of school programs to promote proper dietary and motor habits and control body weight was highlighted (Sacchetti et al., 2015). School might be a crucial setting to obtain changes in obesity related behavior, on eating habits, physical activity level and sedentary behaviors in children. Therefore, overweight and obesity prevention should be based on a combined intervention to control all modifiable factors which contribute to childhood and adolescence obesity. Interventions with positive effects on life habits during childhood could be a key strategy, since it is more difficult to establish healthy habits during adulthood than during childhood (Llagues et al., 2011).

Multidisciplinary interventions seem to have better effects in preventing, managing, and treating child obesity (Amini et al., 2015), encouraging children to establish long-lasting healthy habits. However, according to Kelishadi and Azizi-Soleiman (2014), systematic reviews that examined school physical activity and nutritional interventions reported controversial results about the potential of diet and exercise interventions to prevent and manage children's obesity. Fairclough et al. (2013) with the project "CHANGE!", a 20-week school physical activity and healthy eating intervention, found positive changes on body size of upper elementary children, but no effects on physical activity level, sedentary time and food intake. On the contrary, Rausch, Herscovici, Kovalskys and De Gregorio (2013) reported that a 6-month obesity prevention program had positive effects on dietary intake and food consumption of 9–11-year-old children but no effect on their anthropometric measures. Other studies also reported positive effects of a six-month intervention on food consumption, physical activity and obesity in younger children (7–9-year-old) (Bacardí-Gascon, Pérez-Morales & Jiménez-Cruz, 2012).

Physical activity and exercise are the application of the knowledge and skills learned in the physical education class. Quality physical education programs help all students, independently of any differences, develop among others, health-related fitness, physical competence, cognitive understanding, and positive attitudes about physical activity so that they can become physically literate and adopt active lifestyles. These programs also provide learning experiences that meet children's developmental needs, and improve mental alertness, academic performance, and readiness and enthusiasm for learning.

The acquisition of healthy behaviours at school and at home are not likely to be established and consolidated without education, motivation and commitment. Maintaining them is a sustained commitment of parents, the educational community, health professionals, sports and recreational educators and coaches. Physical activity and exercise are the application of the knowledge and skills learned in the physical education class. Worldwide, less than 50% of countries have developed a national physical education policy and less than 40% of those policies are operational. Only 30% of countries have national physical activity guidelines for all age groups, and just over 40% encourage and active transport.

In Europe, there is a school health promotion network since 1992, in which the main objective is an integral part of policy development in the fields of education and health, supported by WHO, the Council of Europe and the European Commission. Educational institutions are committed to orienting the school community as a whole, not only in the curricula, towards the promotion of healthy lifestyles, through a positive environment to enable students acquire all the necessary knowledge and skills for a better quality of life in the future. Although children spend a great deal of time at school and physical activity, it is not sufficient for achieving the daily recommendations. Also, the restrictions due to the COVID-19 pandemic increased the amount of time spent in front of the screen, for education, socialising and gaming. Therefore, as mentioned above, a multi-sectoral and multi-cross-sectoral context is required for parents, educational institutions, sports clubs and the social context. Specifically, well-organized programmes in schools, workplaces and the health system, policies for access to sports facilities, urban design, environment and transport, and communication and information interventions are needed (Ministero della Salute, 2022). A social synergy fosters contact with others, allows for mutual encouragement and promotes

autonomy, self-esteem, respect and personal growth. Parents, in particular, often underestimate the problem of their children's excess weight and are not aware of the related comorbidities; adequate and continuous education should therefore be provided in schools and in places frequented by children, so as to reach out to parents as well (Ministero della Salute, 2021). It is necessary to create and implement multidisciplinary, developmentally appropriate motor activity and nutrition programmes in schools to help young people acquire the skills, fitness levels, and self-confidence to successfully participate in various movement/sport activities. Also, it is necessary to increase the experience and skills of the professionals in the field since obesity can contribute to inequality, with negative effects on social engagement and psychological well-being.

Within this challenge physical education which is a platform for instilling lifelong habits of health, resilience, and joy of the learners could become a cornerstone of a multifaceted solution. The role of physical educators extends beyond teaching sports or physical skills. They are also called to be mentors and change agents for the young learners.

The lesson plans support the contemporary Curricula of PE (i.e. IEP, 2022)

- contribute multifacetedly to the development of students, having movement as a means, and focusing on health-related fitness and physical activity.
- lead to the achievement of several specific objectives/learning outcomes at the same time.
- promote active participation, autonomy and cooperation of all students.
- are inclusive, regardless of any (many) differences that exist in a class.
- present variety, based on the needs and interests of the students and the particularities of each region.
- are developmentally appropriate and based on a learning sequence.
- show graded difficulty in the same lesson and from lesson to lesson.
- encourage all students to reflect on their individual and group learning experiences and practices.
- are interdisciplinary since they relate to other academic subjects (courses).
- involve the students with the new technologies as well as the continuous social changes.
- connect the learning outcomes with the wider life of the students, the local and wider community.

Specifically, 5th and 6th grade students during the DUSE project will try to achieve certain learning outcomes from those presented below:

- To be actively involved in all Physical Education activities.
- To participate in a variety of physical activities on a regular basis inside and outside of school, which they have chosen, to improve their health.
- To participate daily in moderate to intense physical activity inside and outside of school, at least 60 minutes or more per day and according to the guidelines of the World Health Organization (WHO).
- To make use of the possibilities provided for PA in their area and with the support of their parents (eg, school yards, parks, gyms, clubs).
- Participate in health-related PE activities (e.g. hiking, swimming, dancing, etc.) in various settings such as school, home and community based on principles of exercise.
- Perform with developed standards (qualitatively) activities and promote cardiovascular endurance, muscular strength/endurance, flexibility and body composition, achieving self-set qualitative and quantitative outcomes and keeping a log of their actions and performances.
- To apply three principles of exercise (intensity-quantity-frequency) and to modify the plan and the goals they re-set.
- To be engaged in new and challenging activities, individually or in games, modifying the degree of difficulty of the exercises, which motivate and please them.
- To record their performance, as well as that of their classmates, with and without the aid of technology, and use the results of the assessment (before and after) to plan their participation in activities to improve FC- Health.

- To participate in the evaluation of health-related fitness, using recording sheets, work cards, file, etc.
- Apply technological means as tools to support a healthy and active lifestyle.
- To exercise in the "ideal zone" and measure the heart rate in two places of the body before, during and after the end of the physical activity.
- To adopt behaviors of balancing calorie intake and expenditure to promote and improve health.
- To try to adopt a daily balanced diet the body needs to function effectively in combination with exercise (calorie intake - exercise).

The lesson plans for grades 5 and 6 were developed using a pedagogical framework grounded in experiential learning, inclusive education, and constructivist principles. This approach emphasizes active participation, reflection, and the connection between physical activity and broader life skills. Each lesson follows a consistent structure—learning outcomes, introduction, activities, review, and synopsis—designed to support cognitive, emotional, and physical development in this age group. The slides developed by UNIBO for different age groups and teachers were designed to convey core nutritional concepts in a clear and accessible format. While some duplication exists across age groups to reinforce key messages.

The educational framework for older students, including adolescents and university-level participants, is grounded in principles of autonomy, self-efficacy, and experiential learning. While the physical education curriculum provides a foundation for younger students, the interventions for older age groups are informed by behavioral science and pedagogical models that emphasize personal agency and reflective practice.

For adolescents, the intervention design incorporates elements of the Social Cognitive Theory, particularly the role of observational learning, self-regulation, and reinforcement. Activities such as food diary compilation, app-based tracking, and peer-led discussions are structured to enhance awareness of health behaviors and promote internal motivation. The App Inventor component further supports this by engaging students in the creation of personalized health-tracking tools, fostering ownership and digital literacy.

At the university level, the course "Diabetes: Physiology, Education and Prevention" integrates interdisciplinary content delivered by experts from all partner institutions. The pedagogical approach is based on constructivist learning, encouraging students to synthesize knowledge from physiology, public health, and education to design and evaluate interventions. Seminars and project-based assignments are used to develop critical thinking and practical skills in health promotion.

Across all age groups, the interventions are designed to align with behavior change models such as the Self-Determination Theory, which emphasizes the importance of competence, autonomy, and relatedness in sustaining healthy behaviors. Goal-setting exercises, self-monitoring tools, and feedback mechanisms are embedded throughout the educational material to support these psychological needs and facilitate long-term change.

The design of the DUSE interventions has been informed not only by pedagogical and behavioral principles but also by practical considerations related to cost, time, and resource availability. Recognizing the diversity of educational systems and constraints across participating countries, the consortium has aimed to develop materials that are feasible to implement within existing school structures and schedules. Each lesson plan has been designed to fit within standard physical education periods, typically 45–60 minutes, and to require minimal additional equipment beyond what is commonly available in schools. These activities are structured to be led by PE teachers, or general educators without the need for specialist training, although optional training modules are provided to enhance delivery quality.

In terms of financial cost, the interventions rely primarily on existing human resources from the DUSE consortium and local infrastructure. The App component is freely accessible and designed to run on widely available devices. Some activities, such as the middle school intervention involving blood glucose demonstrations, requires specialist equipment and personnel from IRCSS AOUBO. These activities are intended as optional enhancements and would be adapted or replaced in broader rollout scenarios to ensure feasibility.

Curricular integration has also been a guiding principle. The interventions align with national physical educator and health education curricula, and where possible, interdisciplinary links are made with science, technology, and citizenship education. This supports the embedding of the program within existing teaching priorities and reduces the need for additional instructional time.

Nutritional contents have been delivered by specialists and master students from UNIBO. Those students built their master degree thesis on DUSE results.

1.1 Replication and scaling strategy

To support scalability, the consortium has documented the time and resource requirements for each activity and is developing implementation guides that include low-cost alternatives, scheduling suggestions, and role definitions. These materials will help schools and policymakers assess the feasibility of adopting the interventions within their own contexts.

The DUSE framework provides a flexible and iterative structure that supports the scalability of the project across different contexts and age groups. Because each phase, Design, Use, Social, and Evaluation, can be adapted to local needs, the approach allows for gradual expansion while maintaining core pedagogical principles. The modular design of the lessons enables replication in diverse educational settings, including schools with different grades or family-based programs. Moreover, the participatory and constructivist nature of the project encourages collaboration among experts, educators, learners, and families, making it sustainable and adaptable at larger scales.

The DUSE framework was intentionally developed as a low-cost, modular model that can be implemented within the existing human and infrastructural resources of schools, universities, and community health services. While the pilot phase relied on DUSE partners for co-design and supervision, replication does not require their continued involvement. Instead, capacity will be transferred through standardized training materials and open-access resources.

1. Resource and cost structure

- **Human resources:** delivery can be led by physical education or classroom teachers, supported by locally available health educators. No new staff positions are required.
- **Training:** a short online train-the-trainer module (6–8 hours) prepares educators to apply the DUSE lesson plans and app-based activities independently.
- **Infrastructure:** activities take place in standard school settings using common equipment (balls, cones, mats). The Vitalia App operates on smartphones or tablets already used in schools, without licensing costs.
- **Financial cost:** the model's primary expenses relate to staff time for training and coordination. Material and technology costs are negligible due to use of open-source tools and publicly available educational materials.

2. Replication Model

To enable scaling, the consortium is preparing an implementation toolkit, including a step-by-step Intervention manual linking activities to curricular goals, facilitator topic guides for age-appropriate delivery (see section 13), evaluation templates for standardized pre/post assessment, and adaptation notes allowing national translation and cultural contextualization.

3. Scaling Pathways

Scaling can occur through three complementary channels:

- **Education systems:** integration into national PE or health education curricula via ministries of education.
- **Public health networks:** adoption by local health authorities or NGOs as part of youth prevention programs.
- **Digital dissemination:** the Vitalia App and toolkit will remain open-access for schools wishing to adopt the program autonomously.

By grounding the design in existing resources, standard equipment, and open digital tools, DUSE ensures that replication is financially viable and operationally realistic in non-project contexts. The scaling model thus moves from expert-led delivery to institutionally owned implementation, securing long-term sustainability.

1.2 Impact in other WPs/activities

The Deliverable 2.3 "Educational material" will have an impact on the Deliverables of the WP3 "Study implementation", and WP5 "Study evaluation".

The DUSE intervention strategy is built on a modular and age-specific framework that allows for tailored educational experiences while maintaining coherence across countries and populations. This structure was selected to ensure developmental appropriateness, cultural relevance, and pedagogical effectiveness. Each age group—

elementary school children, adolescents, and university students—receives content designed to match their cognitive, emotional, and social maturity, while sharing core themes related to physical activity, nutrition, and diabetes prevention. The advantage of this approach lies in its flexibility and adaptability. By designing discrete interventions, we are able to respond to the specific needs of each group and setting, whether school-based, clinical, or university-level. At the same time, the interventions are unified through shared learning outcomes, common evaluation tools, and a harmonized Theory of Change. This ensures that data collected across sites and age groups can be meaningfully aggregated and compared, supporting a robust impact evaluation.

The collaborative development of lesson plans, app-based activities, and dietary protocols has enabled partners to align on key pedagogical and behavioral principles. Evaluation steps—including pre- and post-intervention assessments, goal-setting exercises, and self-monitoring tools—are embedded across all interventions, allowing for longitudinal tracking and cross-sectional analysis. These mechanisms support not only the measurement of individual change but also the assessment of replicability and scalability across diverse educational and cultural contexts. While the modular design offers clear benefits in terms of customization and engagement, we acknowledge that it requires careful coordination to ensure consistency in implementation and evaluation. To address this, the consortium has established shared protocols, centralized data management systems, and regular cross-partner review processes. These measures strengthen the internal validity of the study and enhance its potential for informing broader policy and practice in diabetes prevention.

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1.3 Executive summary

Deliverable 2.3 targeted on the preparation of training on health determinants. Twenty-eight lesson plans included in teaching units, based on the objectives of contemporary physical education, and corresponding student learning outcomes in 5th and 6th grade were developed. Also, a detailed presentation with lessons/content related to nutrition, hydration, physical exercise and rest/sleep was created for high school students. Moreover, an international university course was created and applied with lectures by all partners to graduate students, based on DUSE protocols. In addition, dietary programs based on different calories so that the participants in clinical (and not only) settings could change their dietary habits were created. Parent seminars will be also realized.

1.4 Scope of the document

The scope of the document was to develop and provide educational material for elementary and high school students as well as for Graduate students regarding physical activity and nutrition. The focus with the elementary school students was on enhancing knowledge about health-related fitness, physical activity and exercise, but also on assisting them to achieve a higher health-related fitness level, through the physical education course. In parallel, the scope was to develop and present educational material to develop high school students' knowledge upon nutrition, hydration, physical exercise and rest/sleep.

Moreover, the scope was to develop students' knowledge, attitudes, and behaviors upon nutrition, providing dietary programs with different calories. School teachers, PE teachers as well as classroom teachers can use this ready-to-use material in their course. The material could be introduced during the lesson(s) that have similar content or in related school activities and programs. At the same time the interaction with the content can take place at home, at play with friends etc.

2. Activities for elementary schools, in the frame of DUSE

1. Pre-test measurement
2. Lesson plan/units and activities implementation during the PE course
3. App usage after school
4. Post-test measurement
5. Retention test measurement

During the implementation period, children participate in a great number of physical/sports activities that assist them in achieving the learning outcomes of health-related fitness and physical activity. These activities are performed individually, in pairs and groups. Children explore, think critically and creatively, collaborate, learn through movement.

3. Activities for middle and high schools, in the frame of DUSE

DUSE project delivered lessons on nutrition and physical activity to two age groups, 12-year-old and 16-year-old students. While the core content and visual materials (slides) were consistent across sessions to ensure alignment with learning objectives (see sections 8 and 9 of this document), we differentiated our approach according to developmental and cognitive levels. For younger students, we emphasized concrete examples, interactive discussions, and relatable daily-life contexts to support understanding. For older students, we incorporated more abstract reasoning, peer discussion, and opportunities for reflection and critical thinking. This adaptive approach aligns with constructivist pedagogy, as it allowed learners in each group to actively construct meaning through age-appropriate participation, dialogue, and reflection.

3.1 Activities for middle schools

The DUSE project recognizes the importance of reinforcing learning through multiple modalities and environments. The Vitalia App is now being designed not only as a gamified tool for engagement but also as a pedagogical extension of the classroom experience.

Drawing on constructivist and experiential learning models, the App will include features that revisit concepts introduced during physical education and nutrition lessons. These include interactive quizzes, scenario-based challenges, and personalized goal-setting modules that mirror classroom activities.

This alignment allows for periodic reinforcement of key messages, supports self-regulated learning, and encourages students to apply knowledge in real-life contexts. The integration also enables longitudinal tracking of behavior change, linking classroom engagement with digital interaction data.

By embedding the Vitalia App within a coherent pedagogical framework, the project ensures that the digital and physical components of the intervention are mutually reinforcing. This approach enhances the potential for sustained impact, supports differentiated learning, and contributes to the scalability and replicability of the intervention across diverse educational settings.

1. Compilation of food diaries pre-intervention
2. Filling out questionnaires (pre-intervention)
3. DUSE lessons at school
4. Trip to the supermarket
5. Measurement of fasting and post-lunch blood glucose on some teachers to show the students what happens after a meal
6. Organization of rotating sports activities in the school gym
7. App usage
8. Compilation of food diaries post-intervention
9. Filling out questionnaires post-intervention
10. Photo exhibition healthy food - junk food at the school reception.

3.2 Activities for high schools

1. Compilation of food diaries pre-intervention
2. Filling out questionnaires (pre-intervention)
3. DUSE lessons at University of Bologna facilities
6. Theoretical-practical workshops, where students had the opportunity to explore the science of movement and training up.
7. Practical workshops with dedicated discussions with nutrition experts on the following topics: contaminants in fast food, common food myths, how to create a complete and balanced meal, sugary drinks and alcohol.
8. Compilation of food diaries post-intervention
9. Filling out questionnaires post-intervention

4. Protocol for high-risk population

The protocol for high-risk population includes the participation of adolescents seeking weight loss treatment at the outpatient clinic for Childhood Obesity of the Department of Paediatrics, IRCCS AOUBO S. Orsola-Malpighi Hospital. Participants are enrolled directly through the hospital, and no school-based classes are involved. Instead, the intervention is delivered through bi-monthly meetings held outside school hours, where kids engage in

structured group sessions with a multidisciplinary team including doctors, dietitians, nutritionists, psychologists, and physical activity trainers.

Exclusion criteria include secondary causes of obesity (genetic, endocrine, or iatrogenic forms), the presence of other chronic diseases, or mental illness. The educational material used mirrors that of the low-risk school-based cohort, including the gamification strategy, ensuring consistency in content and learning objectives.

A key feature of the protocol is the personalized dietary planning, which is discussed and assigned by the dietitian based on each participant's individual nutritional needs and clinical profile. These plans are reviewed regularly during follow-up sessions to monitor progress and adjust recommendations.

To enhance the success of the intervention, parents and grandparents are actively involved. They are invited to participate in educational classes focused on practical strategies for supporting healthy behaviors at home, including increasing physical activity, reducing sedentary time, and adopting sustainable dietary habits. This family-centered approach is designed to reinforce behavior change and create a supportive environment for the children.

Parents and grandparents will be invited by sharing family traditions, recipes, and experiences related to nutrition and physical activity. This promotes cultural relevance and strengthens the connection between formal learning and everyday life. We seek for the mutual collaborations between participant kids and family members through home-based activities, such as preparing a healthy meal together or engaging in physical challenges, then reflect on these experiences during class discussions. This reinforces knowledge through social participation and experiential learning. IRCSS AOUBO team plans intergenerational workshops, where families discuss lifestyle habits, share reflections, and co-create small health goals. This supports dialogue and mutual learning across generations, a key aspect of constructivist pedagogy. Families will provide feedback on the project's impact through reflective surveys, helping assess both educational outcomes and social engagement. By integrating parents and grandparents across all stages, the project not only enhances learner reflection and motivation but also strengthens the social dimension of constructivist learning.

While the intervention includes activities such as blood glucose demonstrations (e.g., measuring fasting and post-lunch glucose levels on volunteer teachers or staff), these are conducted within the clinical setting using hospital resources and under medical supervision. This ensures safety and feasibility, and such components are considered optional or adaptable in future scaling scenarios.

The protocol has been designed with scalability in mind, balancing clinical rigor with logistical feasibility. By leveraging existing hospital infrastructure and scheduling sessions outside school hours, the intervention minimizes disruption to academic routines while maintaining high engagement and educational value.

The high-risk intervention targets adolescents receiving care for overweight or obesity in clinical or community health settings (Zhu et al., 2025; Young et al., 2019; Melo et al., 2025). Following initial piloting and family consultation, the delivery model was refined into a blended format, combining short in-person family workshops with online reinforcement tasks. This modification was based on empirical observation that families engaged more effectively when sessions were conducted in person with hands-on activities and peer discussion, supported by follow-up digital contact. The intervention will have the following structure and frequency.

Duration: 10 sessions over 5 months (bi-monthly).

Session length: 90 minutes.

Participants (kids): 8–10 adolescent per group.

Participants (parents): 8–10 family members per group (at least one caregiver per participant kids).

Delivery mode: In-person at the clinical facility, supported by online reminders and self-monitoring tasks.

Core team will be composed by 1 paediatrician or clinical coordinator (medical supervision), 1 dietitian (nutrition education and meal planning), 1 physical activity trainer (exercise demonstration and home-activity guidance). Other contributors might be medical students or trained facilitators to assist with logistics and data collection.

Each session combines brief expert input, practical demonstration, and family-based reflection.

Session	Core theme	Main activities
1	"Understanding My Health"	Baseline discussion, anthropometric measurements, goal setting.
2	"Family Food Habits"	Interactive meal planning, identifying barriers, setting weekly home tasks.
3	"Physical Activity for All"	Demonstration of low-cost, home-based exercises; step-count challenge.
4	"Screen Time & Sleep"	Family dialogue, self-assessment worksheet.
5	"Stress and Motivation"	Group discussion led by psychologist; coping strategies.
6	"Review and Celebration"	Post-assessment, reflection, feedback, certificates of participation.

4.1 Resource, cost considerations and scalability

- **Human resources:** all facilitators are existing hospital or community health personnel; no new staff positions are required.
- **Material costs:** negligible; use of printed worksheets, educational slides, and demonstration equipment available on site.
- **Estimated staff time:** approximately 18 hours per professional over 3 months per 10 families.
- **Digital component:** use of the Vitalia App and online goal tracker (free, open source).
- **Indicative cost per family:** DUSE activities are delivered within the DUSE framework. Estimated cost for families is below €150 (based on personnel time and materials).

The model is designed for adaptation to community health centres where educators and trainers can use the DUSE toolkit, school–health collaborations where PE teachers and dieticians co-facilitate sessions, and local NGO programs through the train-the-trainer approach.

By reducing the intensity of specialist involvement and using group-based, short-session formats, this protocol maintains clinical integrity while remaining resource-light, supporting future scale-up within existing health education budgets.

The refinement of the high-risk cohort intervention demonstrates the consortium’s capacity to balance scientific rigor with feasibility. The resulting blended family model provides a structured, reproducible pathway for implementation in diverse healthcare and educational contexts at sustainable cost.

5. University course

The title of DUSE university course is DIABETES: PHYSIOLOGY, EDUCATION AND PREVENTION organized in the international master degree of Wellness, Sport and Health of the University of Bologna which includes a significant number of foreign students from EU and non-EU countries. In this first year, all partners provided lessons and seminars to 11 students. The consortium developed evaluation methodologies. Course information can be find at

the following link: <https://www.unibo.it/en/study/phd-professional-masters-specialisation-schools-and-other-programmes/course-unit-catalogue/course-unit/2024/503928>

5.1 University course and multiplier effect

The university-level component of the DUSE project was designed as a pilot for integrating diabetes prevention education into higher-education curricula, with the aim of creating sustainable academic pathways for future health and education professionals. The course "Diabetes: Physiology, Education and Prevention" was delivered during the first semester of the 2024–2025 academic year (October–December 2024). It comprised 24 hours of blended instruction combining lectures, case-based seminars, and project-based assignments.

The course's impact and multiplier potential stem from its integration within a formal university curriculum and its contribution to professional training. Participants, 11 postgraduate students from six countries, developed small-scale prevention projects targeting schools, sport associations, and community groups, applying the DUSE pedagogical framework in their own professional contexts. Further, five additional students from the master course "Nutrizione umana, benessere e salute" performed their internship within DUSE activities framework and four of them have incorporated DUSE methodologies into master's theses. At present, two graduates are collaborating with local schools to pilot adapted lesson modules.

While these are early indicators, they demonstrate how embedding the intervention within university curricula can foster knowledge transfer and capacity building beyond the consortium itself. Future course editions (scheduled for Fall 2026) will collect systematic data on graduate dissemination activities to quantify this multiplier effect more robustly. In this way, DUSE establishes a replicable higher-education model that cultivates informed professionals equipped to extend diabetes prevention practices in educational, clinical, and community settings.

6. Educational material developed by DUTH: daily lesson plans for health-related fitness & physical activity units

The first 20 PE lesson plans are organized in 7 Teaching Units. Each Teaching Unit includes 2-4 daily lesson plans. Under a Unit there are lessons plans that align with common learning outcomes on health-related fitness, physical activity, and nutrition. Each Unit and its lessons are highlighted with different colors.

EXPLANATIONS

In Gray font: children's answers to Physical Education (PE) teacher's questions

LOs = Learning Outcomes (After the lesson, the students should be able:)

 = theoretical part

 = motor activity

 = homework

6.1 Unit 1 - introductory

6.1.1 Lesson 1

EXPECTED LOs :

- ♦ to measure and/or record heart rate before and after a physical activity, with the PE teacher's help
- ♦ to acquire knowledge about the health-related fitness components and the activities that develop them
- ♦ to correctly perform skills in activities that promote health-related fitness

INTRODUCTION : (5')

📖 Today we will learn (or remember): the health-related fitness components and how we can improve them, to perform correctly the activities that improve them, and to measure our heart rate.

📖 Remind (if students have already been taught) through questions and answers or explain the components of health-related fitness: *cardiovascular endurance, muscular strength, muscular endurance, flexibility and body composition.*

- **Cardiovascular endurance** is the ability of the heart and lungs to send enough oxygen to the body when we do activities that last a long time (more than 20' e.g., running/walking, cycling, swimming, basketball, football, skipping rope, etc.) (it also called **aerobic endurance** or **capacity**)

- **Muscular strength**: how much force a muscle or group of muscles can exert in a single effort

- **Muscular endurance**: the ability of a muscle or a group of muscles to "work" for a long period of time without getting tired.

- **Flexibility**: the ability to move your joints fully to prevent muscle injury

- **Body composition**: how much of our body is fat and how much is body mass? (muscles/bones/organs/fluid) as a result of diet and exercise.

Why is each of the above elements important for health? (e.g., strong abdomen & back, no back pain - good cardiovascular endurance, we don't tire easily - good flexibility, we avoid injuries - good body composition, better health and functions)

🏹 GAME "TAILS" (5')

The game is played with 2 tails (ribbons, t-shirts, whatever insignia you have) hanging left and right (from pockets, belt, etc.).

ORGANIZATION: On the half basketball court

Everyone is chasing everyone else to steal tails. RULE: no one is left without a tail! IF a child LOses both of their tails, another child who has more than two MUST give one to the child who doesn't have one (2-3 restarts of the game depending on the situation)

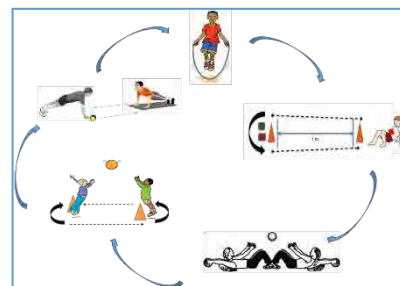
MAIN PART

🏹 "PRACTICE IN STATIONS" (10')

Children in pairs are placed at 5-6 stations in the space, such as:

- in twos, facing each other, in plank position roll a ball to each other
- individual jumping rope
- in twos, facing each other, curl up exchanging a basketball
- in twos, one throws a bean-bag, the other catches it and then change positions
- in crab position, movement around cones 5-7 m apart.

Adding music, when possible, with an appropriate tempo, acts as a motivational factor. When the music is playing, they work (30" each station), when it stops, they change stations.



👂 You constantly check the **correct performance of the exercises** and provide feedback

After children do all the exercises in stations, they perform **stretches in a circle** that you indicate and at the same time ask:

- What activity(ies) made your legs stronger?
- Your hands? The torso?
- With which one(s) did you gasp the most and your heart beat the fastest?
- So, if you want to improve muscular endurance, what activities should you do?
- If you want to improve cardiovascular endurance, what exercises will you do?

📖 Review of the effect of exercise on the cardiovascular system. You ask:

- How do we know how hard the heart is working? (*we count heart beats*).
- What is a heartbeat? When does it change?

- How many heartbeats/pulses do we have at rest (when we are sitting)? (60-100).
- How many do we have when we exercise, more or less?
- What activities make the heart stronger?
- What is our pulse rate when we exercise to strengthen the heart? (130 to 180 beats)

They count resting pulses for 6" (with your 'go' and 'stop') and multiply by 10 (put a 0 in the number they found) to see heartbeats per minute (If you taught them another way to measure heart rate, you keep it). You help anyone who is having difficulty to locate the pulse in the neck.

- You ask the children to repeat frequently the measurement outside of school (e.g., when watching TV, when they are scared by something, when playing, etc.) and to measure their parents' pulses for practice.

"TEAM RUNNING" (7')

ORGANIZATION: Children in groups of 3 or 4, one behind the other.

INSTRUCTIONS: The teams run slowly around the field, each team with its first child as the leader. You blow a whistle every 1 minute and the last child in line runs first and becomes the leader.

The pace is slow and steady, running openly in large curves in space, not in a circle.

When children finish, **they measure their pulse**. They compare it with the resting pulse which they measured before. The ideal exercise heart rate, in relation to resting, to improve cardiovascular endurance is between 60% and 85% of the maximum heart rate (220-age), i.e. it can be e.g. 130-180

- Explain children that people in good physical condition have lower resting heart rates. Ask why? (*The heart pumps more blood with each beat because it is stronger*).

You remind children that people are not all the same. What matters is the physical condition and its improvement in relation to ourselves and not to others.

YOU ASK:

- ☞ *What element of health-related fitness did you develop by running in today's activity? Why?*
- ☞ *Did anything else in your body change besides your heartbeat? (e.g., breathing rate, sweating, blushing). Why?*

SYNOPSIS

 Stretching exercises in a circle and answer your questions:

- ☞ *What are the health-related fitness components?*
- ☞ *What components did we work on today?*
- ☞ *With what exercises each one?*
- ☞ *How do we measure pulses? (on the neck or wrist, for 6", times 10 = pulses/minute)*
- ☞ *How many are the resting pulses?*

You give group feedback on what we have at the beginning of the plan for what we will learn today (to what extent does the class know the health-related fitness components and the activities that improve them, how correctly they perform the activities, how many children measure their heart rates correctly and that in future lessons all of this will be improved further)

6.1.2 Lesson 2

EXPECTED LOs:

- ♦ to know the health-related fitness component and activities that develop them
- ♦ to perform, qualitatively and quantitatively, skills that promote health-related fitness components and record their scores
- ♦ to set individual goals that follow SMART criteria (specific, measurable, achievable, relevant and time-bound)

INTRODUCTION : (2')

 Remind with questions:

- ☞ *What are the health-related fitness components?*
- ☞ *Which element do you cultivate if you do:*
 - *as many vertical jumps as possible in 15"?*
 - *horizontal jumps forward-backward over a line for 20"?*
 - *as many push-ups as you can in 20"?*
 - *ride a bike for half an hour*
 - *stretching*

"I SAY-THEY DO" (5')

ORGANIZATION: Children in circles of 4-5. One ball in each circle, a child holds the ball.

INSTRUCTIONS: Whoever is holding the ball says out loud the name of an exercise that children are performing with up to 10 repetitions (e.g. sit-ups). When the repetitions are finished, the person with the ball throws it to another child who in turn says another exercise. The ball passes through all the members of the circle.

GAME: "SKETCH RELAY" (7')

ORGANIZATION: The children are in groups of three. For each group there is a marker and a blank A3 sheet at the other end of the gym or yard. On the A3 you have written the health-related fitness components that you want them to draw or write about (e.g., muscular strength/endurance, cardiovascular endurance, flexibility)

INSTRUCTIONS: Each child **runs*** to their group's A3 sheet and has 10" to draw a sketch of an activity (or write its name). Then he/she runs and gives the marker to the next child.

The children who are waiting perform activities that they choose or that you assign to them (e.g. jumping jacks, jumping rope, alternating knee lifts, etc.).

The teams have **5 minutes** to design (or record) as many activities as they can. The result will be a collaborative mural.

You check and what was recorded or planned is reported to the class.

* you can also ask for other movement skills (hopping, jumping, skipping, galloping etc.)

MAIN PART

 "FITNESS ACTIVITIES" (10') to learn or remember (if they have been taught) what a SMART goal means

ORGANIZATION/INSTRUCTIONS: Distribute to the children a sheet with the following table (see [ADDITIONAL MATERIAL](#)):

	1 st measurement/...../.....		2 nd measurement/...../.....
Exercises (30")	repetitions	target	repetitions
Push-ups			

Sit-ups			
Jumping jacks			
Side-lying leg raises			
Climber			
Claps under the leg, alternating			

You explain the exercises and points of attention for correct performance.

Each child in their space performs the exercises in whatever order they want. They start on your signal, they stop on your signal, you give them 10" to record their performance in the first column. Then, they start a new exercise and so on, until they are all finished.

- ☞ You constantly check the **correct performance of the skills** and provide feedback, check the recording of scores.
- ☞ At the end you ask them to take their pulse.

HOW TO SET SMART GOALS (5')

ORGANIZATION: The children form a large semicircle with their leaflet and pencil in front of them.

INSTRUCTIONS: Explain how we set goals (what characteristics they must have to be "smart")

SMART targets:
 Specific
 Measurable
 Achievable
 Relevant
 Time-Bound

- Put the children in the goal setting process (remind them if they have already been taught it).
- Focus on improving over their previous personal performance.
- Teach children to set **specific** and **measurable** goals (e.g., for push-ups, the goal should be *"I will do 2 more" than before* and not just *"I will do more"*).
- Check that their goals are **simple** but also **challenging** and **realistic** for each child (e.g. goals should not be easy (they get bored as there is no challenge), but not too difficult (they get discouraged and give up)).
- Have the children **write down** their goals and set a **time frame in which** they will achieve them.
- Help each one by explaining strategies for improving and maintaining their fitness.
- Support and provide regular feedback on progress towards achieving their goals.

You ask the children to look at their scores in the previous activity and **to fill in** for each exercise the goal they want to achieve in the performance they will do next.

You ask: *What are you doing to achieve your goal?* (more effort, the best I can, etc.)

 You repeat the FITNESS ACTIVITIES they did before as well as recording the new scores (6')

- ☞ You are discussing whether the goals set were SMART and why?

SYNOPSIS :

 Children do stretches and you ask:

- ☞ *Which fitness component does each of the exercises in your leaflet develop?*
- ☞ *Which fitness component develop the exercises you are performing now?*
- ☞ *What do I pay attention to when I do sit-ups? When I do push-ups? (key points)*

☞ What do I pay attention to when setting goals so that I can achieve them? So that they are "smart"?

- ☞ Motivate children to set a weekly goal and check achievement. How will they prepare to succeed? (practice outside, when and how many, etc.)

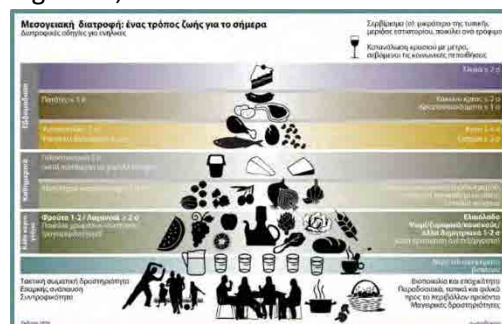
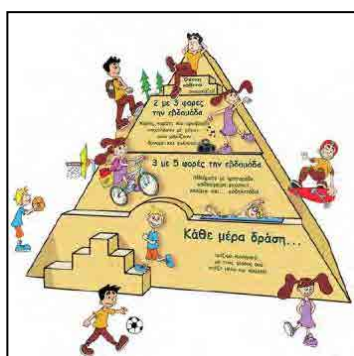
6.1.3 Lesson 3

EXPECTED LOs :

- ♦ to know the principles and contents of the Mediterranean diet (e.g., food categories and their contents, frequency of consumption)
- ♦ to understand and analyze the importance of healthy habits, such as diet, exercise and their combination, for improving health
- ♦ to perform locomotor and non-locomotor skills

- ☞ Children study the Mediterranean diet pyramid (perhaps they were taught it as part of another lesson or program at school) or time/lesson is dedicated to informing them, in collaboration with the

computer science lesson). e.g., the adjacent image from <https://eyzhn.edu.gr/teaching-children-mediterranean-diet/> and information at



<https://photodentro.edu.gr/v/item/ds/8521/3661>

- ☞ Accordingly, for the physical activity pyramid: <https://eyzhn.edu.gr/the-pyramid-of-physical-activity/>

🔴 "AM I CHOOSING RIGHT?" (5')

ORGANIZATION: Children spread out on a line (e.g., on the sideline of the basketball court)

INSTRUCTIONS: You express the following opinions and if the child agrees, he/she runs to the other side of the field/court and returns, if he/she disagrees, he/she stays in place and do jumping jacks.

- ❖ Before starting the next question, they answer the **WHY question** of the previous correct answer.

- I should eat two or more fruits a day 😊
- At least half of the foods I eat daily should be of plant origin (fruits, vegetables, legumes, nuts, potatoes, whole grains) 😊
- It is good to eat fast food such as pizzas and hamburgers, etc., at least 3 times a week
- It is good for my health to drink soft drinks and commercial juices every day
- My breakfast should include biscuits and croissants because they have sugar which is good for my health
- I need to drink a lot of water when I run or play soccer or basketball or other games for a long time 😊
- I need to exercise at least one hour a day 😊
- I need to do exercises to strengthen my muscles at least 3 times a week 😊
- If I exercise every day, I can eat hamburgers and pizza every day
- Homemade hamburgers and pizza are more nutritious than store-bought ones 😊

"THESAURUS-PYRAMIDS"

ORGANIZATION: In groups, they are asked to complete a series of 5 tests/activities, 1 for each station, to reach the "treasure" (Completing a puzzle with 2 pyramids: 1 of nutrition & 1 of exercise).

INSTRUCTIONS: At each station, upon completing the mission, they receive a piece of the **food pyramid** and one of the **exercise pyramid**. The goal is for each team to create the two pyramid puzzles at the end.

Discussion about their daily and weekly eating and exercise habits according to the pyramids

SYNOPSIS:

 Stretches

QUESTIONS: *What foods have you already consumed since morning? Which were nutritious and which were less nutritious according to the principles and content of the Mediterranean diet?*

6.2 Unit 2

6.2.1 Lesson 1

EXPECTED LOs:

- ♦ *to be actively involved in all Physical Education activities*
- ♦ *to understand and analyze the importance of physical activities with a focus on lifelong exercise for improving health*
- ♦ *to apply well non-locomotor and manipulative skills in team activities (e.g., correct balances and correct performance of passing skills in basketball, soccer, handball, and volleyball)*

INTRODUCTION: (7') (Warm-up of the large muscle groups)

 « The UP DOWN!"

ORGANIZATION: The children are in twos spread out in the space. One of each pair stands up and the other in a "crab" position (belly up) or a "bridge" position (belly down), they choose for themselves.

INSTRUCTIONS: At your signal, the standing children move around the space and pass over a "crab" or crawl under a "bridge". After each pass, the child **turns** to the opposite position (from "crab" to "bridge" and vice versa). Change roles at your signal every 1 minute.

→ for standing children: " *Carefully pass over and under other children*"

"Pass a different child each time"

→ for the kids below: " *Tighten your muscles, keep them strong*"

→ **Count** (individually) how many children you " **turned over** "

 After everybody has passed from both positions, **you ask** :

- ☞ *What health-related fitness components do you practice? (muscular endurance and strength) which parts of the body (abdomen, back/waist, arms, etc.)?*
- ☞ *What is the benefit to your health when muscle strength and endurance increase? (e.g., we become more agile and flexible, injuries and back pain are prevented).*
- ☞ *Think about your score. How can you improve it? What will you do? (e.g., I will move faster, I will constantly look for a free child).*
- ☞ *Consider and tell a variation of the game without changing the crab/bridge (e.g., you stay with your partner and only flip your pair)*

 Repeat the game for one round with the variation of the last question (30" for each child)

- ☞ At the end, ask them to think about "*how the difficulty of the exercise can be increased for any children who wish to do so*" (e.g., *to do 1 push-up in the bridge and crab position*). Application in the next lesson

MAIN PART

🔴 "PASSES AND FITNESS" (25')

ORGANIZATION: Practice teaching style with stations: You create 4 practice stations with group activities that can last 5-6 minutes [e.g., passing games: passes with foot - 5 passes=1 goal, basketball passes-5 passes=1 point, handball passes-5 passes=1 point, overhead volleyball passes=5 consecutive=1 point, as well as traditional dances and aerobics (where music is required, organize accordingly)].

INSTRUCTIONS: The children (divided into groups of 6 and/or 4) go through all the stations playing 3X3 or 2X2 games. You can use music as routine for start and stop of the activities and change of stations.

- ☞ You ask the groups to decide whether they will do 5 passes or change to 3 or 7 or 10 so that all members participate at their level.
- ☞ Encourage them to change their goal during the game if it is too difficult or easy.
- ☞ Before performing at each station, give them 1 minute to **record on a health card/notebook the benefits of each activity on their health**, as well as 2-3 important key points of the skills that the activities include.
- ☞ You constantly check the **correct performance of the skills** and provide feedback at all stations

SYNOPSIS :

🔴 Stretches (students in a semicircle) and simultaneous questions:

- ☞ Think about the activities of today's lesson. What health-related fitness component did each activity of the lesson develop? The totality of the activities? Why? What were the benefits? (SYNOPSIS of what they recorded in their notebooks)
-

6.2.2 Lesson 2

EXPECTED LOs :

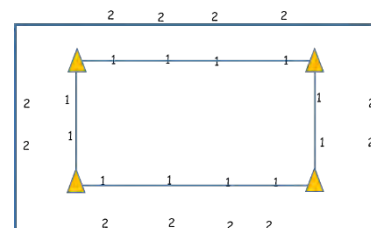
- ♦ to be actively involved in all Physical Education activities
- ♦ to understand and analyze the importance of healthy habits, such as diet, exercise and their combination, for improving their health
- ♦ to correctly perform locomotor and non-locomotor skills for health-related fitness

INTRODUCTION : (Warm-up 7 ')

Y "RUN IN TWOS"

ORGANIZATION :

1. 4 cones in the corners of the volleyball court. The volleyball lines and the basketball lines create the running track (See the picture). Alternatively, create running tracks with cones, chalk, etc.
2. The children are in twos with a bean bag or ball for each pair.
3. Decide who is 1 and who is 2. 1 will be near the volleyball line (inside) and 2 will be directly across on the basketball line (outside) **holding the bean bag** in hand. Make sure the children are spread out on all four sides of the basketball court.



INSTRUCTIONS: You say: "1 ready, 2 **Jumping**" **Jacks** - let's go! "The 2 of each pair throws the bag to the partner and starts the Jumping Jacks, No1 takes the bean bag and runs one round the track. On his/her return, he/she gives the bean bag to No2 and the roles are reversed.

When both finish a round, you change exercises: e.g., "1 ready, 2 **push-ups** - let's go!"

- ♦ The fastest pairs, who will wait for the others to finish the round, perform together the exercise you announced for the 2.
- ♦ If the exercise is used for a warm-up, give instructions for 3 different exercises, **which the children can pre-select** (e.g., jumping jacks , push-ups, plank), and add rounds as they improve or adjust as desired depending on your children's level.

ATTENTION: " *It's not a race!* ", " *But you do the best you can, as you also affect your partner*" "How?"
(The partner also performs while you run)

☞ Observe and provide feedback on correct execution of skills throughout the course

☞ Finally you ask:

- What fitness component did you develop with each activity? With what health benefits?
- What were the key points of the motor skills you performed?

MAIN PART

Y " I DISCUSS & EXERCISE" (cooperative learning technique) (10')

ORGANIZATION:

The children are scattered in a space limited by cones.

INSTRUCTIONS: You ask them to do X repetitions **of one** of the exercises*, then you whistle, each child finds a pair, you announce one of the following scenarios**, they discuss for 30" and find the answer, you whistle again and announce a new exercise, and so on.

* 5 burpees, 20 mountain climbers, 20 lower body twists, 20 arm circles, 20 knee-elbow, 10 sit-ups

** Scenario suggestions (See [Additional material](#)) (you can add your own ideas):

- ✚ During your afternoon walk around the neighborhood, your friend buys a soda, juice, or other commercial beverage every day and offers you one too. What do you decide? Is this a positive or negative habit for your health?
- ✚ When you go out with friends or with your parents, you eat fast food (hamburger, pizza, etc.) at least 3 times a week. Is this a good eating habit or not and why?
- ✚ Your mother insists on giving you fruit in a snack box every day for school lunch. Do you agree or not? Why?
- ✚ You like to eat cookies, or chips, shrimp, etc. during breaks, but your best friend doesn't agree with your choice. What do you decide to do and why?

- ✚ Your mother or father brings you a... good portion of nuts every day, when you read. Do you agree with their action or not and why?
- ✚ The heart needs proper nutrition and exercise. Find 2 exercises that strengthen the heart, and you can do them for 10 minutes before eating pizza.
- ✚ Carbohydrates are the fuel for our bodies, and we need them to have energy when we exercise. Think of and name 3 such carbohydrates that we can eat shortly before exercise. (e.g. a bagel or a banana, or a few nuts)
- ✚ If we don't drink enough water when we exercise, our body becomes dehydrated, and we experience problems like cramps and headaches. How much water should we drink daily? (6-8 glasses of liquids as well as fruits, vegetables, etc.)
- ✚ Physical activity helps the brain to work properly and improves our mood. Think and say why? (It helps with concentration, better sleep, reduces stress, improves self-confidence, we feel better)
- ✚ Why is physical activity important for our lives? (Because it is related to our physical and mental health.)
- ✚ Choosing nutrient-rich foods before and after exercise is important. Think about **what** we consume during exercise and what after exercise and **why** (water and something from: banana, pasteli, cereal bar, toast, nuts)
- ✚ Think about and name two ways of getting from school to home and vice versa that enhance your physical activity and are good for your health.

SYNOPSIS (7'):

✚ They perform stretching exercises in a semicircle.

📖 At the same time, the answers to the scenarios and their justifications are discussed in plenary.

QUESTION: Which component of health-related fitness does the combination of proper nutrition and physical activity develop? What is the health benefit? (In **body composition** and body weight control. With regular exercise we consume energy. Thus, together with proper nutrition, it helps to prevent obesity, maintain our weight or lose excess weight)

6.2.3 Lesson 3

EXPECTED LOS:

- ♦ to be actively involved in all Physical Education activities
- ♦ to understand and analyze the importance of physical activities with a focus on lifelong exercise for improving their health
- ♦ to perform qualitatively and quantitatively balance skills in physical and health development activities
- ♦ to recognize the concept of "overload" in the changes that occur in the body due to exercise

IMPORT:

- 📖 You explain that fitness improves when we exercise regularly and when we get a little tired but not exhausted. We push ourselves a little bit at a time, so that we feel a short and natural fatigue called overload. This little bit more each time (progressiveness) in overload helps us improve our fitness
- 📖 But remember that: If overload is **normal** (I got tired, I felt like my body worked), it benefits the body's functions (heart, lungs, muscles, bones) and cardiovascular health.
- 📖 However, if the overload is **excessive**, we feel very tired, exhausted, we cannot rest quickly, etc. so it does us no good!

MAIN PART

✚ " GET CLOSE AND EXERCISE " (20'): In today's lesson we will do a series of exercises, adding a new one and more repetitions each time

ORGANIZATION: Children in twos opposite each other, at a distance of 10 meters, form 2 lines

INSTRUCTIONS: Perform a series of 10 exercises as follows:

1. You call out the name of the 1st exercise *,
2. They run close face to face, halfway through their distance, perform it together **once** and return to their starting position...

3. You call out the name of the 2nd exercise
4. They run close face to face, perform the 1st exercise 1 time and then the 2nd exercise 2 times and go back
→ Each exercise is performed *as many times as its number on the queue, after all the previous ones are executed first*

* an example of 10 exercises is:

1. give me 5 2. plank-give me 5 3. jumping jacks (stars) 4. curl ups with clapping 5. Jumping rope (virtual) 6. I lift my partner in turns 7. Knee up-palm down 8. Bicycle with hands 9. Squats (noses touching, holding hands) 10. Back-to-back virtual ball change from side o side	You can also put: ▸ Lunges ▸ Climber ▸ Side Lunges ▸ Extent, hand circles ▸ And whatever else you can think of! <i>The activity is used after the skills have been practiced in previous lessons and are known</i>
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So, for example, when you shout: 5. Jump rope!! They run close to their partner and perform: give me **51time**, plank-clapping **2t**, jumping jacks **3t**, curl ups **4t** and jumping virtual rope **5t**. IN OTHER WORDS, each time they must remember the entire previous series of exercises.

Then you ask: to count their pulse and discuss the following:

- *Think about the activity you did. Did your heart rate change as the exercises progressed? How did your breathing change? How did your muscles feel? Which muscles were tired and how much? Why? What elements of the body were being worked?*
- *Do you think the order of exercises matters? Why? The number of repetitions? The order of muscle groups being worked?*

You discuss in simple terms the concepts of *overload* and *progression* in training so that they understand the concept of *normal and beneficial overload*.

- ▣ The children are in small groups (give each group one name of the foods of the Mediterranean diet). You assign each group to create a series of 5 exercises for the application of the above game. The exercises will be implemented in future lessons, after being reviewed and approved by you (so you teach them to consider the *order of the exercises* due to load, to put low-intensity exercises in between, etc.)

Children's creations are applied [in the 7th UNIT \(1st lesson plan\)](#)

STRETCHES & SYNOPSIS (7'):

🦋 A series of stretches for the whole body. A little more pressure and 10" for each stretch.

At the same time, questions and discussions are held on the following:

- What fitness component have we developed today/now? (*flexibility, muscular endurance*)
- What does it mean for our health to have strong muscles? What does it mean to have strong respiratory muscles? (*breathing becomes easier because the lungs use more of them*)
- *Why does regular exercise make our bones healthier? (They become denser and stronger and our joints more stable. This way our skeleton develops better and the chances of fractures in older age decrease)*

6.3 Unit 3

6.3.1 Lesson 1

EXPECTED LOS

- ♦ to perform correctly activities that promote muscle strength/endurance and flexibility and record their scores
- ♦ to understand and analyze the importance of physical activities of muscle strength and flexibility with an orientation towards lifelong exercise for improving their health
- ♦ to identify the main muscles of the trunk and upper limbs (abdominals, lats, pectorals, deltoids, triceps, biceps)
- ♦ to choose individual goals following goal-setting criteria (e.g. SMART) in activities inside and outside of school and to keep a diary

INTRODUCTION: muscles and flexibility

- 📖 Today we will practice exercises for muscle strength and flexibility of our upper torso. We will remember what these health-related fitness components mean, how they benefit our health, which muscles we train and how we can improve them.
- 📖 Stretching and Q&A about flexibility (7'). Reference to what it is, what it is good for, what we pay attention to, when it is practiced*. The questions should be presented through a game where they perform something, stop, listen to or a question/discussion, etc.: e.g.,
 - ❖ standing position, one leg stretched, the other folded inwards (stepping on the inside of the other thigh) bending towards the toes of the stretched leg (*What is flexibility?*)
 - ❖ face down, arms by the side of the body, head and chest raised (*do we need it? what benefit do we have?*)
 - ❖ standing position, knees stretched, legs as wide as they can go (*do we all have the same flexibility? what does it depend on? how often do we do flexibility exercises?*)
 - ❖ lying on your back, one leg bent and pulled towards your chest (*what should we pay attention to when stretching?*)
 - ❖ hand from lifting bends at the elbow back, the other presses lightly (*do we apply the s keys?*)
 - ❖ and any others you want or need

* **Flexibility** is the ease with which **a joint moves** and depends on how **elastic the muscles** around the joint are. All movements, both every day and athletic, require flexibility. When we don't have enough flexibility, we have difficulty in our movements, and it is easier to get injured.

Joint mobility varies from person to person and from day to day. It depends on age, gender and training. Therefore, stretching should be performed without competition (e.g. never say "who will bend over the most", etc.) and if possible, daily.

In addition to physical education class, we can do stretching after waking up in the morning, while watching TV, at the beach, when we get a cramp, etc. Also, flexibility exercises make us a little taller, because when we sit for a long time, we "get a little shorter." That's why we should stretch as soon as we get up.

When stretching, it is important to feel pleasure and not pain.

Points to note :

- ❖ exhale as you stretch
- ❖ breathe normally while you are in the stretch
- ❖ inhale as you return to the starting position
- ❖ always do the stretches slowly
- ❖ stay in the stretch for 8"-10", without sudden movements

Discussion (5') about the main muscles (**name, location, function**)

Flexibility is the ease of movement of joints and requires elastic muscles. Let's learn some basic muscles. (If they don't know them, they can be discussed in 2 lessons, e.g. here **trunk and upper limbs** and in the next lesson **trunk and lower limbs**). Some of the most basic muscles and the movements they perform are as follows:

biceps = front part of the arm, the fork in the mouth, you bend the elbow during push-ups
triceps = back of arm, you stretch your elbows when bending
deltoid = upper part of the shoulder, raises the shoulder, for lifting objects, making throws
pectoral = on the chest, for throwing objects, for pulling, for climbing
abdominals = support and protect the spine, so you can bend forward
latissimus dorsi = the same, to climb a rope, to shrug

"FLEXIBILITY EXERCISES IN TWOS" (5')

Children stand back to back, in pairs of similar height, exchanging balls from various positions.

- ☞ Count how many you will do in 20"
- ☞ Which muscles were used in each exercise?
- ☞ You ask them to change pairs. They repeat.

MAIN PART

"INDIVIDUAL STRENGTH EXERCISES" (10')

ORGANIZATION: Practice teaching style without stations. Each child has a pencil and a booklet with the adjacent Chart (available in [ADDITIONAL MATERIAL](#)).

INSTRUCTIONS: They perform the HALF exercises (1, 2, 3, 4) in the order they want and at the pace they can and record their scores for the 30".

- ☞ You give the start and end signal of the 30", remind them to record immediately afterwards, and constantly observe and provide feedback on the correct performance of the exercises.

After completing the activity, ASK:

- Which muscles worked with which exercises?

YOU ASK :

- Set your personal goal for each exercise, the next measurement in 3-4 weeks. (Remember the SMART principles for goals and progression/overload that were covered in previous lessons)
- Keep a diary with the exercises you will do, the date and the repetitions to achieve the goal you set (available in [ADDITIONAL MATERIAL](#)).

→ The activity INDIVIDUAL STRENGTH EXERCISES is repeated in [UNIT 4, LESSON PLAN 1](#) to monitor achievement of goals.

Exercises	score	target in	score	
1. sit ups (30")				
2. back exercise (30")				
3. push-ups (30") pectoral, deltoid, triceps				
4. reverse push-ups (30") triceps				
5. climber (30")				
6. lateral leg raises (15" x 15")	left = _____ right = _____	left = _____ right = _____	left = _____ right = _____	
7. jumping jacks (30")				
8. going up and down stairs (30") quadriceps, hamstrings				

	STRENGTH WORKOUT CALENDAR					
	1st week		2nd week		3rd week	
	Date: _____		Date: _____		Date: _____	
	Exercises	Times	Exercises	Times	Exercises	Times
Monday						
Tuesday						
Wednesday						
Thursday						
Friday						
Saturday						
Sunday						

STRETCHES (10')

Stretching exercises mainly for the upper body and limbs (8"-10", 3-4 repetitions)

You ask: *Why do we do upper body stretches?* (muscles worked in the above activity)

QUESTIONS at the same time:

- What is flexibility?
- What are the benefits of flexibility?
- What are the points to pay attention to when you stretch your muscles?
- How often should we do flexibility exercises?

— Which health-related fitness component do the stretches develop?

Assessment & SYNOPSIS:

- ☞ You observe the correct performance of all skills activities during the lesson
- ☞ Check if they set achievable goals in the 2nd activity
- ☞ You ask after the activity STRETCHES:
 - *tell me 3 stretches for the shoulder joint*
 - *which muscles are stretched when I "tie" my right and left palms behind my back, etc.*
 - Someone demonstrates a stretch, and the others report muscles and joints that are being worked
- 🔴 You assign small groups (e.g., 2-3 students) to prepare a 5-minute warm-up activity where they will teach in turn, explaining to the others which muscles and joints are "warmed up" (they can be determined from the beginning and know which group will present when) (Divergent Discovery teaching style)

ALTERNATIVES: The class is divided into 5 groups, each named after a food group of the Mediterranean diet (proteins, fruits, grains, vegetables, dairy). Each group is responsible for planning and leading the class in stretching exercises at the beginning and end of the following lessons.

6.3.2 Lesson 2

EXPECTED LOs

- ♦ *to correctly perform activities that promote muscle strength/endurance and flexibility and to record their performance*
- ♦ *to identify the main muscles of the trunk and lower extremities (abdominals, lats, quadriceps, gastrocnemius, hamstring)*
- ♦ *to set individual goals following SMART goal-setting criteria in activities inside and outside of school and keep an activity diary*

INTRODUCTION:

- 📖 Reminding of the muscles mentioned in a previous lesson (name, location, function) with questions about the basic muscles of the trunk and upper limbs
- 📖 Reference to the **lower limb muscles** that will be worked today (5')

quadriceps = front of thigh, to stretch the knee

hamstring = back of thigh, to bend the knee (climbing, jumping) jacks etc)

gastrocnemius (calf) = in the calf, raises the leg up and down, you stand on your toes and balance

🦋 "TAILS" (5')

ORGANIZATION: On half of the basketball court. The game is played with 2 tails (ribbons, jerseys, etc) for each child hanging left and right (from pockets, belt, etc.).

INSTRUCTIONS: Everyone tags everyone else to steal tails. RULE: no one is left without a tail! IF a child lost both of their tails, someone else who has more than two MUST give one to the child who doesn't have one. You can restart the game 2-3 times.

MAIN PART

🦋 "INDIVIDUAL STRENGTH EXERCISES" (10')

ORGANIZATION: Practice teaching style without stations. Each child has a pencil and the booklet with the adjacent Table, as a continuation of a previous lesson (available in [ADDITIONAL MATERIAL](#)).

INSTRUCTIONS: They perform exercises 5, 6, 7, 8 (lower extremities) in the order they want and at the pace they can and record their scores at 30".

- ☞ You give the start and end signal of the 30", remind the recording of scores. You observe and provide feedback on the correct performance of skills.

After completing the activity:

YOU ASK:

- Which muscles worked with which exercises?
- Set your personal goal for each exercise, according to the principles we have learned (remind them if you want) and write in your diary what you will do to achieve them in the next measurement in 3-4 weeks (as was done in a previous lesson).
- In groups of 3-4, they think for 2'-3' and suggest activities from team or individual sports for muscular strength/endurance of the upper body and legs.

The activity INDIVIDUAL STRENGTH EXERCISES is repeated in **UNIT 4, PLAN 1** to check goal achievement (after 3-4 weeks).

Exercises	score	target in	score	
1. sit ups (30")				
2. back exercise (30")				
3. push-ups (30") pectoral, deltoid, triceps				
4. reverse push-ups (30") triceps				
5. climber (30")				
6. lateral leg raises (15"x15")	left = right =	left = right =	left = right =	
7. jumping jacks (30")				
8. going up and down stairs (30") quadriceps, hamstrings				

STRETCHES

SYNOPSIS QUESTIONS at the same time:

- What should we pay attention to when performing stretches? (see previous lesson plan)
- What fitness component does stretches develop? What are the health benefits?
- Tell me 3 stretches for the hip joint, the knees ... and which muscles are stretched?
- Which muscles are stretched when I bring both knees to my chest?
- Demonstration by a child and the others mention the muscles and joints involved.

 Remind teams which prepare warm-up/cool-down activities to also include muscles/joints mentioned today.

 You discuss with the children muscle strength and endurance exercises that they can do at home and ask them to try them while watching TV or sitting, reading, in the morning when they get up, etc.

6.3.3 Lesson 3

EXPECTED LOs

- ♦ To correctly perform activities that promote cardiovascular endurance, and to keep a diary recording their actions and performances
- ♦ to understand and analyze the importance of physical activities with a focus on lifelong exercise for improving their health
- ♦ to recognize the effect of "overload" on physiological changes due to exercise
- ♦ to choose individual and group, short-term goals following goal-setting criteria (e.g. SMART) in activities inside and outside of school

INTRODUCTION (5')

 Reviewing through questions :

- What is cardiovascular endurance?
- Why is it important for health?

- How is it affected by physical activity?
- How do we understand the level of effort? (pulses).
- How do we measure pulses?
- What are the characteristics of the exercises that develop it? (they require a lot of energy, increase pulse and breathing, are continuous and can be maintained for more than 20 minutes)

MAIN PART

Y "RUNNING IN THE SCHOOL YARD" (25')

ORGANIZATION: Children in twos of similar ability in distance running. You define a path in the school yard for running (you delimit it with cones and know approximately the distance e.g., 1 lap = 100 meters so that by counting laps they can calculate and note the distance they cover).

INSTRUCTIONS: They run 3 phases with a 5' break between them: In the 1st phase they run for 3', in the 2nd for 4' and in the 3rd for 5'.

Goal: not to stop until the end of time of each phase. **If necessary, instead of running, they walk.**

1. To begin each running phase, they first answer the following questions:

- Why does physical activity help the heart health? (Because it strengthens the heart muscle and thus it gets tired much less during the 24-hour period)
- "Exercise strengthens the heart and thus it can better withstand what we do". Tell 3 activities that strengthen the heart"
- Why should we stretch almost every day?

2. **You point out** from the beginning:

- ☞ The key points to pay attention to when running long distances (see text box)
- ☞ Run at a pace that is steady and allows them to talk to each other. You could suggest topics for discussion (e.g. the benefits they get from running, the changes they feel in their bodies when they run, or a current event you would like them to think about, etc.).

LONG DISTANCE RUNNING

- ❖ Look forward-far away
- ❖ Face, neck, shoulders relaxed
- ❖ Elbows bent
- ❖ Arms swinging freely
- ❖ Short strides
- ❖ Landing first with the heel

You explain that a) a steady pace is less tiring and b) being able to talk while running or walking fast is a practical way to understand that we are doing **moderate-intensity physical activity**. (intensity = how intensely/hard an exercise is performed)

☞ **No competition**, comparison only with yourself.

3. You move in the opposite direction of their running (to provide feedback so they don't run faster when they approach you). You constantly observe and provide feedback to all on key points.

4. At the end of each phase: **they measure heart pulse**, with your signal, AND record their **pulse on an individual sheet**, and the **distance** they covered as scores of the 1st measurement (the individual sheet is available in the **SUPPLEMENTARY MATERIAL**).

Name:		LONG DISTANCE RUNNING			Key points
		1st phase : 3'	2nd phase : 4'	3rd phase : 5'	
1st measurement date:	Distance: _____ meters	_____ meters	_____ meters		Looking ahead-far away Face, neck, shoulders relaxed Elbows bent Hands hanging freely Small steps Heel-first landing
	Pulses: _____	_____	_____		
	Target: _____ meters	_____ meters	_____ meters		
2nd measurement date:	Distance: _____ meters	_____ meters	_____ meters		
	Pulses: _____	_____	_____		
	Target: _____ meters	_____ meters	_____ meters		
3rd measurement date:	Distance: _____ meters	_____ meters	_____ meters		
	Pulses: _____	_____	_____		
	Target: _____ meters	_____ meters	_____ meters		

📅 I SET GOALS (5')

- How did the time you added to each phase affect you? (on which human system, how did it feel? e.g., breathing, sweating, muscle fatigue, etc.)
- Do you remember the concept of overload? (I practice a little more each time). How did you understand it in today's activity? Was it normal or excessive?
- What will you do to improve or maintain your score?

- *What characteristics did we learn that our goals should have? (SMART).*

☒ You help them set an INDIVIDUAL achievable goal for the next 2-3 weeks and what to do daily inside and outside of school to achieve it **and record their performance** (e.g., how many consecutive minutes did I run/walk fast, counting steps with smart devices, etc.)

→ The RUNNING IN THE SCHOOL YARD activity is repeated in [UNIT 4, 2ND LESSON PLAN](#). The children record their scores on the same individual sheet and compare the goals with the scores they achieved.

SYNOPSIS (5'):

☒ Stretching program with emphasis on leg muscles by the group assigned from a previous lesson

QUESTIONS:

- *What are the key points for long-distance running?*
- *Which fitness component did we work on? Were your pulses at a good level for strengthening the heart? What are the health benefits?*
- *What changes can we have in body functions due to exercise?*

6.3.4 Lesson 4

EXPECTED LOS

- ◆ *to perform activities correctly and promote cardiovascular endurance, muscular strength/endurance, flexibility and body composition, achieving qualitative and quantitative goals and keeping a diary*
- ◆ *to understand and analyze the importance of physical activities with a focus on lifelong exercise for improving their health*
- ◆ *to set "smart" individual and group, short-term goals in activities inside and outside of school*

WARM-UP (5'):

☒ "ANIMAL MOVEMENT FOR STENGTH"

ORGANIZATION: Children scattered around the space.

INSTRUCTIONS: At your signal, each child moves for about 10 meters imitating an animal movement, e.g., like a **duck** (in a deep squat), **flamingo** (crouching: bending and stretching one leg with each step/hands on the floor), **kangaroo**, **gorilla**, **bear**, **elephant**, **hare**, **crab**, **lizard**, **caterpillar** AND any other animal movement the children or you can think.

If you haven't done a similar activity before, you can start exploring, asking the children to try and imitate the animals. Also, to think of others that you haven't told them about.

When they try the movements, you use a series of moves (movement skills routine) as a warm-up for strength.

MAIN PART

☒ "RECIPROCAL JUMPING ROPE" (10')

ORGANIZATION: Children in twos. Each pair has a rope, a reciprocal teaching style checklist (see [ADDITIONAL MATERIAL](#)) and a pencil/pen.

INSTRUCTIONS: Both of you read the key points carefully. One child performs and the other observes. The observer should correct when the trainee does not perform according to the key points and filled in the Criteria sheet. Also, the observer should encourage his partner in every attempt.

You allow about 1 minute of execution time, then the roles change.

You, as PE teacher, monitor the children-observers and give them feedback on how they support their partner's learning.

Reciprocal teaching style criteria sheet JUMPING ROPE	CHILD A			CHILD B		
Key points:	Always	Some times	Not yet	Always	Some times	Not yet
Elbows near the body						
Wrist rotation						
Knees slightly bent						
Bounce on the front of the foot, low to the ground						
Continuous bounces at pace						

🏃 "JUMPING ROPE" (individually) (7-10')

ORGANIZATION: Each child has his/her own rope.

INSTRUCTIONS: At your signal, he/she starts jumping with two legs (single, double, as desired) for 1 minute (or 45") counting repetitions (when he/she loses, the counting continues...).

VARIATIONS: Depending on the skill level, provide variations such as: double time, single time, jumps on one leg, one bounce with the right and one with the left, turning backwards on the spot/moving forward or backward, jumps with moving in space while running on the spot with eyes closed, etc. If possible, use musical accompaniment for rhythm.

ATTENTION to the correct rope length and KEY POINTS (see criteria checklist)

Each child notes on his/her booklet the **type of jump**, **how many repetitions** he/she did, as well as **how many of the key points** performed correctly (the individual sheet is available in the [ADDITIONAL MATERIAL](#)).

Name:		Quality of performance				Key points
jumping rope variations	Repetitions	all key points	4 out of 5 key points	3 out of 5 key points	1-2 out of 5 key points	
						1. Elbows close to the body 2. Wrist rotation 3. Knees slightly bent 4. Bounce on the front of the foot, low to the ground 5. Continuous bounces at a pace

📅 Set individual goals for re-measurement later (e.g., in 2 weeks)

ASK during breaks, or at the end:

1. Which fitness component do you develop?
2. What benefits does good muscular endurance bring to us?

SYNOPSIS :

🏃 Stretching, especially the muscles that were worked (quadriceps, hamstrings, gastrocnemius, core, etc.)

📅 At the same time, you ask "why these muscles in particular?", "what does good joint flexibility do for us?" "do we all have the same flexibility?" "what does it depend on?" "what do we do to improve it?"

📅 You suggest practicing jumping rope at home at least 3 times a week. They record in a diary how long they practiced each time and the highest number of repetitions they achieve without "losing" in each jumping rope category.

📅 Combination with corresponding app activity

📅 Remind them to practice stretching at home (in the morning as soon as they get up, when they read, in front of the screen, etc.)

6.4 Unit 4

6.4.1 Lesson 1

EXPECTED LOS

- ♦ to correctly perform physical education activities, achieving qualitative and quantitative goals that they have set for themselves and to keep a diary recording their actions and performances.
- ♦ to understand the benefits of achieving health goals
- ♦ to apply combinations of skills and concepts in sports games and complex activities.

WARM-UP (10')

Y "SHOT AND GO" (kick-pass and movement)

ORGANIZATION: The children in groups of 3, with a soccer ball. At first in a triangle and then in a straight line (the two opposite each other 5 m. away, the third child in between them)

INSTRUCTIONS: a) In the triangle, they perform consecutive passes without losing control. **You ask them** to count how many they can perform in 45" without losing control. You signal for 2 rounds of 45" (each trio pays attention to the mistakes of the first time and aims to improve their score the second time).

b) Then, in a line, one passes/shoots to the other, passing the ball under the legs of the midfielder. Immediately after the pass, the shooter and midfielder quickly change positions. **You ask them** to set a **quantitative goal** (how many passes without interrupting their flow in 45" and **qualitatively** how many key points will be executed correctly continuously)

YOU ASK:

- ☞ Have you developed any health-related fitness component, besides skill's technique? Which ones? Why? How does this component benefit your participation in sports games?
- ☞ What did you pay attention to when performing the pass to achieve your goal?

1. The body behind the ball
2. Support leg next to the ball slightly bent, it "looks" at the target
3. Hitting the ball with the inside of the foot
4. Hitting the center of the ball with proportional force (close, long pass)
5. The foot follows the trajectory of the ball (follow through)

MAIN PART

Y "INDIVIDUAL STRENGTH EXERCISES" (15') (Checking goals set in the [UNIT 3, PLANS 1st & 2nd](#))

ORGANIZATION: Practice style without stations. Each child gets a pencil and their own card with the Table of Skills, Scores and Goals they recorded in previous lessons.

INSTRUCTIONS: They perform all 8 exercises in the order they want and at the pace they can and record their new scores.

- ☞ You give the start-end signal of 30"
- ☞ Observe and provide feedback on **correct performance of the skills**

Exercises	score	target in	score	
1. sit ups (30")				
2. back exercise (30")				
3. push-ups (30") pectoral, deltoid, triceps				
4. reverse push-ups (30") triceps				
5. climber (30")				
6. lateral leg raises (15"×15")	left = ____ right = ____	left = ____ right = ____	left = ____ right = ____	
7. jumping jacks (30")				
8. going up and down stairs (30") quadriceps, hamstrings				

📖 QUESTIONS-DISCUSSION:

- Check if you achieved your personal goals. Think about what you did and achieved (consult your diary).
- What should you do to achieve what you failed to achieve or to maintain and further improve your scores?
- CHARACTERIZE your goals according to SMART principles (Were your goals achievable and time-appropriate?)
- What is the benefit of the goals you achieved?

Y "BASKETBALL 21" (10')

ORGANIZATION: the children play 3X3 (or 2X2) basketball. You divide children according to the number of baskets you have. Alternatively, the remaining trios play a passing game (10 passes = 2 points) and take turns going to the basketball court.

INSTRUCTIONS: They play basketball 3 on 3 with the following scoring rules: *ball in the basket = 3 points, ball hits the hoop and go outside = 2 points, ball on the backboard = 1 point*. The team that reaches exactly **21 points wins**. If a team surpasses 21 point with the last shot, it has 10 points deducted (e.g., they have 19 points and earn 3 more, instead of going to 22 points, they go to 9.)

Y "COLLABORATIVE PASSES" (7') (for upper limb muscular endurance)

ORGANIZATION: In groups of four or larger (depending on your materials). Each group holds the perimeter of a small parachute (alternatively, you can use pieces of fabric, old sheets, large plastic bags). A light ball on the parachute.

INSTRUCTIONS: *"Try cooperatively to make the ball bounce repeatedly."* The team moves to control the ball.

How many bounces will the ball make in 30'' without coming out of the parachute"

Differentiations:

- Adding a 2nd ball to the group that does well.
- Exchange of the ball between two teams, for those who do well.

DISCUSSION:

- ☞ *What is the condition for achieving a high score? (collaboration)*
- ☞ *Which part of the body got tired? Which muscles worked?*

SYNOPSIS:

Y Cool down with stretching for all muscles

6.4.2 Lesson 2

EXPECTED LOS

- ♦ *to correctly perform physical education activities, achieving qualitative and quantitative goals that they have set for themselves and to keep a diary recording their actions and performances.*
- ♦ *to understand the benefits of achieving health goals*
- ♦ *to apply locomotor skills and movement concepts to physical activities*

WARM-UP: (5')

Y ROCK-PAPER-SCISSORS (LINE WALKING)

At your signal, the children walk quickly within a designated area, each in their own direction. When a child meets another one, they stop and play rock, paper, scissors. The winner becomes the leader and the other follows him/her. The process is repeated between the leaders of the lines (they stop, play, the teams join, etc.). Any leader who loses, his/her team gets behind the winning team. The process continues until the entire class becomes a line walking quickly.

You can, alternatively, request a different locomotor skill instead of walking (e.g., hop, jump, etc. or change the skill each time a team is added).

MAIN PART:

Y "RUNNING IN THE SCHOOL YARD for fitness" " for targets' control from [PLAN 3, UNIT 3](#) (25')

ORGANIZATION: The children are in twos. You give each one a pencil and his/her individual sheet with the LONG DISTANCE RUNNING table *that they filled in, in previous lesson*. You define the route in the

school yard for running that you had created in the 3rd lesson of the 3rd UNIT, so that by counting laps they can calculate and note the distance they ran. There is a box with card next to the finish line.

INSTRUCTIONS: They run in twos, 3 times/phases with a 5' break between them: The 1st time they run 3', the 2nd 4' and the 3rd 5'. At the end of each phase, each pair takes a card that is in a box next to the finish line, discusses the question it contains and answers whether it is true or false (ideas for creating cards are in the [ADDITIONAL MATERIAL](#)).

Targets: 1) not to stop until the end of the time of each phase (walk quickly where necessary until you can jog again) 2) perform correctly the running skill according to the key points on the card

YOU ASK/REMINDE :

- Run at a pace that allows you to talk to each other (What are we controlling this way? (the moderate intensity)
- What should we pay attention to in order to run properly for a long distance? (the key points)

- ☞ You move in the opposite direction they are running.
- ☞ You constantly observe and provide on key points.
- ☞ At the end of each phase: **they measure their pulse** with your own signal AND **record the pulses and the distance they traveled** on the individual sheet (2nd measurement).

ATTENTION: No competition, comparison only with yourself

Name: _____		LONG DISTANCE RUNNING			
		1st phase: 3'	2nd phase: 4'	3rd phase: 5'	Key points
1st measurement date: _____	Distance: _____ meters	_____ meters	_____ meters	- Looking ahead for away - Face, neck, shoulders relaxed - Elbows bent - Hands hanging freely - Small steps - Heel/first landing	
	Pulse: _____	_____	_____		
	Target: _____ meters	_____ meters	_____ meters		
2nd measurement date: _____	Distance: _____ meters	_____ meters	_____ meters		
	Pulse: _____	_____	_____		
	Target: _____ meters	_____ meters	_____ meters		
3rd measurement date: _____	Distance: _____ meters	_____ meters	_____ meters		
	Pulse: _____	_____	_____		
	Target: _____ meters	_____ meters	_____ meters		

QUESTIONS-DISCUSSION:

- Were you running properly the whole time?
- Were the pulse rates within the pulse zone for improvement?
- Check if you achieved your personal goals. What is the benefit of this? Think about what you did and achieved (consult your diary).
- What should you do to achieve what you failed to achieve? or to maintain and further improve your scores?
- CHARACTERIZE your goals according to SMART principles (were they achievable and time-appropriate?)

SYNOPSIS (5'):

🏃 Stretching program with emphasis on leg muscles by the group assigned from a previous lesson

QUESTIONS:

- The key points for long-distance running?
- What health benefits did you achieve from today's lesson?

6.5 Unit 5

6.5.1 Lesson 1

EXPECTED LOS

- ◆ to record their performance (quantitatively), as well as that of their classmates, and use the results of the assessment to plan their participation in activities to improve health-related fitness
- ◆ to know ways of planning and evaluating health-related fitness with (or without) the help of technology

Introduction

 **THEORY: You teach (or remind)** concepts such as Frequency, Intensity, Duration, Type of exercise (**Frequency:** How often do you exercise to improve your fitness, **Intensity:** How intensely you should exercise to improve your fitness, **Duration:** How long should your exercise last, **Type:** aerobic, strength, flexibility, circuit, etc. What types of activities should you use for the health-related fitness component you want? How do these principles affect the functioning of the body?

 "ICE and FIRE" (7'):

ORGANIZATION: Depending on the number of children, 1 or 2 children with coloured bands and a ball are ICE, and 1 or 2 children with different coloured bands and a ball are FIRE.

INSTRUCTIONS: The ICE children chase the others (except the FIRE children) to touch them with the ball. If they touch them, they "freeze" on a balance position until one of the FIRE children touches them with his ball.

 Stretches for the whole body

MAIN PART

 "FITNESS ASSESSMENT" (with **FITNESSGRAM TEST**)

After the children have practiced the individual fitness components according to previous lesson plans, they measure their performance on the components with specific tests and record their scores in the table below (The Table below can also be used in formal recordings, e.g., at the beginning, in the middle and just after the end of the program)

ORGANIZATION: Divide the children into twos and the space into 5 stations, one for each test. The pairs go through all the stations. For the station with long distance running, keep the organization of previous lessons with a delimited space, of known distance for calculating the total score (**It is suggested for the lesson plan to take place in 2 days: one CARDIOVASCULAR ENDURANCE (1st test) and the other FLEXIBILITY and STRENGTH (2nd, 3rd, 4th, 5th test)**)

INSTRUCTIONS: One child in the dyad performs and the other counts the repetitions, motivates and observes if the exercises are being done correctly. Where necessary, corrects the performance. Then the roles change. The scores are recorded on the Table that you will find in the [ADDITIONAL MATERIAL](#). (EXCEPTION is the 12' run/walk where the dyad performs together).

Health related fitness component	Test	1st measurement	target	2nd measurement	target	3rd measurement
cardiovascular endurance	12' continuous running and/or walking	Date : Score: meters		Date : Score: meters		Date : Score: ... meters
trunk muscular endurance	correct curl ups	Date : Score:		Date : Score:		Date : Score:
upper body muscular endurance	correct push-ups	Date : Score:		Date : Score:		Date : Score:
trunk flexibility	trunk lift	Date : Score:		Date : Score:		Date : Score:
trunk flexibility	sit and reach	Date : Score:		Date : Score:		Date : Score:

*Curl ups <https://slideplayer.com/slide/4180512/>

The child is lying down with bent knees/feet stomping.

7 cm thick tape.

When the child is lying down, he/she touch the beginning of the tape, and then he/she lift him/herself up until the fingers touch the other end of the tape.

How many correct repetitions can you do?

CURL-UPS FITNESSGRAM Healthy Fitness Zones		
AGE	GIRLS	BOYS
5	≥ 2	≥ 2
6	≥ 2	≥ 2
7	≥ 4	≥ 4
8	≥ 6	≥ 6
9	≥ 9	≥ 9
10	≥ 12	≥ 12
11	≥ 15	≥ 15
12	≥ 18	≥ 18
13	≥ 18	≥ 21
14	≥ 18	≥ 24
15	≥ 18	≥ 24

90° PUSH-UPS FITNESSGRAM Healthy Fitness Zones		
AGE	GIRLS	BOYS
5	≥ 3	≥ 3
6	≥ 3	≥ 3
7	≥ 4	≥ 4
8	≥ 5	≥ 5
9	≥ 6	≥ 6
10	≥ 7	≥ 7
11	≥ 7	≥ 8
12	≥ 7	≥ 10
13	≥ 7	≥ 12
14	≥ 7	≥ 14
15	≥ 7	≥ 16

** Push-ups

Hands at shoulder width apart

Thighs stretched

Toes (or knees) on the ground

You start with your elbows bent.

Bend your elbows to 90 degrees and come back up. How many correct repetitions can you do?

*** Trunk flexibility/lift

Prone (prone position) with hands under thighs

He/she lifts his/her body supporting his/her legs

We measure the distance from the ground to the child's chin with a 50 cm ruler (preferably no more than 30.5 cm)

Two attempts and he/she records the best performance in centimeters.

Trunk Lift FITNESSGRAM Healthy Fitness Zones		
AGE	GIRLS	BOYS
5	6-12	6-12
6	6-12	6-12
7	6-12	6-12
8	6-12	6-12
9	6-12	6-12
10	9-12	9-12
11	9-12	9-12
12	9-12	9-12
13	9-12	9-12
14	9-12	9-12
15	9-12	9-12

Back-Saver Sit & Reach FITNESSGRAM Healthy Fitness Zones		
AGE	GIRLS	BOYS
5	9	8
6	9	8
7	9	8
8	9	8
9	9	8
10	9	8
11	10	8
12	10	8
13	10	8
14	10	8
15	12	8

**** Sit and rich

Sitting position with one leg extended

One foot resting on the flexor and the other bent at the knee with the foot resting on the ground

The arms are stretched out in front, with the palms one on top of the other

Bending the trunk forward, trying to reach as far as possible, onto the rule.

SYNOPSIS

Y Stretching

QUESTION about which test assesses which fitness component and what are the key points for doing the exercise correctly. WHY should the exercise be done correctly?

 Design a program to achieve new goals (recorded on the card)

Discussion: muscular strength and muscular endurance. What is the difference between them? How do you understand it during exercise? Training with more weight (resistance) and fewer repetitions to increase muscular strength, training with less weight and more repetitions to improve muscular endurance

Remember the principle of overload: "Today" I practice more than "yesterday", "tomorrow" I will practice more than "today" ("yesterday", "today" "tomorrow" are relative).

 Each child sees his/her performance, decides what he/she wants to improve and with your help plans which activities will do, with what intensity, how often, etc. (they have practiced keeping a diary in the lesson plans of UNIT 3)

6.5.2 Lesson 2

EXPECTED LOS

- ♦ *to apply combinations of motor skills and concepts as well as basic tactics in sports games and complex activities*
- ♦ *to record or report their performance (quantitative and qualitative), as well as that of their classmates, and use the results of the assessment (before and after) to plan their participation in activities to improve health-related fitness.*

"TENNIS WITH HAND" (10') (to strengthen the upper limbs and secondarily cardio endurance)

ORGANIZATION: Children in twos with a ball. Between them is a line, a rope at a low height, or whatever similar divider you have.

INSTRUCTIONS: Hitting the ball with only one hand, they do as many repetitions as they can without missing it (allow one hit on the ground, or two depending on the children's performance level, or none for more difficult ones)

- ☞ *Try and count how many consecutive passes you make (1')*
- ☞ *You stop them: How do we execute to succeed? Where is your look? How does the hand move? Where do you send the ball? Do you control the force you apply? etc. (You explain or elicit with questions, if you have already taught it)*
- ☞ *Now set a quantitative goal (e.g., 2 more than the previous attempt) AND make sure your hand movement is done correctly. (Perform 2')*
- ☞ *Did you achieve the goal you set? Why yes, why not? Now find a different pair. Repeat the process.*
- *When they perform well enough, or those who perform well, they do the activity with 2 V 2. The rest continue practicing in 1 v 1 and decide with you when they are ready to change.*

QUESTIONS:

- *Which health-related fitness component did you develop? Why? (arm strength, cardio due to constant movement, etc.)*
- *What should you do to avoid losing balls?*

NOTE: Depending on the school's capabilities, the activities can also be implemented using rackets.

"HANDBALL 2x2 or 3X3"

ORGANIZATION: Children in 2 groups of four (or six), one group plays (players) and the other observes (observers). You adapt the organization to the number of children in your class.

INSTRUCTIONS: In the playing team, half of the children are the attackers and half the defenders. In the observing team, each child observes a player and records on his/her card (**ADDITIONAL MATERIAL**) the offensive and defensive tactics he/she applies.

The attackers are behind the center, using dribbling and passing to attack, while the defenders wait for them on the 6-meter line (or approximately).

After each shot attempt, the attacker-defender roles change.

Defensive tactics	YES	Offensive tactics	YES
gets in front of the opponent		constantly moving	
gets between the ball and the goal post/basket		she/he stays away from others	
disturbs the ball, when he/she can		finds open space	
blocks the path of the pass		passes to someone who will score	
		communicates with teammates	

When the offense scores a goal, they earn 2 points. When the defenders play good defense (prevent a goal, steal the ball), they earn 1 point.

- ☞ Interact with the child observers to ensure that he/she understands the tactics.
- ☞ You discuss the results and tactics that will help improve performance in future games.

NOTE: The activity can be done for any other team sport you wish.

SYNOPSIS

 STRETCHES and

 QUESTIONS

1. Which component of fitness developed?
2. Why? What is the benefit?
3. What muscles did you use?

6.6 Unit 6

6.6.1 Lesson 1

EXPECTED LOS

- ♦ *to know which foods in their daily diet are healthier*
- ♦ *to understand and analyze the importance of healthy eating habits for improving their health.*
- ♦ *to correctly perform a combination of manipulative and non-locomotor skills to improve health-related fitness*

INTRODUCTION:

Do you remember the food categories of the Mediterranean diet?

WARM-UP 7'

 « COLLECTING FOOD » (5 ')

ORGANIZATION: Place five large hoops (MEDITERRANEAN DIET food baskets: vegetables, proteins, fruits, grains, dairy) around the perimeter of the exercise area. Scatter colored materials (bags, various balls or any other material with the idea that each color represents one of the 5 food groups, e.g., red materials = fruits, yellow materials = grains, green = vegetables, white = dairy, multi-colored = proteins) throughout the play area.

INSTRUCTIONS: At your signal, ask children to pick up a material and, by throwing it, fill the baskets, cleaning the area as quickly as possible. Then, ask them to tell you the name of each material in each hoop (e.g., name all the fruits in the corresponding hoop, all the vegetables, etc.).

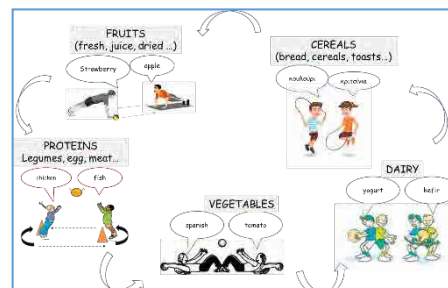
MAIN PART

🏹 "THE NUTRITION STATIONS" 🏹 (25')

ORGANIZATION: Children are divided into twos at 5 stations. Each one corresponds to a food category of the Mediterranean diet (fruits, vegetables, cereals, proteins, dairy). At each station there is 1 question in as many copies as the number of pairs in the class (1 paper for each pair, see [ADDITIONAL MATERIAL](#)).

INSTRUCTIONS: At your signal, each pair performs the station exercise (see image) for 40", taking turns mentioning foods from their station's category.

At your next signal, they stop, read the question together, and collaboratively record the answer. They move on to the next station.



1. "Breakfast is essential because it gives us energy. A complete breakfast requires a combination of foods from 3 groups: Dairy, Cereals and Fruits. Write down the contents of a healthy breakfast " (e.g., 1 glass of milk with breakfast cereal and a banana, or bread with cheese and 1 glass of natural orange juice)
2. "We should not eat sweets often because they are not nutritious, they damage the teeth, the heart, the joints and increase the risk of diabetes. However, there are foods that are sweet but also have nutrients. Write 3 of them) (honey, dried fruits, pasteli, dark chocolate, compotes)
3. "We must consume fast food (hamburgers, pizzas, etc.) in moderation. Why?" (they almost always have few nutrients)
4. Legumes protect the heart, regulate blood sugar and ensure good bowel function. To which food category(ies) of the Mediterranean diet do they belong? Write 4 legumes that you know and the one you like the most.
5. What are your favorite ingredients for a pizza? Which of these are the healthiest? Why?

SYNOPSIS:

The answers given by the pairs are discussed in the plenary of the class.

Then you ask the questions:

- What healthy foods have you already eaten today?
- Evaluate whether the menu you were given at school yesterday or consumed at home at lunch included what you learned about the Mediterranean diet.

6.3.2 Lessons 2 & 3

EXPECTED LOS

- ♦ to adopt behaviors that balance calorie intake and expenditure to promote and improve health
- ♦ to understand and analyze the importance of healthy habits, such as diet, exercise and their combination, for improving their health
- ♦ to participate in different types of sports/physical activities

INTRODUCTION

In today's lesson we will practice balance calorie (intake and expenditure) in various activities.

WARM-UP (5')

🏹 "ICE and FIRE"

Tag game (5th UNIT, 1st lesson plan)

MAIN PART

"I'M BUYING MY PLATE WITH EXERCISE" (20'+ 10')

ORGANIZATION: Children in twos receive the list of activities and the value of each in euros (see [ADDITIONAL MATERIAL](#)).

INSTRUCTIONS: Each child performs and the pair records the scores.

After both children have finished, they calculate the money they earned together.

- | | |
|----|--|
| 1. | PUSH-UPS: 1 repetition = 1€ (up to 10€) |
| 2. | SQUATS: 1 repetition = 1€ (up to 15€) |
| 3. | PLANK: 30" = 5€ (up to 15€) |
| 4. | BRIDGE: 1 repetition = 1€ (up to 15€) |
| 5. | BURPEES: 1 repetition = 2€ (up to 20€) |
| 6. | CURL UPS: 1 repetition = 1€ (up to 10€) |
| 7. | JUMPING JACKS: 1 repeat = €1 (up to €20) |
| 8. | ROPE JUMPINGS: 1 repetition = 1€ (up to 15€) |

MASTER CHEF

INSTRUCTIONS: Following the activity "I'M BUYING MY PLATE...", the children in their pairs plan the content of their 3 main meals (breakfast, lunch, dinner) according to the principles of the Mediterranean diet and calculate their value, so that the money they earned from the exercises will be enough for them.

FRUIT: 2 euros each

VEGETABLES: 2 euros each

PROTEINS: 7 euros per piece

CEREALS: 3 euros per piece

DAIRY PRODUCTS: 3 euros per piece

Then they PARTICIPATE in the following activity where they are asked to RUN to get the ingredients to prepare their dishes:

"RELAY RACE OF THE HEALTHY PLATE" (5')

ORGANIZATION: The children in their pairs stand around a large circle. Each pair has a hoop where they will include the contents of their dishes for the day.

In the center of the circle there are colored beanbags or various balls or any other material, **with each color representing one of the 5 food groups** (e.g., red=fruits, yellow=cereals, green=vegetables, white=dairy, colorful=proteins) (See "COLLECTING FOOD" in the 1st lesson plan of UNIT 6).

INSTRUCTIONS: the children in the pair run in turns collecting one food item at a time, which they place in their hoop, in order to prepare the dishes they designed in the MASTERCHEF activity above.

"I BURN CALORIES"

See [ADDITIONAL MATERIAL](#)

Exercise	Reps/time	calories burned	
BURPEES	15	20	• FAST WALKING = 5 calories/1'
CURL UPS	20	30	• EXERCISE WITH MUSIC/ AEROBIC = 10 calories/1'
PUSH UPS	5	5	• BASKETBALL or HANDBALL or FOOTBALL = 8 calories/1'
CLIMBER	20 "	10	• RUNNING = 10 calories /1'
RUN	10 METERS	10	• SKIPPING = 10 calories /1'
SQUATS & JUMPS	30 "	10	• ROPE JUMPING = 10 calories /1'
WALL SQUATS	1 '	10	• CLIMBERS = 10 calories / 1'
LANGES	20 "	20	• JUMPING JACKS = 10 calories /1'
SQUATS	20	30	

Plan what you will do to burn off all the calories you got from yesterday's lunch, or the breakfast or dinner you planned (or because you ate):

1 serving of homemade French fries = 300 calories.

1 chocolate ice cream = 250 calories.

10 potato chips = 100 calories

1 slice of pizza = 350 calories

1 glass of milk = 160 calories

1 Thessaloniki's bagel = 90 calories

1 chocolate croissant = 300 calories

1 apple =120 or 1 pear=75, or 1 orange=70

1 glass of natural orange juice = 85 calories

1 medium piece of cake = 200 calories

1 boiled egg = 80 calories

Add anything else you think is useful for your students

SYNOPSIS

You provide group feedback on the expected learning outcomes of the unit

6.7.1 Lesson 1

EXPECTED LOS

- ♦ to participate in a variety of physical activities within the school, which they have chosen by them, to improve health
- ♦ to know which activities develop which components of heat-related fitness and the basic principles of their design
- ♦ to create and participate with their peers in school games, to develop social interaction skills

Introduction

Knowledge QUIZ

 You give children a list of activities:

30' Running/fast walking, Aerobics, Dancing, Chasing, Push-ups, Pull-ups, Abs, Lower Back exercise, Stair climbing, Knee-to-chest jumps, Jumping rope, Muscle stretching for 8-10", Horizontal jumps, 30' Biking, 30' Basketball 3v3 or Football 5v5

You ask them to tell you or match each activity from the above, next to the health-related fitness component that it develops and to justify their choices (See [ADDITIONAL MATERIAL](#)).

Component of health-related fitness	Activities
Cardiovascular Endurance	
Muscular endurance	
Muscular Strength	
Flexibility	
Body composition	

WARM-UP : (5')

-  Children in small groups of 5-6 people, play a tag game of their own choice (you give them 40" to decide on the game and roles)
-  Full body stretching routine (3rd UNIT , 1st Plan)

MAIN PART

 "I AM IMPLEMENTING WHAT I PLANNED"

In [UNIT 2, 3rd lesson plan](#), each group of children was asked to create a series of 5 exercises for the implementation of the game " GET CLOSE AND EXERCISE".

- The work of the groups is implemented, and the members explain the benefits they seek with the activity they planned.
- After each group's work is completed, students measure their pulse and the exercise "zone" is evaluated.

SYNOPSIS

 Stretching

 and questions:

- Why did you choose these specific exercises?
- What did you take into account when designing the exercise sequence? (the order of exercise, its difficulty, the number of repetitions, the order of muscle groups being exercised)
- What is the exercise zone and what do we develop when we work in the ideal exercise zone?
- How was the collaboration to create the activity? What did you do to prepare it as you implemented it today? (suggestions, discussion about suitability , order of entry, disagreements, resolution)

6.7.2 Lesson 2

EXPECTED LOS

- ♦ *to participate in a variety of physical activities, which **they have chosen**, on a regular basis inside and outside of school to improve health.*
- ♦ *to participate in selected activities , based on personal levels of enjoyment*

IMPORT

Y "A DIFFERENT TUNNEL " (5')

ORGANIZATION: Children in groups of 5-6 in lines

INSTRUCTIONS: The well-known "tunnel" game but in 2 variations: instead of making a tunnel by opening their legs, (1) they sit down and lift their legs at the same time to pass the ball under them and (2) they take a "crab"/"table" position at the same time to pass the ball under their bodies. Repetitions: 2 of each variation

MAIN PART

Y " I CHOOSE THE EXERCISES I WILL DO" (20')

ORGANIZATION: Divide the space into stations. Place a card at each station with the health-related component that will be practiced: e.g.,

- arm strength
- leg strength
- trunk strength
- flexibility of upper limbs and joints
- trunk and lower limb flexibility

INSTRUCTIONS: You give each child a list of exercises (e.g. push-ups, pull-ups, sit-ups, wall sit-ups, crunches, soccer, lunges, jogging in place, jumping rope, dancing, cycling, running, kicking, alternating knee raises, etc.) and let them choose what they will perform at each station, to develop what you asked for.

- They can consult their scores on the assessment they took, about what they want to improve

Y "I CHOOSE THE TEAM GAME I PLAY" (10')

INSTRUCTIONS: children in groups of 3-4, think for 1'-2' and suggest *activities from team sports or games that they like to play inside or outside of school. These activities should develop and cardiovascular endurance.*

Then they decide together which game or activity they will play (depending on the space you have).

SYNOPSIS

Y Stretching and discussing feelings they gained from participating in the activities they chose.

6.7.3 Lesson 3

EXPECTED LOS

- ♦ *to participate in a variety of physical activities, which **they have chosen**, on a regular basis inside and outside of school for health improvement.*
- ♦ *to create and participate in games with their friends, to develop social interaction skills*
- ♦ *to perform a jumping rope routine, they have created with a classmate, using a short or long rope.*

WARM-UP: 5'

- 🦋 Each child, with his/her own jumping rope, performs jumps of his/her choice (standing and moving) at the pace he/she wants.
- 🦋 Stretching by a group of students (assigned to a previous plan)

MAIN PART

🦋 "TEAM JUMPING ROPE" (10')

ORGANIZATION: Children in groups of three, one long rope per group (or 2 small/individual ropes tied together). 2 students rotate the rope making an "arch", the third one jumps. Roles change regularly*:

INSTRUCTIONS: Give the children a list of group exercises with a rope (or announce them yourself, depending on their familiarity). Allow them time to choose which ones to try, or give them the next challenge based on how well they achieve the task each time:

the child who jumps:

- ◆ He/she stands in the middle of the rope and jumps as many times as he/she can without missing.
- ◆ He/she stands in the middle, jumps twice in one direction and then twice in the other without stopping the "arch"
- ◆ Enters the "arch" and exits on the other side without jump (e.g., 5 repetitions)
- ◆ He/she enters the arch, jump once and runs out from the other side without stopping the "arch"

Once all of the above is done, you give them a choice for the following (they decide and gradually set goals to achieve them)

- gradually increases the jumps to 2, then 3, 4...
- He/she enters the arch, does as many jumps as he/she can.
- changes directions during as jumps
- enters and hop on one and then on the other foot alternately for at least 5 seconds
- enters the arch from the other side ("upside down")
- and whatever else you or the kids can think of... **

Where possible, children enter and exit the "arch" without stopping the rotation and the children who spin the rope change regularly.

POINTS OF ATTENTION: "You enter" as soon as the rope hits the ground ("it hits and I enter")

You "come out" as soon as you jump ("jump and I come out")

* You teach children a) to differentiate the difficulty of the exercise in the trios depending on the achievement of the child who jumps b) to help the child who jumps, e.g., by turning more slowly or giving a vocal instruction, e.g. 1-2-3 get in)

** If there are very advanced performances, children make larger groups and do the above jumps in pairs or threes, etc.

SYNOPSIS

🦋 STRETCHES and

📖 QUESTIONS

1. Which components of fitness were developed?
2. Why? What is the benefit?
3. What do you pay attention to achieve your goal in team jumping rope?

- TEAM JUMPING ROPE: You assign the trios to set goals for other group jumping rope exercises as well as with larger groups. You motivate them to practice at the school breaks to achieve them.

6.8 Additional/supplementary material for the lessons of the aforementioned teaching units

Unit 1 lesson 2

You can enlarge the tables, print 2 per page and cut accordingly



NAME:	1st measurement / /		2nd measurement / /
Exercises (30")	repetitions	target	repetitions
Push-ups			
Sit-ups			
Jumping jacks			
Side-lying leg raises			
Climber			
Claps under the leg, alternating			

NAME:	1st measurement / /		2nd measurement / /
Exercises (30")	repetitions	target	repetitions
Push-ups			
Sit-ups			
Jumping jacks			
Side-lying leg raises			
Climber			
Claps under the leg, alternating			

Unit 2 lesson 2

Problem solving cards (quiz) quiz trade or clock questions)?

During your afternoon walk around the neighborhood, your friend buys a soda, juice, or other commercial beverage every day and offers you one too. Is this a positive or negative habit for your health? Why?	On a walk or at home with friends or parents, you consume fast food (hamburger, pizza, etc.) at least 3 times a week. Is this a good eating habit or not and why?
You like to eat cookies, or chips, shrimp, etc. during breaks, but your best friend doesn't agree with your choice. What do you decide to do and why?	Your mother or father usually brings you a good portion of nuts every day, when you read. Do you agree with their action or not and why?
Your mother insists on giving you fruit in a snack box every day for school lunch. Do you agree or not? Why?	Choosing nutrient-rich foods before and after exercise is important. Think about what we consume and why <i>during</i> exercise and what <i>after</i> exercise.
The heart needs proper nutrition and exercise to be strong. Find 2 exercises that strengthen your heart and you can do them for 10 minutes before eating a pizza.	If we don't drink enough water when we exercise, our body becomes dehydrated, and we experience problems like cramps and headaches. How much water should we drink daily?
Carbohydrates are the fuel for our bodies and we need them to have energy when we exercise. Think of and name 3 such carbohydrates that we can eat shortly before exercise.	Think about and name two ways of getting from school to home and vice versa that enhance your physical activity and are good for your health.
Physical activity helps the brain to work properly and improves our mood. Think and say why?	Why is physical activity important for our lives?

Unit 3 lesson 1

Exercises	score	target in	score	
1. sit ups (30")				
2. back exercise (30")				
3. push-ups (30") <i>pectoral, deltoid, triceps</i>				
4. reverse push-ups (30") <i>triceps</i>				
5. climber (30 ")				
6. lateral leg raises (15"+15")	left = ____ right= ____	left = ____ right= ____	left = ____ right= ____	
7. jumping jacks (30")				
8. going up and down stairs (30") <i>quadriceps , hamstrings</i>				

	STRENGTH WORKOUT CALENDAR					
	1st week		2nd week		3rd week	
	Date: _____		Date: _____		Date: _____	
	Exercises	Times	Exercises	Times	Exercises	Times
Monday						
Tuesday						
Wednesday						
Thursday						
Friday						
Saturday						
Sunday						

Unit 3 lesson 3

Name:		DISTANCE RUNNING			
		1st phase : 3'	2nd phase : 4'	3rd phase : 5'	Key points
1st measurement date: _____	Distance	___ meters	___ meters	___ meters	▸ <i>Looking ahead-far away</i> ▸ <i>Face, neck, shoulders relaxed</i> ▸ <i>Elbows bent</i> ▸ <i>Hands hanging freely</i> ▸ <i>Small steps</i> ▸ <i>Heel-first landing</i>
	Pulses				
	Target:	___ meters	___ meters	___ meters	
2nd measurement date: _____	Distance	___ meters	___ meters	___ meters	
	Pulses				
	Target:	___ meters	___ meters	___ meters	
3rd measurement date: _____	Distance	___ meters	___ meters	___ meters	
	Pulses				
	Target:	___ meters	___ meters	___ meters	

Unit 3 lesson 4

Reciprocal Teaching Style Criteria Sheet ROPE JUMPING	CHILD A			CHILD B		
key points	Always	Sometimes	Not yet	Always	Sometimes	Not yet
<i>Elbows close to the body</i>						
<i>Wrist rotation</i>						
<i>Knees slightly bent</i>						
<i>Bounce on the front of the foot, low to the ground</i>						
<i>Continuous bounces at a pace</i>						

[illegible]

Unit 4 lesson 2

Cards with questions (TRUE-FALSE or open-ended) about the benefits of achieving health goals. You can edit the content, print the page, laminate and cut the cards.

With physical activity and exercise we live healthy and happy lives. T-F	With physical activity and exercise we sleep better. T-F
With physical activity and exercise, bones become stronger and more robust. T-F	With physical activity and exercise we move more easily, because the joints are flexible. T-F
With physical activity and exercise we have less stress. T-F	With physical activity and exercise we are more confident in ourselves. T-F
Through physical activity and exercise we make friendships with other children. T-F	With physical activity and exercise we get sick less. T-F
With physical activity and exercise, our heart rests more quickly. T-F	Physical activity and exercise increase heart rate when we sit. T-F
With physical activity and exercise we do better at study. T-F	With physical activity and exercise we get more tired in everyday life. T-F
With physical activity and exercise, our body becomes more beautiful and stronger. T-F	With physical activity and exercise, the heart strengthens and we don't get tired easily. T-F
At what heart rate should you exercise to improve your cardio endurance?	What are the characteristics of exercises that improve cardio endurance?
Name 3 benefits you will get from the exercise you just did.	How does your health benefit when you achieve the goals you set?

Unit 5 lesson 1

Health related fitness component	Test	1st measurement	target	2nd measurement	target	3rd measurement
cardiovascular endurance	12' continuous running and/or walking	Date : Score: meters		Date : Score: meters		Date : Score: ... meters
trunk muscular endurance	correct curl ups	Date : Score:		Date : Score:		Date : Score:
upper body muscular endurance	correct push - ups	Date : Score:		Date : Score:		Date : Score:
trunk flexibility	trunk lift	Date : Score:		Date : Score:		Date : Score:
trunk flexibility	sit and reach	Date : Score:		Date : Score:		Date : Score:

Unit 5 lesson 1

Defensive tactics	YES	Offensive tactics	YES
gets in front of the opponent		constantly moving	
gets between the ball and the goal post		stays away from others	
disturbs the ball when she/he can		finds open space	
blocks the path of the pass		passes to someone who will score	
		communicates with teammates	



Defensive tactics	YES	Offensive tactics	YES
gets in front of the opponent		constantly moving	
gets between the ball and the goal post		stays away from others	
disturbs the ball when she/he can		finds open space	
blocks the path of the pass		passes to someone who will score	
		communicates with teammates	

Unit 6 lesson 1

Print each question twice per page and cut the page in half. Leave 1 question for each pair of children and pencils/pencils at each station.

Breakfast is essential because it gives us energy. A complete breakfast requires a combination of foods from 3 groups: *Dairy, Cereals and Fruits*. Write the content of a healthy breakfast.

We should not eat sweets often, because they are not nutritious, they damage the teeth, the heart, the joints and increase the risk of diabetes. However, there are foods that are sweet but also have nutrients. Write 3 of them.

We must consume fast food (hamburgers, pizzas, etc.) in moderation. Why?

Legumes protect the heart, regulate blood sugar and ensure good bowel function. To which food category(ies) of the Mediterranean diet do they belong? Write 4 legumes that you know and the one you like the most.

What are your favorite ingredients for a pizza? Which of these are the healthiest? Why?

Unit 6 lessons 2 & 3

1. PUSH-UPS: 1 repetition = 1€ (up to 10€)
2. SQUATS: 1 repetition = 1€ (up to 15€)
3. PLANK: 30"= 5€ (up to 15€)
4. BRIDGE: 1 repetition = 1€ (up to 15€)
5. BURPEES: 1 repetition = 2€ (up to 20€)
6. CURL UPS: 1 repetition = 1€ (up to 10€)
7. JUMPING JACKS: 1 repeat = €1 (up to €20)
8. ROPE JUMPINGS: 1 repetition = 1€ (up to 15€)

Exercise	Reps/time	calories burned
BURPEES	15	20
CURL UPS	20	30
PUSH UPS	5	5
CLIMBER	20 "	10
RUN	10 METERS	10
SQUATS & JUMPS	30 "	10
WALL SQUATS	1 '	10
LANGES	20 "	20
SQUATS	20	30

Unit 7 lesson 1

QUIZ

Put each of the following activities on the board, depending on the component of health-related fitness it develops:

30' Running/Fast walking, Aerobics, Dance, Chasing, Push-ups, Pull-ups, Abs, Lower Back exercise, 30' 5v5 Football, Climbing stairs, Jumping knees to chest, Jumping rope, Muscle stretching for 8"-10", Horizontal jumps, 30' Bicycle, 30' Basketball 3v3

Component of health-related fitness	Activities
Cardiovascular Endurance	
Muscular endurance	
Muscular Strength	
Flexibility	
Body composition	

7. Educational material developed by DUTH: daily lesson plans for health-related fitness & nutrition with dance

7.1 Lesson 1 (5th & 6th grade)

EXPECTED Learning Outcomes (LOs) :

- a) Understand/remember concepts related to health-related fitness
- b) To understand that dance - of any kind - is a physical activity and can contribute to improving physical fitness for health.
- c) To perform the kinetic form of the dances (dances that have as their model the kinetic pattern in three – Sirtos in three (Kontoula Lemonia – Children of Samarina – Teeth Thick), Siganos Sirtos (Crete), Hasapia [Roumpalia (Domna Samiou) – Ehe gia panta gia (Aidonidis)], Zonaradikos (Do sta lianohortaroudia me Doitsidis).

Introduction (5')

Health information:

Explain what elements are included in health-related fitness and why each one is important for human health

Cardiovascular endurance

Muscle strength

Muscular endurance

Flexibility

Body composition

Warm-up (5 minutes)

Organization: The class is divided into groups of 3-4 children of different dance levels, each one. All the groups are in a large circle (if there is none, you can make one with tape on the floor. They dance Sigano, Sirto in three and Roumbalia (Domna Samiou). In each dance, the child of each group who dances first changes.

MAIN PART

Activity 1 (20 ')

Teaching the dance "Zonaradikos" taking into account the movement pattern in three. Teaching method "Common movement patterns".

1. You ask the students to reproduce the rhythm (clapping, tapping the hand on the foot or with the foot).
2. You ask the students to dance the three-count pattern to the music of Zonaradikos.
3. You ask the students to dance in and out (towards the center of the circle and vice versa).
4. You ask the students to find how to move around the circle by dancing in and out (the solution is: dancing zig-zag or in an L-shape)
5. You constantly check the correct execution of the dance moves

✓ **After they have danced all four dances, you could ask them:**

- Did you notice any similarities between the four dances? If so, what are they?
- Did you notice any differences between the four dances? If so, what are they?
- Which dance made you gasp the most?
- Which dance do you think made your legs stronger?

I dance all 4 dances in a row (15 min)

- ✓ You use the file with the unified music of the dances (Siganos, Syrtos in three with the song "Dontia pykna", Hasapia with the song "Eche gia panta gia" with Aidonidis, Zonaradikos with the song "Do sta lianohortaroudia" with Doitsidis)
- ✓ The students dance without a break between dances.
- ✓ After they finish, do you ask them the questions?

- a) What changes in your body did you notice? (increased breathing rate, sweating, flushing of the face).
- b) Did you notice these changes in another activity you participated in? (running, basketball).
- c) Can dancing bring similar results to other activities?
- d) Does it have something that the others don't? (music, effect on mood, etc.)

7.2 Lesson 2

EXPECTED Learning Outcomes:

- a) Measure and record their heart rate before and after the end of a dance
- b) Explain how to measure heart rate
- c) To correctly perform dance skills (dances: Tick, Ant)

INTRODUCTION: (5')

The importance of cardiac endurance for human health. Ways to improve it.

ORGANIZATION: The class is divided into groups of 3-4 children of different dance levels. All groups are in a large circle (if there is none, you can make one with tape on the floor).

They dance 2-3 dances that they already know, for example, 2-3 of: Siganos, Sirtos in three (Children of Samarina, Thick Teeth), Hasapia (Roumbalia – Garoufalia/Domna Samiou). In each dance, the child from each group who dances first changes.

MAIN PART

Activity 1 (20')

Students continue to dance in small groups.

You teach Tick first and then Ant.

Duration of each piece of music 2.30 min.

You constantly check for correct execution of the movement and provide feedback

After they learn both dances, you ask them:

a) measure and record their heart rate. Remind them of the two ways (neck or wrist) of measurement. Some may have a watch that allows recording of heart rate.

b) first dance the Tick and after a 2-minute break, dance the Ant.

c) In both cases you ask them to count and record with the end of each dance their heart rate.

You ask them:

a) Which dance made you gasp the most and your heart beat the fastest?

b) Which dance made your legs stronger?

c) Did your hands get stronger with some dance? Why did you give this answer?

Activity 2 (15')

Resting heart rate (when sitting or doing nothing): the number of heartbeats when we are doing nothing (for children older than 10 years old it ranges from 60 – 100)

Exercise heart rate: the number of heartbeats when we exercise

Exercise intensity: how hard our body needs to work when performing a specific activity or exercise (or how much energy the body consumes during exercise).

We can calculate the level/intensity of an exercise by how much our heart rate increases compared to a resting state, how much effort it takes to breathe, and how tired we feel.

- 1) Silent, Syrtos in three (Teeth Thick) and Tick (the music is played in succession) and
- 2) Butcher and Ant (music plays in sequence)

They dance the 1st combination and after resting for, i.e., 3 minutes – walking at a relatively fast pace – they dance the 2nd combination.

In both cases, they measure and record their heart rate once they finish their dance.

You ask them:

a) in which of the two combinations did they dance the most (longer)?

b) in which of the two combinations did they get more tired/their heart rate was higher?

c) is there some correspondence in dance time/duration and increase in heart rate/intensity?

d) in which of the two cases was the heart exercised more?

Feedback (5')

While the children are doing stretching exercises, you ask them questions related to what they learned in today's lesson:

- 👉 What elements make up physical fitness for health?
- 👉 What element did we work on today?
- 👉 Importance of exercise time?
- 👉 How do we measure pulses? (on the neck or wrist, for 6 seconds X 10 = pulses/minute)
- 👉 What should be the resting pulse rate for their age?

7.3 Lesson 3

EXPECTED Learning Outcomes:

- a) understand concepts related to cardio-health such as *maximum exercise heart rate* and *ideal exercise zone*
- b) be able to calculate their maximum exercise heart rate
- c) be able to calculate their ideal exercise zone
- d) To correctly perform the kinetic form of the Motivo in two: Syrtos in two (*The sun is setting* with Alexiou), Syrtomballos (*In the middle of the Aegean waters* with Arvanitakis), Kalamatianos (Mantzourana).

INTRODUCTION: (7')

- a) **Maximum exercise heart rate:** Maximum Heart Rate (MHR) is the maximum number of beats per minute that the heart reaches during maximum exertion. Alternatively, it is the maximum rate at which your heart can beat in one minute.

How do you calculate your maximum exercise heart rate:

$$220 - \text{Age } 220 - 12 = 208$$

- b) **Ideal exercise zone:** the heart rate that brings about changes in cardiorespiratory function. That is, the endurance/aerobic capacity of a person improves. It depends on the physical condition of each person. For students without good physical condition – who lead a sedentary life – exercise with 50% – 60% of the MHR is ideal to start with. Then, the intensity can be increased and reach up to 80% since with higher intensities we train other parameters (anaerobic exercise). For students, exercise is appropriate when it forces the heart to work with 125 – 165 heartbeats per minute.

- c) **Active break:** The time between two exercises. The student exercises with a lower intensity activity

- d) **Passive break:** The time between two exercises. The student sits and does not perform any exercise.

Warm-up (5 minutes)

ORGANIZATION: The class is divided into groups of 3-4 children of different dance levels, each one. All the groups are on a large circle. They dance 2-3 dances that they already know, for example, 2-3 of: Syrtos in three (Children of Samarina), Fysouni (if they don't know it, you teach it with the pattern in three), Hasapia (Roumpalia – Garoufalia/ Domna Samiou), Tik, Zonaradikos. You try to gradually increase the intensity. In each dance, the child of each group who dances first changes.

MAIN PART

Activity 1 (18')

Students continue to dance in small groups.

a) You teach the pattern in two

b) Sirtos in two (The sun is rising with Alexiou), (2-3 ')

active break 1'

c) Sirtombalos (Amid the Aegean waters with Arvanitakis) (3')

3 minute active break.

d) Kalamatianos (Mantzourana), (2'30'')

2 minute active break

- ✓ You constantly check the correct execution of the dance movements. In the syrtomballo you pay special attention to the movement of the feet (it starts from the lower leg -foot- and is transferred to the rest of the body)
- ✓ You ask each child to count and record their pulse (as they learned in a previous lesson or class) at the beginning and after the end of each dance.

After they dance all three dances, you ask them:

- Did all three dances have the same impact on your heart rate?
- Which dance had the smallest?
- Which dance had the biggest?
- Can you connect the lower burden with the length of the break?
- Why do you think the break between the 2nd and 3rd dances lasted longer?

Activity 2 (15')

The students dance in order:

Slowly, without a break

Syrtos in three, without a break

Syrtos in two, 1 minute break

Fysouni, 2' break

Kalamatianos, 2:30 break

Sirtomball

- Before and after each dance, you measure and record your heart rate.
- Calculate your maximum exercise heart rate
- Considering your maximum exercise heart rate, can you find the workload you received (intensity) while dancing each dance?
- How close or far from your ideal exercise zone was this?



Encourage students to calculate their parents' MHR and ideal exercise zone.



Then, have them show/teach some dances to their parents and calculate how close or far they were from their ideal exercise zone.

7.4 Lesson 4

EXPECTED Learning Outcomes:

- a) Recognize the rhythmic movement/speed of music (Tempo)
- b) Participate in dances of different cultural or national origin (Hora (Romanian Dance) – basic steps and Tarantella Napolitana)
- e) Perform dances - of any kind - as a physical activity that contributes to improving physical condition for health

INTRODUCTION: (5')

Tempo: Tempo is how fast or slow a piece of music will be played. It is measured by the number of beats of a percussion instrument in one minute. The speed of performance is divided into five basic speeds:

- Slow (56-80 beats in 1 minute) Corresponds to the Largo (very slow) of European music
- Medium (80-100 beats per minute) Corresponds to the Adagio (slow) of European music
- Moderate (100-168 beats per minute) Corresponds to the Moderato of European music
- Fast (168-208 beats per minute) Corresponds to the Allegro (happy-lively) of European music
- Very fast or rapid (208 beats per minute) Corresponds to the Presto (very fast) of European music

Warm-up (5 minutes)

ORGANIZATION: The UNIT is divided into groups of 3-4 children of different dance levels, each one. All groups form a large circle. They dance 2-3 dances that they already know, for example, 2-3 of: Syrtos in three (Children of Samarina, Kontoula Lemonia), Fysouni, Hasapia (Roumpalia – Garoufalia/Domna Samiou). In each dance, the child of each group who dances first changes.

MAIN PART

Activity 1 (20')

Students continue to dance in small groups.

1st Dance: Sirtos in three (Teeth Thick) (The song is 4', we dance it for 2')

2nd Hour (Romanian) Dance – basic steps (2'30''). We don't teach it, we put on the music and students dance the movement pattern in threes

3rd Butcher (Hello, always hello) (3'30'')

4th Tarantella Napolitana (4'50'')

The dance will be taught taking into account the pattern, the Fysouni, the Tsamiko (the complex steps). The game "tsikoleleta" can be used for practice.

Break: 2 minutes

- ✓ You constantly check the correct execution of the dance moves
- ✓ You ask children to count and record their pulse (as they learned in a previous lesson or class) after the end of each dance.

- ✓ **After they have danced all four dances, you ask them:**
 - o Did you notice any similarities with the dances of our country? If so, what are they?
 - o Did you notice any differences with the dances of our country? If so, what are they?
 - o Which dance do you think made your legs stronger?
 - o Which dance made you gasp the most and therefore your heart beat faster?
 - o If you want to improve muscular endurance, which dance(s) would you choose?
 - o If you want to improve your cardiovascular endurance, which dance(s) would you choose?
 - o Why do you think that while dancing Tarantella your heart rate was higher than while dancing Sirto in three?
 - o To which category does each dance belong in terms of the speed of the music we mentioned at the beginning?
 - o How does the speed of music affect our cardiovascular health?

Activity 2 (5')

Questions about the effect of dance on the cardiovascular system:

- How many heartbeats did you have during each dance?
- Why do you think this variation is observed from dance to dance?

I dance 4 dances in a row (10 minutes)

- ✓ "Sirto sa tria" (Teeth Thick), "Fysouni", "Hora" and "Tarantella"
- ✓ The students dance without a break between dances.
- ✓ Pulse measurement before and at the end of the activity
- ✓ After they finish, do you ask them the questions?

a) Besides the increase in heart rate, what other changes in your body did you notice? (increased breathing rate, sweating, flushing of the face).

b) Did you notice these changes in another activity you participated in? (running, basketball).

- c) Can dancing bring similar results to other activities?
- d) Does it have something that the others don't? (music, effect on mood, etc.)



Encourage students to show/teach a dance to their parents and to measure their heart rates at the end.

7.5 Lesson 5

EXPECTED Learning Outcomes:

- a) Participate in physical activity (such as dancing) based on the principles of exercise
- b) be able to create a short exercise program, with dance, with which they will improve their cardiorespiratory function
- c) Perform dance skills correctly

INTRODUCTION (5')

Exercise principles to improve cardiorespiratory function:

- 1) Type of activity: Dance
- 2) Intensity: Heart rate – Ideal exercise zone
- 3) Time: Exercise duration: at least 30 minutes
- 4) Frequency: How many times a week: according to WHO
60 minutes of moderate to intense exercise are required per day.

Activity (40')

Dances	Song	Duration	Intensity
Quiet		5'	52%
Omal Kars	40 red apples	3'20''	55%
Tsakonian	I told you, mother.	3'	58%
At three	Dent Teeth (Chalkias)	4'30''	60%
In two	The sun is setting (Alexiou)	4'	62%
Tick		2'	63%
Ant		3'	64%
Fissouni		2'	65%
Zonaradikos	Lianohortaroudia (Doitsidis)	3'	66%
Chamikos	Amaranth	3'30''	67%
Butcher's shop	Hello, hello, hello (Aidonidis)	3'30''	68%
Syrtos	My red apple	3'10''	69%
Kalamatianos	Marjoram	2'30''	70%
Foot		1'51''	72%
Sirtomball	In the middle of the Aegean waters (Arvanitakis)	3'	75%
Sirtos Syngathistos	The Dawner reigned	3'	76%

From the previous lesson you give the list of dances and the children in 2 groups choose the dances for their 20' program, in their ideal exercise zone. After the warm-up, one group presents, and everyone dances the dances together. This is followed by a cool-down. In the next lesson, the same is done for the other group. You remind them that their goal is to practice.

7.6 Lesson 6

Expected Learning Outcomes

- a) learn/remember what nutrition is, proper/healthy nutrition and how it contributes to maintaining health
- b) understand the value of the Mediterranean diet for health
- c) to correctly perform the dances Dentrtsi and Tsourapia
- d) perform spatial activities (spatial orientation), agility, balance

Introduction (5')

Food: We call food any substance, natural, processed or semi-processed, which is intended for human consumption so that the body can produce the energy required to live

Nutrition: are all those foods and drinks that someone chooses to consume to maintain his/her life

Proper/Healthy diet: a person is nourished when he/she consumes the correct and required

amount of all nutrients from foods that have characterized as healthy and the right combinations of them.

The goal of a healthy diet is to meet nutritional needs and prevent disease.

Mediterranean diet: It is a diet that emphasizes the consumption of cereals, legumes, olive oil, vegetables and fruits. It also contains small amounts of fish and white meat (once a week) while the consumption of red meat is rare.

Research has shown that people who follow the Mediterranean diet are at lower risk of developing heart disease, diabetes, Alzheimer's, Parkinson's, hypertension, and strokes.

Warm-up (5 minutes)

The children dance Tsamiko, to remember the complex step, Tsakonikos and Kalamatianos all together in a circle or, if there are many, in two circles.

Main part:

Activity 1 (15')

Teaching the Dentrtsi dance

- a) you put on the music and ask the children to clap their hands to the rhythm (3 claps)
- b) ask the children to do the complex step of the tsamikos with the song foot (count 1-2-3)

c) after they learn it, you teach them the movements on the spot (lifts, push-ups) by counting them and again, in three beats (1-2-3).

Teaching Tsourapia

- a) you put on the music and ask the children to clap their hands to the rhythm (4 are the claps and you count them 2- 2 – 2 - 3)
- b) you start teaching from the last 8 movements: you ask them to take three steps in the direction of the circle starting with the right and then they bring the left next to the right in attention position. That is, R – L – R – L next to the R, in an attention position.
- c) do the same starting with the left foot this time and going in the opposite direction to the direction of the circle. That is, L – R – L – R next to L, in an attention position.
- d) at this point you can turn on the music and have them perform the movements they have learned so far
- e) after they dance it several times – until they understand it and dance it comfortably, especially the movement with the left foot to the left – you add four more movements – those of Kalamatianos. That is, R – L – R – L.

Activity 2 (15')

You place cones in the area so that the children can perform various maneuvers.

- a) Ask the children to close their eyes except the first one who will be the guide.
- b) they walk the route once without music
- c) you put on the music/song of Tsakonikos and the children dance while passing through the cones.
- d) They do the same with the Tsourapia dance, only now his eyes are open
- e) They dance, without the cones, Dentrtsi

After they have danced all three dances, you ask them (5'):

- a) Which dance do you think requires more energy from your body? Why?
- b) Is it correct to get this energy from foods that contain large amounts sugar?
- c) At the end of the lesson, which of the following will you choose to eat and drink?
A slice of pizza with a can of juice
A toast (with cheese and tomato or green salad) that you brought from home and water
Chips and water

d) With which dance did you train your legs more?

7.7 Lesson 7

Expected Learning Outcomes

- a) to learn what calorie balance is
- b) to learn what the ideal weight is
- c) to correctly perform the Raiko and Palamakia dances
- d) to adopt correct/appropriate eating behaviors

Introduction (5')

Calorie/Energy Balance: When the energy taken in through food is equal to that consumed

Positive energy balance: When the energy intake is more than what our body needs

Negative energy balance: When the energy intake is less than what our body needs

Ideal weight: According to Ziros (2014), ideal body weight is that which is associated with the lowest mortality rate among healthy people. Desirable – ideal weight, according to this logic, is that which has been associated with the highest rates of longevity

Underweight: A person is considered underweight when his/her body weight is low in relation to height

Obesity: It is the condition characterized by an excessive increase in adipose tissue, either throughout the body or locally.

Warm-up (5 minutes)

The children dance Sirto in two (Yianni m' to mantili sou), Hasapia (Tonight on the Beach) and Kalamatiano (Mantzourana) all together in a circle or, if there are many, in two circles.

Main part

Activity 1 (20')

Teaching the Raiko dance

- a) you put on the music and ask the children to clap their hands to the rhythm
- b) you explain to the children that the dance consists of two parts: the first which is progressive in the direction of the circle and the second which is danced on the spot and is very similar to the on-the-spot steps of Kalamatianos. This is where you start your teaching.

c) your teaching differs only in the addition of a 4th beat during which the left foot is in the lift. So, your count could be 1-2-3 lift or above. The same is repeated to the left starting with the left foot.

d) after they have mastered this pattern, after 4-5 repetitions both with counting/clapping and with music, you proceed to teach the first part which includes two movements and two lifts. More specifically, starting with the right foot, you ask them to take a step in the direction of the circle and lift the left and then step with the left and lift the right. You ask the children to repeat the above movements a few times with the command step-hold, step-hold.

After they have repeated it a few times and with the music, you combine the two parts. It is best at this stage, not to proceed with teaching the hand movements. However, if you see that the children have mastered the movements, then you proceed with teaching the hand movements as well.

The initial grip is from the palms and the arms are extended at the elbows. The arms bend at the elbows with the first movement (right leg) of the on-the-spot movements (part 2).

Teaching the dance Palamakia

a) The dance consists of two parts. In the 1st part the kinetic form of the dance is that of the pattern (syrtos) in two which is repeated 8 times while in the 2nd the dancers clap their hands.

b) what you should pay attention to is the 8th pattern which is not completed since in the 5th beat the R foot comes into focus next to the L and remains in the 6th beat. In the second part the arms, bent at the elbows, move right, left and again right where they will clap their hands. The same will be repeated left, right and again left where they will clap their hands.

Activity 2 (15')

You ask the children to count and record their pulses.

You ask the children to dance the dance duets continuously (we have combined the music into a single file)

Tsourapia – Raiko,

Syrto in two (Yianni m' to mandili sou) - Syrto in three (Dontia Pykna)

Tsourapia - Palamakia

After each execution, the children measure and record their pulse.

After they finish the last pair, you ask them to compare the four heart rates they have recorded:

a) What do you notice regarding the fluctuation of your heart rate? (the highest should be after the Tsourapia – Palamakia, the next Tsourapia – Raiko, the third one of the Syrto at two – Syrto at three and last the initial one)

b) Did this variation bring about changes in your body? (sweating, flushing, rapid breathing, tired legs for the 1st and 3rd dance pairs, while for the 2nd breathing became calmer and generally there was a feeling of rest)

c) with which pair of dances do you think you consumed more energy (more calories)? They can also consult the table in Lesson plan 8.

d) if you add up the calories you consumed in today's class (again, refer to the table and add the calories you consumed for each dance you danced), in which category do you think you would classify yourself (add up the calories you consumed from breakfast until the moment the class started); Positive (calorie surplus, therefore you took in more than you consumed), negative (you took in more than you consumed), balance (you took in as many as you consumed)

e) if you classify yourself as having a negative balance and do not want to lose weight, which of the following foods would you prefer to use to make up for the deficit?

1) one chocolate bar, 2) one cereal bar, 3) one croissant, 4) one fruit, 5) one bag of chips/shrimp, 6) one portion of nuts

7.8 Lesson 8

Expected Learning Outcomes

a) have the children remember what was mentioned in the lessons that dance was used as a tool

exercise

b) ideal exercise zone through dance

c) correctly perform the dances that have been taught so far

d) to become capable of composing an exercise program with dance, both for themselves and for others

their families

e) adopt correct/appropriate eating behaviors

Introduction (5')

a) Ideal exercise zone,

b) Principles of exercise to improve cardiorespiratory function,

c) Mediterranean diet,

d) Calorie balance

Warm-up (6 minutes)

The children dance: Sirto sta dyo (Yianni m' to mantili sou), Hasapia (Tonight on the Beach), Zonaradiko, Tsourapia and Kalamatiano (Mantzourana) all together in a circle or, if there are many, in two circles.

Main part

Activity (34')

a) You ask the children to measure and record their heart rate

b) You ask the children to create a dance exercise program that should take into account their maximum exercise heart rate, their ideal exercise zone, and their caloric balance.

c) You give an example:

1. Average heart rate = 202 beats/min

2. Exercise intensity = 67% (67.3%)

3. Average ideal exercise zone 135 beats per minute

4. Duration: 30' (31' 15'').

5. You could use the file with the unified music and apply the following program

Dances	Song	Duration	Intensity	Calories approx.
Tsakonian	I told you, mother	3'	58%	15
At three	Dense Teeth - Chalkias	4'30''	60%	20.8
In two	On the hill of Parga – Glykeria	3'	62%	18.5
Zonaradikos	Lianoherbataroudia – Doitsidis	3'	66%	21
Tasia		2'45''	68%	18.5
Socks		2'45''	68%	18.5
Butcher's shop	Tonight on the beaches	3'15''	68%	23
Withdrawn	Dentritsi – Aidonidis	3'	74%	15
Raikos		2'30''	74%	23
Clapping		2'30''	75%	24
Total		31'15''	67.3%	197.3

a) the children exercised at 67.3% intensity for 31.15 minutes, consuming 197.3 calories

b) you ask them to find what other activity they could do to bring the same results (basketball, volleyball, football, swimming, walking?)

c) ask the children about their caloric equivalent. Was it positive or negative? To answer they will have to calculate the calories they have consumed up to the time of the lesson

d) if someone would like to lose weight, and therefore have a negative calorie balance, what changes should be made?

e) if they don't want to lose weight, so they want to make up for the calories they lost, what will they choose?

1) 1 seasonal fruit, 2) 15 unsalted nuts, 3) 1 cheesecake, 4) a croissant,

4) 1/2 0% yogurt with 1 tbsp. oats and 1 tbsp. raisins



Encourage students to make a similar plan for their parents or friends, considering the data provided.

Calorie consumption per dance

Dances	Song	Duration	Intensity	Calories approx.
At three	Dense Teeth - Chalkias	4'30''	60%	20.8
In two	On the hill of Parga – Glykeria	3'	62%	18.5
In two	The sun is setting - Alexiou	4'	62%	24.7
Zagorisios	Kapsalis	2'45''	62%	18.5
Ant		3'	64%	21
Fissouni		2'	65%	18
Time	Romanian dance	3'	65%	21
Zonaradikos	Lianoherbataroudia – Doitsidis	3'	66%	21
Tasia		2'45''	68%	18.5
Socks		2'45''	68%	18.5
Butcher's shop	Hello, hello, hello - Aidonidis	3'30''	68%	23
Butcher's shop	Tonight on the beaches	3'15''	68%	23
Kalamatianos	Marjoram	2'30''	70%	18
Sirtos -Cyprus	Love her with all your heart - Ioannidis	3'15''	70%	23
Chamikos	Amaranth	3'30''	70%	23
Foot		1'51''	72%	12
Withdrawn	Dentritsi – Aidonidis	3'	74%	15
Raikos		2'30''	74%	23
Clapping		2'30''	75%	24
Sirtomball	In the middle of the Aegean waters_ Arvanitakis	3'	75%	25
Sirtos Syngathistos	The Dawner has reigned _ Aidonidis	3'	76%	25
Sousta Symi		3'10''	76%	25
Eleven	Kozanite	5'50''	77%	48
Tarantella Pizzica	San Vito Orchestra Etnomusa di Sapienza di Roma.	4 ' 45 ''	78%	48

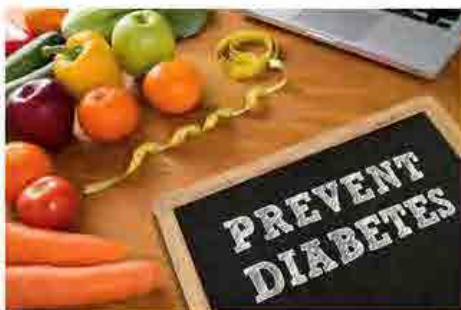
8. Educational material developed by UNIBO for 11-12 years old kids





Counteracting diabetes using interdisciplinary educative programs – DUSE

[HOME](#)
[PROJECT](#)
[PARTNER](#)
[EVENTS](#)
[CONTACTUS](#)



The European DUSE project

The European DUSE project aims at developing new educational strategies to increase awareness in children and adolescents on how maintaining a healthy lifestyle can counteract the onset of NCD such as diabetes. Thus, the DUSE project aims at promoting self-efficacy of younger generations making them able to incorporate good nutrition and the constant practice of sport activity in their daily routine.



COUNTERING DIABETES BY EDUCATION



**Co-funded by
the European Union**

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Assessorato Regionale Sanitario - Dipartimento di Bologna
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SPES-DUTH
Department of Health Sciences and Physical Education



THE
LEAGUE of
TOLERANCE

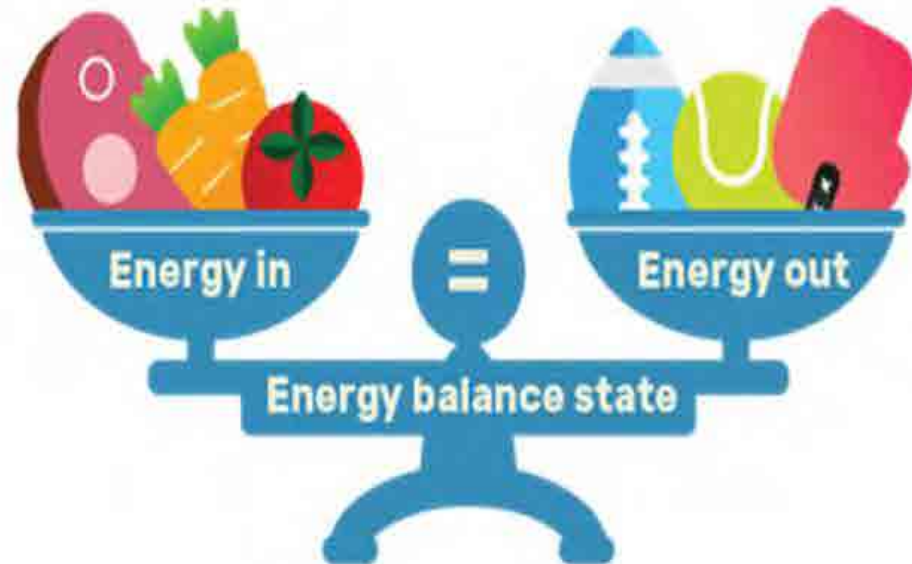


SPORT FOR ALL
ASSOCIATION



ΔΗΜΟΚΡΙΤΕΙΟ
ΠΑΝΕΠΙΣΤΗΜΙΟ
ΘΡΑΚΗΣ
DEMOCRITUS
UNIVERSITY
OF THRACE

It's all about ENERGY!



WHAT'S ON TODAY'S LESSON PLAN?



- ☐ MEDITERRANEAN DIET
- ☐ FOOD, MAIN CHARACTERISTICS
- ☐ COMPLETE AND BALANCED PLATE
- ☐ DISTRIBUTION OF MEALS DURING THE DAY
- ☐ LESS IS MORE
- ☐ HYDRATATION
- ☐ HUNTING FOOD LABELS

NUTRITIONAL EDUCATION

Diet (*from the Greek "diaita"*) way of life, understood as daily rule for health care, with guidelines governing every aspect of everyday life.

NUTRITION

HYDRATATION

PHYSICAL ACTIVITY

SLEEP



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Intangible
Cultural
Heritage

Ancel Keys (1904-2004) an American physiologist, was the first to explain to the world why people in certain regions were longer-lived.



UNESCO 2010

Mediterranean Diet

Intangible Cultural Heritage of Humanity

Mediterranean Diet is much more than just food. It promotes social interaction, as communal meals form the basis of social customs and festivities shared by a given community, and has given rise to a wealth of knowledge, songs, sayings, tales and legends. The Diet is founded on respect for the territory and biodiversity and ensures the preservation and development of traditional activities and crafts related to fishing and agriculture in Mediterranean communities.



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NUTRITIONAL PRINCIPLES

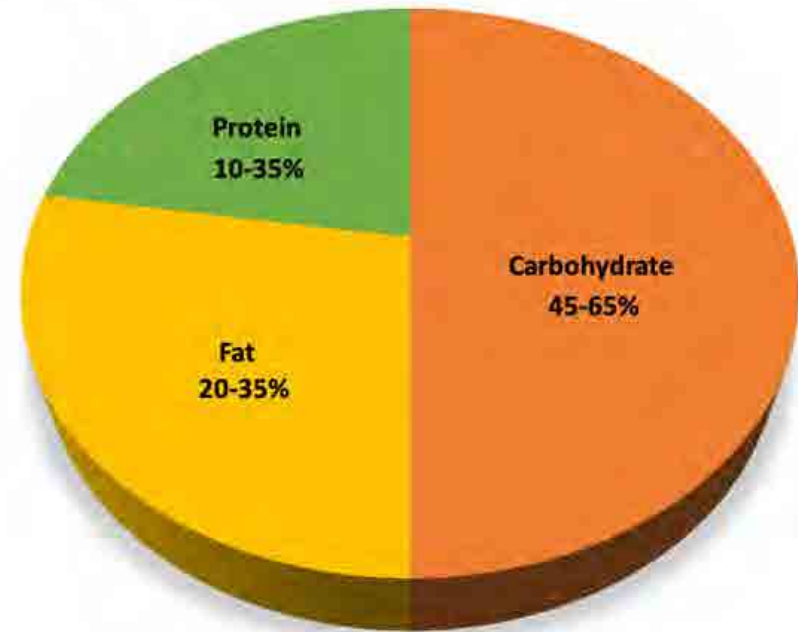
▪ Macronutrients

Necessary to provide the body with the energy it needs and the material for tissue growth and regeneration.

CARBOHYDRATES

FATS

PROTEINS



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NUTRITIONAL PRINCIPLES

▪ Micronutrients

ESSENTIAL

VITAMINS



MINERALS



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FOOD AND GROUPS

Foods can be divided into food groups, based on the nutrients of which they are the main source.

- CEREALS, BY-PRODUCTS AND TUBERS

- FRUIT AND VEGETABLES

- MEAT, FISH, EGGS AND LEGUMES

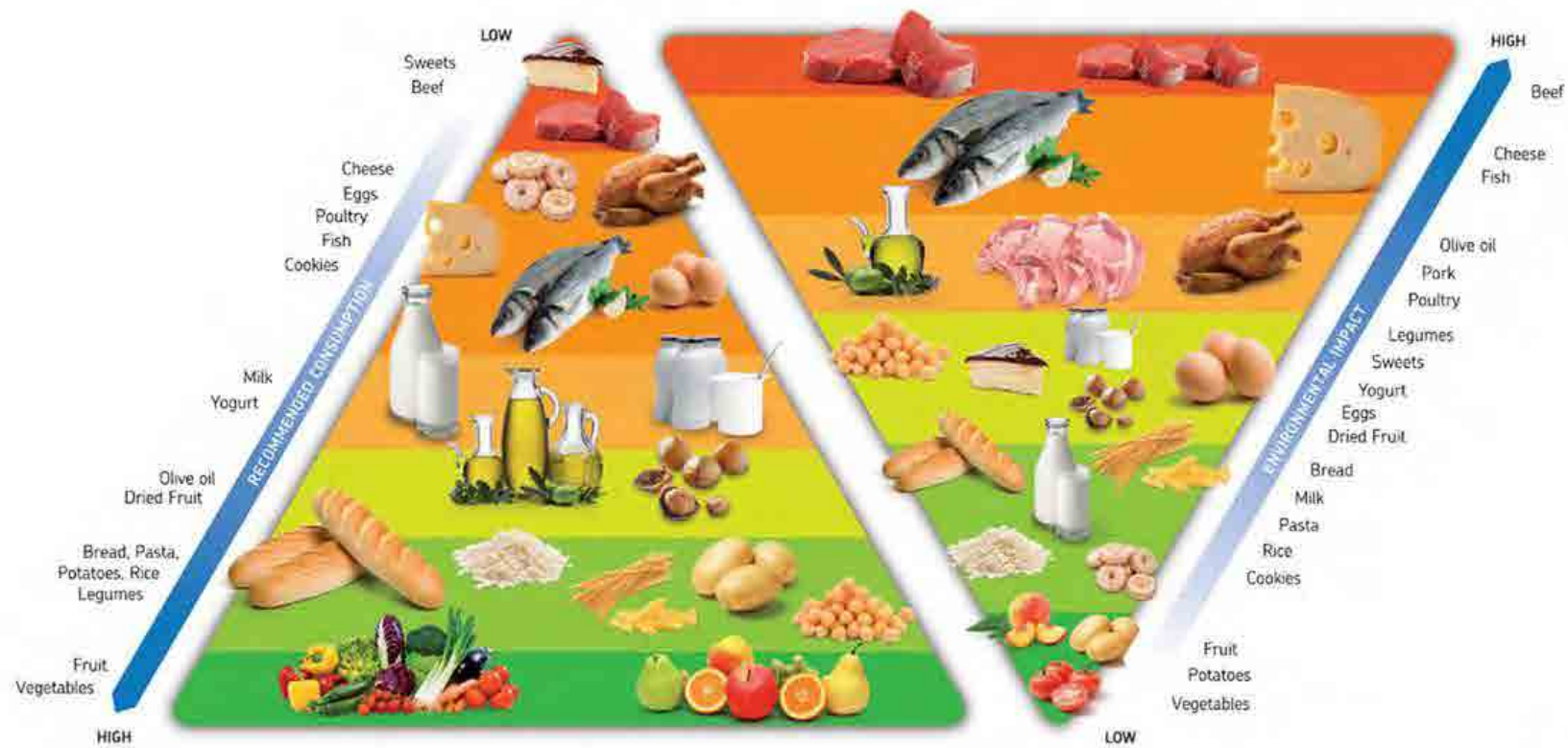
- MILK AND DAILY PRODUCTS

- COOKING FATS



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ENVIRONMENTAL PYRAMID



FOOD PYRAMID



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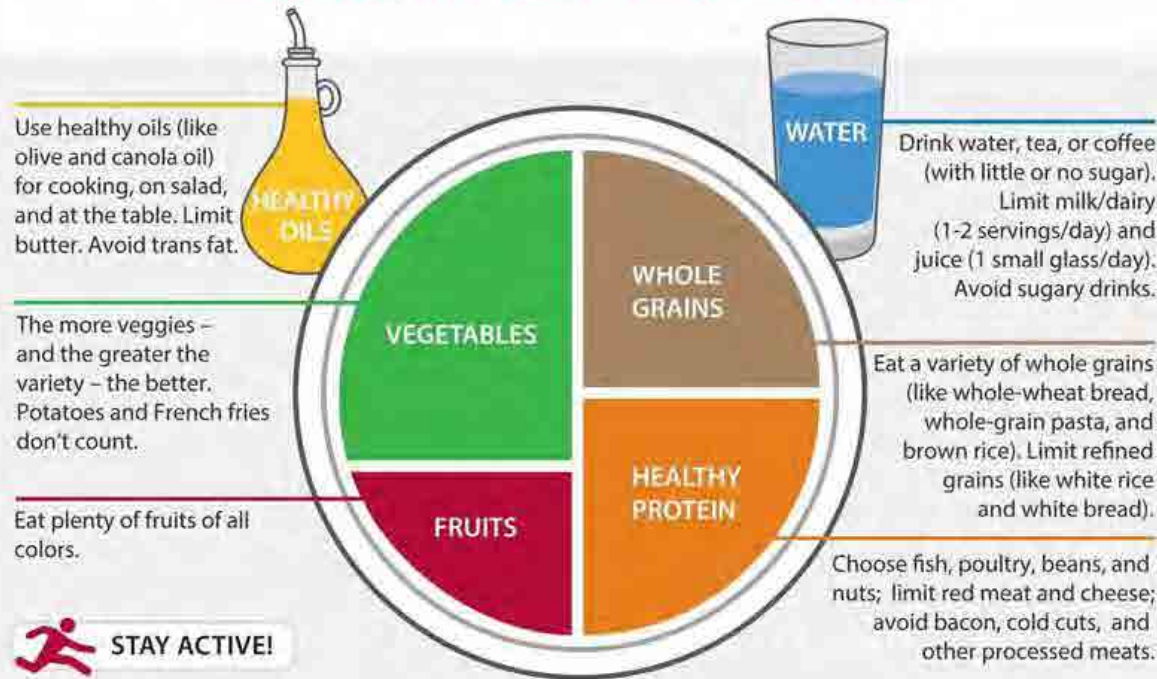


**HOW TO
COMPOSE THE
PLATE IN A
BALANCED AND
COMPLETE WAY?**



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HEALTHY EATING PLATE



STAY ACTIVE!

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Harvard T.H. Chan School of Public Health
The Nutrition Source
www.hsph.harvard.edu/nutritionsource

Harvard Medical School
Harvard Health Publications
www.health.harvard.edu



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UNIVERSITATIS BUDAPESTENSIS
CAPITULUM (H. RIVANI)

Copyright © 2011, Harvard University. For more information about The Healthy Eating Plate, please see The Nutrition Source, Department of Nutrition, Harvard T.H. Chan School of Public Health, www.thenutritionsource.org, and Harvard Health Publications, www.health.harvard.edu. (Source: <https://nutritionsource.hsph.harvard.edu/healthy-eating-plate/>)

QUIZ

How much fruit and vegetables is recommended per day?

A fruit and a vegetable

One fruit and two of vegetables

Two fruits and two vegetables

QUIZ

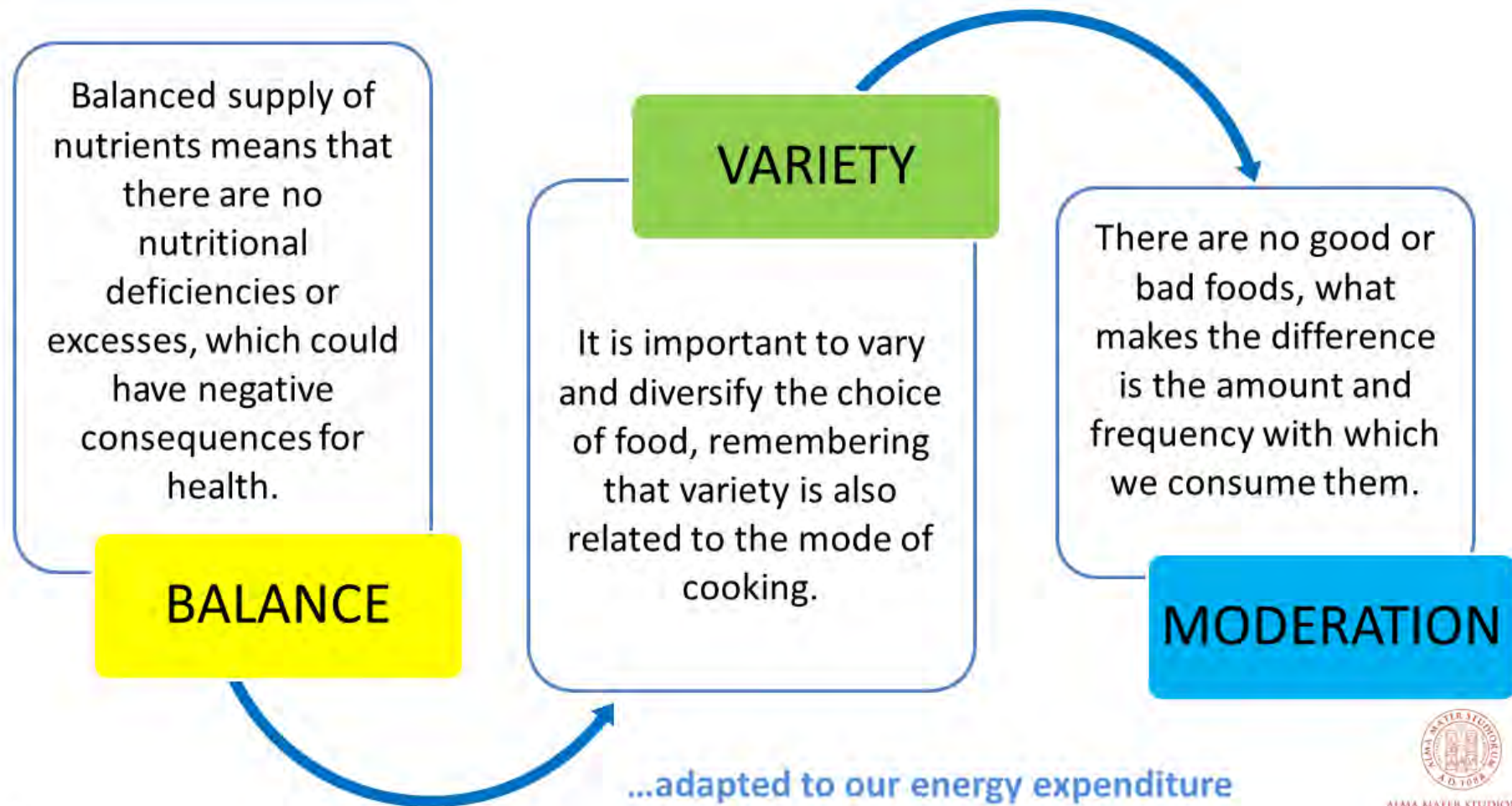
Can you eat red meat everyday?

YES

NO



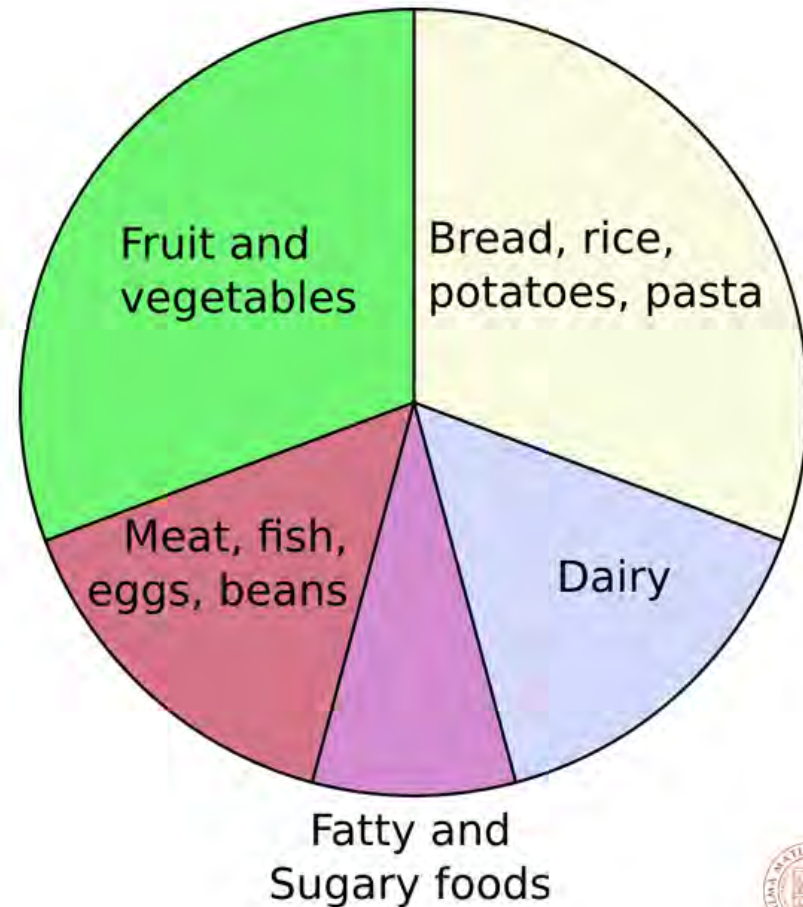
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BALANCED PLATE

- prevalence of **carbohydrates**, preferably from **fruits, vegetables** and **cereals**.
- It is preferable to choose **whole**, unrefined **cereals**.
- **Proteins** are also of **vegetable origin** (legumes, soy and some cereals), not only animal, and are a useful alternative to the latter.

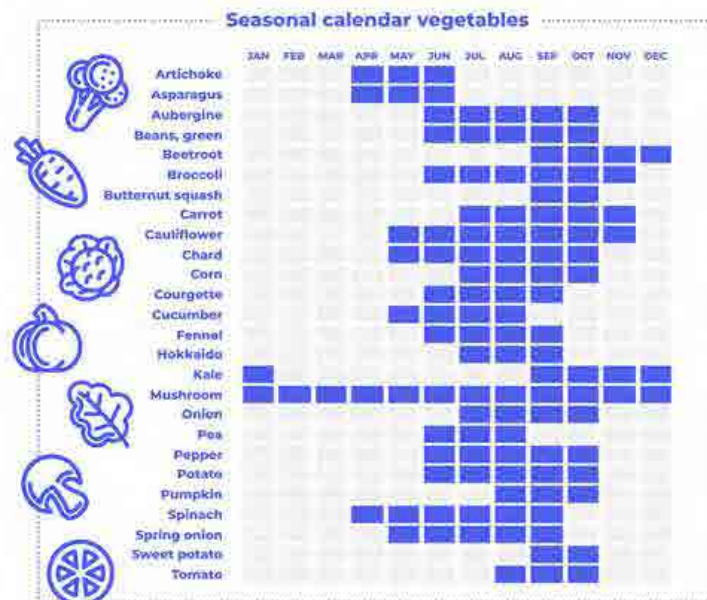


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- **Fruits and vegetables** are a **great source** of **carbohydrates**. They facilitate the intestinal flow thanks to the high percentage of **fiber** and are the **best source** of **vitamins** and **minerals**.
- *World Health Organization recommends 5 servings of fruits and vegetables per day, each with a different colour.*

EAT IN COLOR!



Eating Seasonally Chart

Summer		Fall		Winter		Spring	
Avocados	Lettuce	Apples	Lettuce	Apricots	Mushrooms	Apricots	Lettuce
Bananas	Lima Beans	Bananas	Limes	Avocados	Onions	Avocados	Limes
Bell Peppers	Mangos	Beets	Mangos	Bananas	Oranges	Bananas	Oranges
Blackberries	Mushrooms	Broccoli	Mushrooms	Brussels Sprouts	Pears	Brussels Sprouts	Pears
Blueberries	Okra	Brussels Sprouts	Parsnips	Celery	Potatoes	Celery	Potatoes
Cantaloupe	Peaches	Carrots	Pears	Collard Greens	Pumpkin	Collard Greens	Pumpkin
Celery	Pineapples	Cauliflower	Pear	Grapes	Rutabagas	Grapes	Rutabagas
Cherries	Plums	Celery	Pumpkin	Kale	Sweet Potatoes	Kale	Sweet Potatoes
Corn	Raspberries	Cranberries	Radishes	Kiwi	Swiss Chard	Kiwi	Swiss Chard
Cucumbers	Strawberries	Garlic	Rutabagas	Leeks	Turnips	Leeks	Turnips
Eggplant	Summer Squash	Ginger	Sweet Potatoes	Lemons	Winter Squash	Lemons	Winter Squash
Garlic	Tomatillos	Grapes	Swiss Chard	Limes	Yams	Limes	Yams
Grapes	Tomatoes	Green Beans	Turnips				
Green Beans	Watermelon	Kale	Winter Squash				
Honeydew Melon	Zucchini	Lemons	Yams				
Lemons							
Lettuce							

HOW MANY MEALS PER DAY?



BREAKFAST

The first opportunity to replenish energy essential for starting the day well both physical and mental: the brain consumes only carbohydrates.

SNACKS

They are to be inserted between a meal to ensure our body the right energy at all times and not get to the main meals too hungry.

Avoid pre-packaged snacks and sugary drinks.



LUNCH AND DINNER

Together with breakfast are part of the main meals.



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QUIZ

How many colors of fruit and vegetables should we vary as much as possible?

3

4

5

How do you compose a healthy dish?

Does anyone want to give an example?

LESS IS BETTER...

FOODS RICH IN SIMPLE SUGARS



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SHALL WE TALK ABOUT SUGAR?

WHAT HAPPENS ONE HOUR AFTER DRINKING A CAN OF COKE

1 FIRST 10 MINUTES

10 teaspoons of sugar hit your system, 100% of your recommended daily intake. You don't immediately vomit from the overwhelming sweetness because phosphoric acid clothe the taste allowing you to keep it down.

2 20 MINUTES

Your blood sugar spikes, saving an insulin burst. Your liver responds to this by turning any sugar it can get its hands on into fat. (That's plenty of fat at this particular moment)

3 40 MINUTES

Caffeine absorption is complete. Your pupils dilate, your blood pressure rises, as a response your blood vessels move sugar into your bloodstream. The adenosine receptors in your brain are now blocked preventing drowsiness.

4 45 MINUTES

Your body upps your dopamine production stimulating the pleasure centers of your brain. This is all exactly the same way heroin works, by the way.

5 60 MINUTES

The phosphoric acid binds sodium, magnesium and zinc in your lower intestine preventing a further boost in metabolism. This is compensated by high doses of sugar and artificial sweeteners plus increasing the urinary excretion of sodium.

6 >60 MINUTES

The caffeine's diuretic properties come into play. It makes you have to pee. It is now assured that you'll excrete the bound calcium, magnesium and zinc that was headed to your bones as well as sodium, electrolyte and water.

7 >60 MINUTES

As the rare birds of you dies spend you'll start to have a sugar crash. You may become irritable and/or sluggish. You're also now literally pissed away all the water that was in the Coke. If at not before intuing it with valuable nutrients your body could have used for things like even losing the ability to hydrate your system or build strong bones and teeth.



1 45 MINUTES

2 60 MINUTES

3 >60 MINUTES



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LESS IS MORE...

**FOODS HIGH IN
SATURATED FAT AND SALT**



GODD FATS



Olive Oil



Avocado



Nuts



Salmon



Coconut

BAD FATS



Corn Oil



Beef



Margarine



Shortening



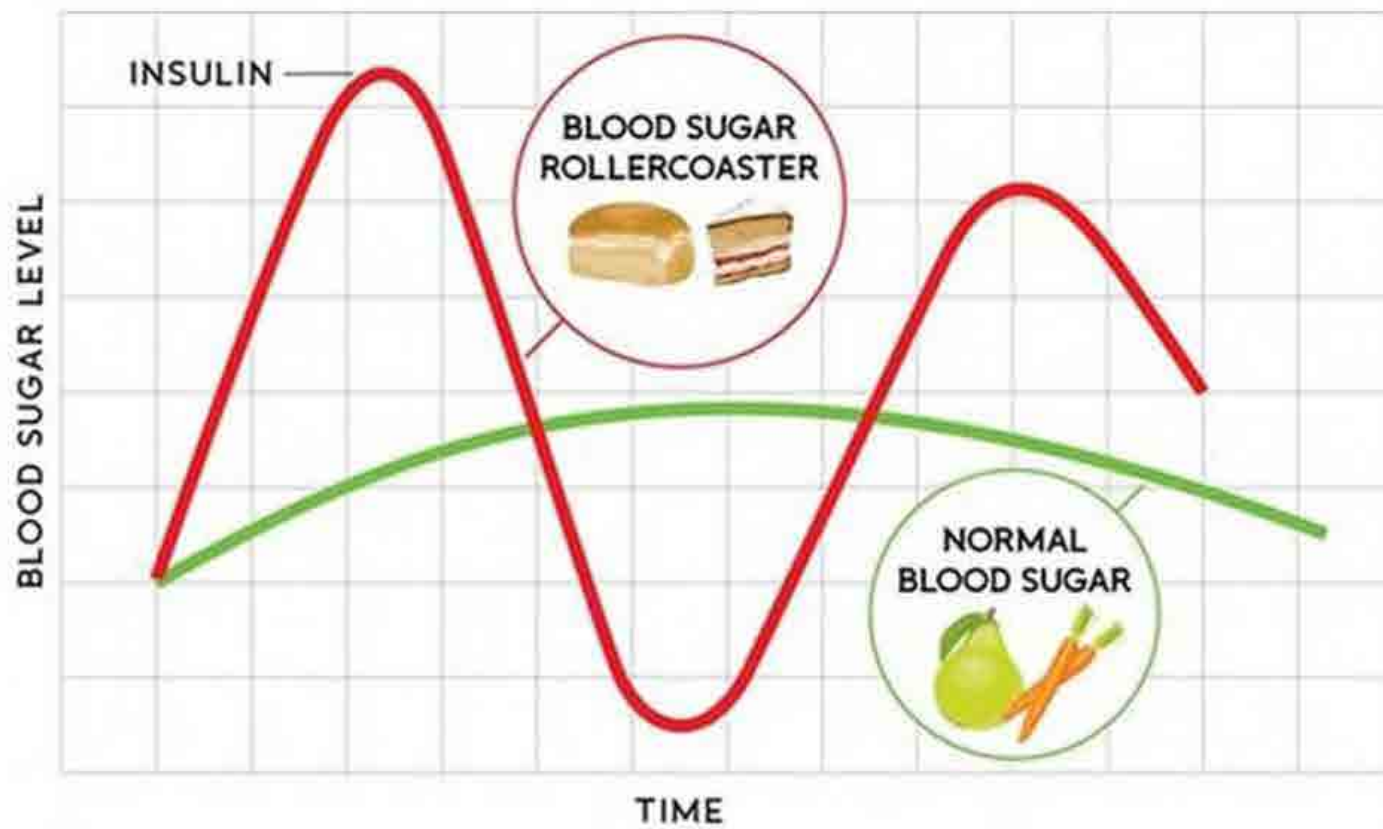
Soybean Oil

HIGH-FAT

FOODS...



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Hand Guide to Portion Control



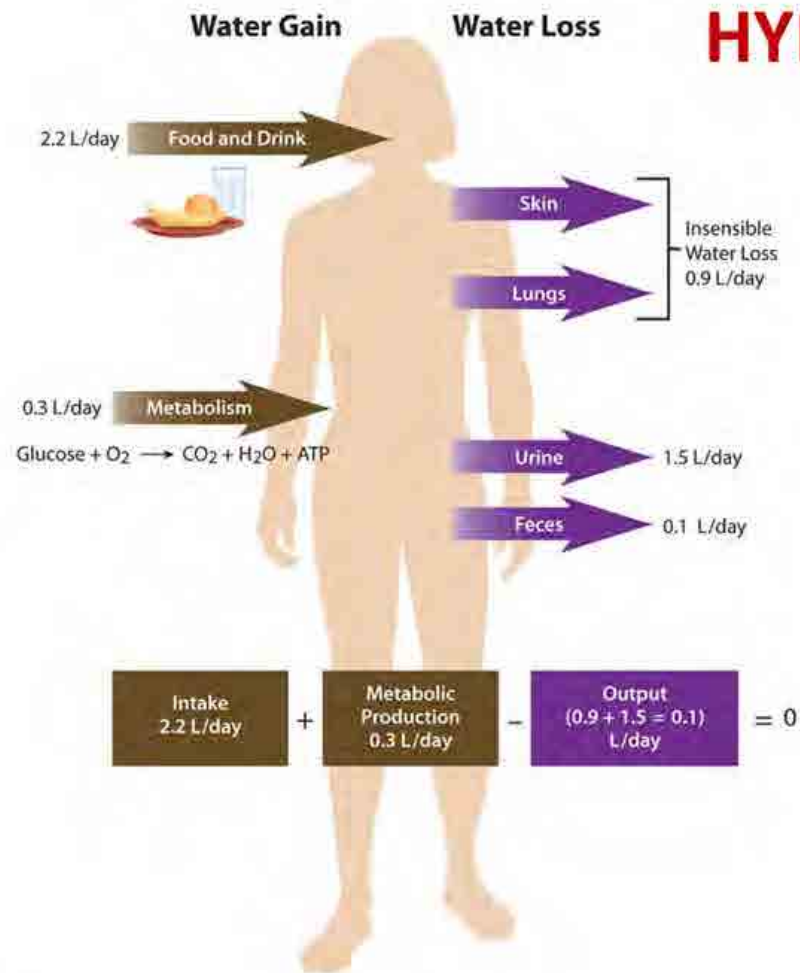
THE HAND AS A TOOL FOR ESTIMATING PORTIONS

Sources:
<http://www.cnpp.usda.gov/Publications/DietaryGuidelines/2000/2000DGBrochureHowMuch.pdf>
<http://www.health.arkansas.gov/programsServices/chronicDisease/Nutrition/Pages/ServingSizes.aspx>

www.GuardYourHealth.com



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HYDRATION

WATER - How much you and your kids should drink each day

Nursing	                  	(13 cups, 3.1 L)
Men 19+	                  	(12 cups, 3.0 L)
Boys 14-18	                  	(11 cups, 2.6 L)
Pregnant	                  	(10 cups, 2.4 L)
Women 19+	                  	(9 cups, 2.2 L)
Girls 14-18	                  	(8 cups, 1.9 L)
Boys 9-13	                  	(8 cups, 1.9 L)
Girls 9-13	                  	(7 cups, 1.7 L)
Children 4-8	                  	(6 cups, 1.4 L)
Toddlers 1-3	                  	(4.5 cups, 1.0 L)

Based on Total Water Adequate intake, as set by the Institute of Medicine "Dietary Reference Intakes for Water, Potassium, Sodium, Chloride and Sulfate", Washington DC, The National Academies Press, 2005



Our body is composed of more than **70% water**, that's why you have to drink to keep it hydrated, efficient and healthy: **at least 2 liters of water** a day, remembering to drink little and frequently.



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HYDRATION



THE INVERTED PYRAMID OF HEALTHY HYDRATION



The physiological need to drink water during various daily activities should be taken into account:

- prefer non-carbonated drinks
- drink cold but not cold
- Drink regularly before and during sport

Hydration and sport: the water losses suffered by evaporation of sweat during physical activity should not be overlooked. Weighing without clothes before and after the activity allows you to calculate how much fluid must be refilled at the end of the exercise.



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How dehydrated are you?

A quick way to test how well
you're hydrated is to check
the colour of your urine.



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WATCH THE LABELS

HOW TO READ A FOOD LABEL

If living with high cholesterol, pay close attention to the fat, sugar, and calorie lines.

SERVING INFORMATION

Servings in entire package, and the size of each serving

TOTAL FAT

The amount of saturated (bad) and unsaturated (good) fat that is in one serving

NUTRIENTS

Key nutrients in one serving of the food

Nutrition Facts	
8 servings per container	
Serving Size	10 pieces (60g)
Amount per serving	
Calories	220
% Daily Value*	
Total Fat 50g	4%
Saturated Fat 0.5g	4%
Trans Fat 0g	
Cholesterol 5mg	2%
Sodium 270mg	12%
Total Carbohydrate 41g	15%
Dietary Fiber 4g	14%
Total Sugars 2g	
Includes 0g Added Sugars	0%
Protein 2g	
Vitamin D 0.3mcg	0%
Calcium 40mg	2%
Iron 15mg	8%
Potassium 170mg	2%

CALORIES

The amount of energy you get from one serving

% DAILY VALUE

The amount a nutrient contributes to your total daily diet based on a 2,000 calorie a day diet.

TOTAL SUGARS + ADDED SUGARS

The amount of sugar that is in a product naturally and how much is added.

MEDICALNEWSToday

What's on a food label?

Date Marking

This is the 'Use By', 'Sell By' and 'Best Use Before' date. It gives the date by which the food should be eaten.

Product Name

Usually beside the brand name. Tells you what the food is.

Net Weight

This gives the actual weight of the food excluding the packaging. For canned foods packed in liquid, the net weight is the weight of the drained food.

USE BY

Ingredient List

This shows all the ingredients that make up the product. The ingredients are listed in descending order by weight.

Nutrition Information

This panel shows the nutrients found in one serving or in 100 g / 100 ml of the food.

Usage Instructions

These are instructions for storing or using the product.

Manufacturer's Details

Every label includes the name and address of the manufacturer, importer or distributor.



2



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Summing up...

**THE PILLARS FOR
A HEALTHY
LIFESTYLE:**



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WHAT'S ON TODAY'S LESSON PLAN?



- ☐ EXPLORING THE FRIDGE...
- ☐ PHYSICAL ACTIVITY
- ☐ INTENSITY, FREQUENCY AND BENEFITS
- ☐ BODY COMPOSITION
- ☐ BODY MASS INDEX
- ☐ SLEEP
- ☐ DIABETES
- ☐ WHAT ABOUT THE SUPERMARKET RECEIPTS



EXPLORING THE FRIDGE...





FRIDGE DOOR

Condiments such as ketchup, mayonnaise, salad dressings, jams, pickles and chutneys. They contain preservatives and can cope with the changes in temperature. Store water, juice and wine here too.



TOP SHELF

Cheese, yoghurt and dips such as houmous

MIDDLE SHELVES

Cooked meats, butter, milk, leftovers, fruit, ready meals

BOTTOM SHELVES

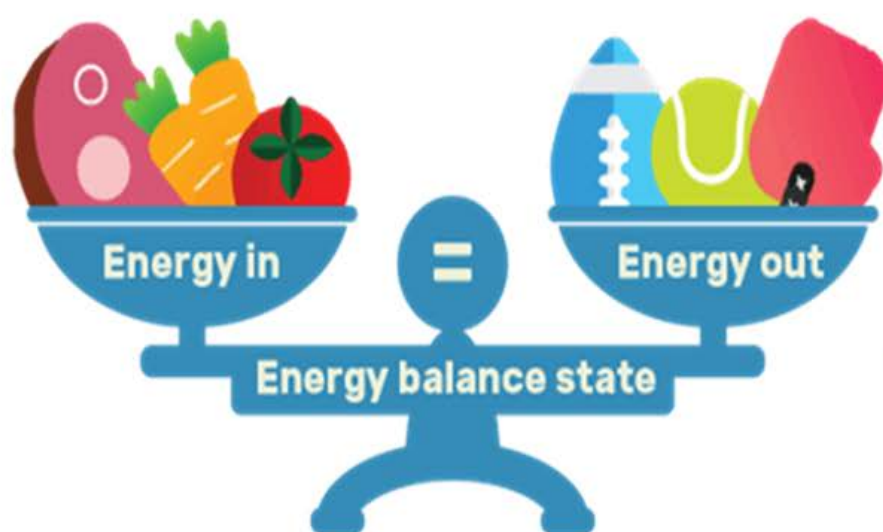
Raw meat, poultry, fish

FRUIT AND VEG DRAWERS

Store fruit and veg in separate drawers if possible



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PHYSICAL ACTIVITY AND ENERGY BALANCE



Sedentary behaviour

Waking state in which one is sitting or reclining with low energy expenditure ($< 1,5$ MET)

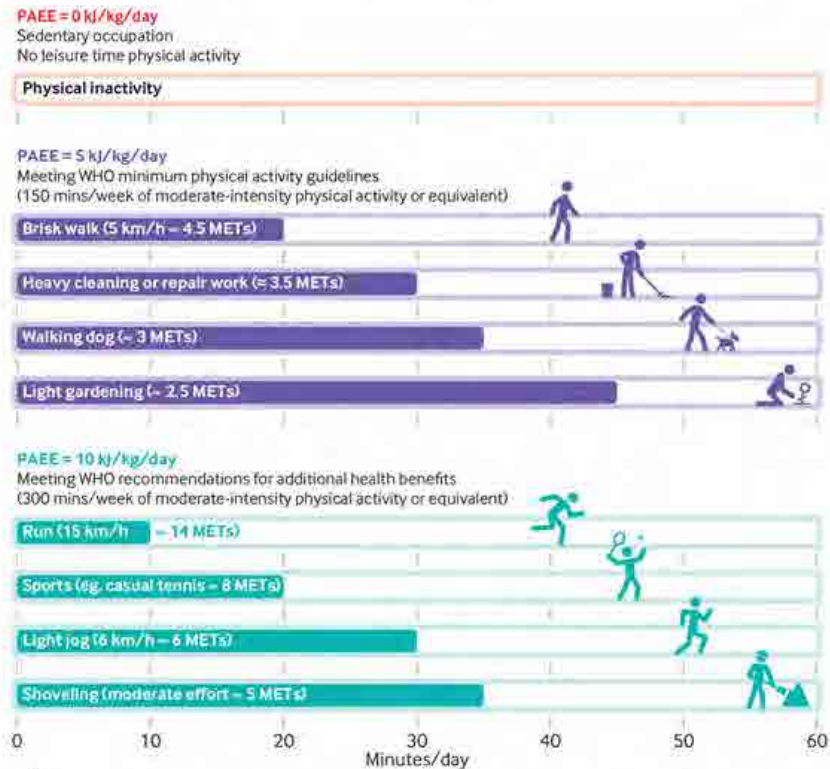
Physical activity is any movement of the body produced by skeletal muscles that involves energy expenditure

The WHO defines exercise as any movement of the body produced by muscles and requiring energy expenditure. It is a «subcategory» of physical activity, which is planned, structured and repetitive and has the objective to improve or maintain one or more aspects of physical fitness.

Physical inactivity

Those who do not reach the WHO-established levels of physical activity. 4° global mortality risk factor

HOW DO WE MISURE PHYSICAL EFFORT?



#	Level of Perceived Exertion Scale		
	Original RPE Scale		Revised RPE Scale
6	No exertion	0	Nothing at all
7	Very, very light	0.5	Very, very weak
8		1	
9	Very light	2	Very weak
10		3	
11	Light	4	Somewhat strong
12		5	Strong
13	Somewhat hard	6	
14		7	Very strong
15	Hard (heavy)	8	
16		9	
17	Very hard	10	Very, very strong
18			
19	Extremely hard		
20	Maximal		



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EVERY MOVE COUNTS

Being active has significant health benefits for hearts, bodies and minds, whether you're walking, wheeling or cycling, dancing, doing sport or playing with your kids.



WHO guidelines on physical activity and sedentary behaviour (2020)

For more information, visit: www.who.int/health-topics/physical-activity



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BMI Body Mass Index

It is a parameter that allows to obtain a GENERIC estimate of one's body composition by relating the weight and the height. You calculate by dividing your weight in kg by the square of your height in metres.

Formula for body mass index (BMI):

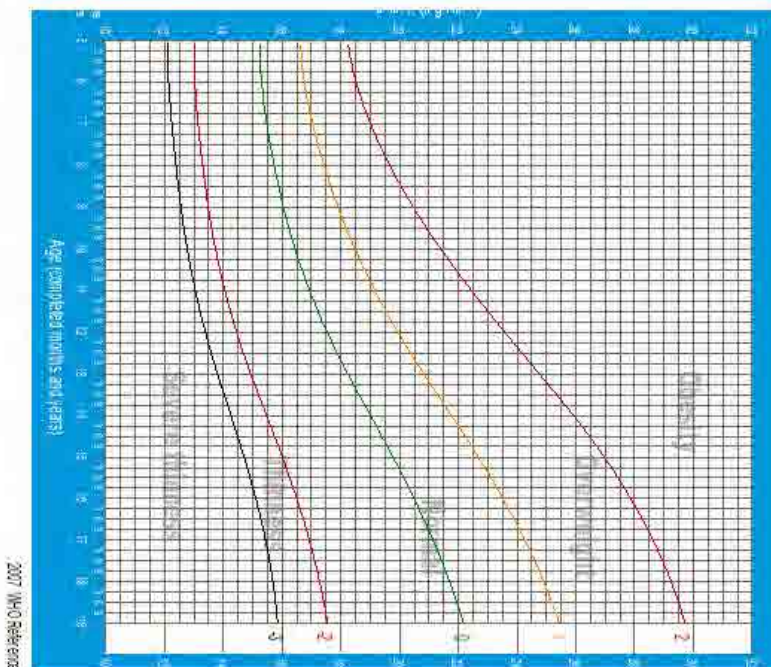
$$BMI = \frac{weight}{height^2}$$

Write a Python Program that asks the user for weight and height and then displays **weight class** based on BMI (use the table below for this).

BMI	Weight class
below 18.5	underweight
18.5 - 24.9	normal
25.0 - 29.9	overweight
30.0 and up	Very overweight

BMI-for-age BOYS

5 to 19 years (z-scores)



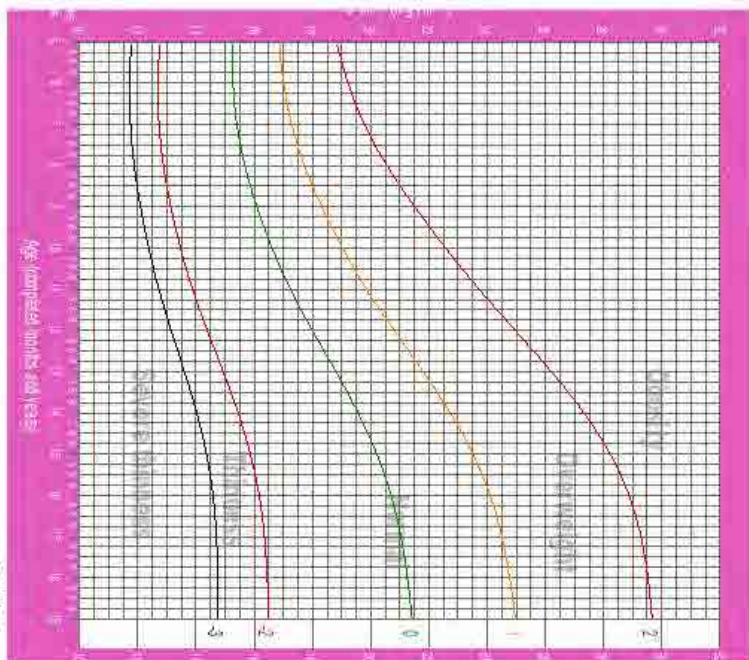
2007 WHO Reference



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BMI-for-age GIRLS

5 to 19 years (z-scores)



2007 WHO Reference

PERCENTILES MEASURE GROWTH PARAMETERS

HOW DO WE CONSUME ENERGY WHEN WE DO SPORTS?

Activities	Calories Consumption
Brisk walking (5-6 km/h)	200-300 kcal
Running (8 km/h)	750 kcal
Cycling (16-19 km/h)	300-450 kcal
Swimming (stile libero)	400-600 kcal
Basketball	600 kcal
Volleyball	360 kcal
Soccer	400 kcal
Dance (moderate intensity)	200-400 kcal
Skating	600-700 kcal
Tennis	400 kcal
Ropping	500-700 kcal

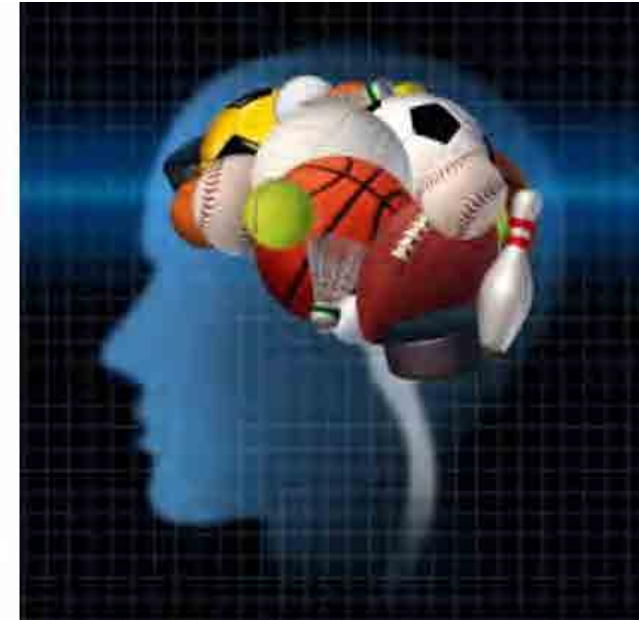
Approximate values that may vary according to intensity and body weight.



AFMA RESEARCH STUDIOS
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WHY IS IT GOOD TO MOVE?

- Essential for the smooth functioning of joints
- It improves:
 - blood circulation and oxygen
 - ...do you know how to measure heart rate?
- the lung capacity
 - ...you know how to measure the breathing rate?
- digestion (better not to do intense activity after eating)
- the body's defenses
- the ability to concentrate



Increases **cognitive functions**

Allows greater control over **emotions**

Improves learning and memorization

at muscle level, strength, trophism and elasticity are acquired



IMPORTANCE OF SLEEP

HOURS OF SLEEP:

School age (6-13 years): 9-11 hours

Teenagers (14-17 years): 8-10 hours

BENEFITS:

Recovery and conservation of energy

Improves attention, learning and memory

Regulates mood

Improves physical health



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Riepilogando...

**I PILASTRI PER
UNO STILE DI
VITA SANO:**

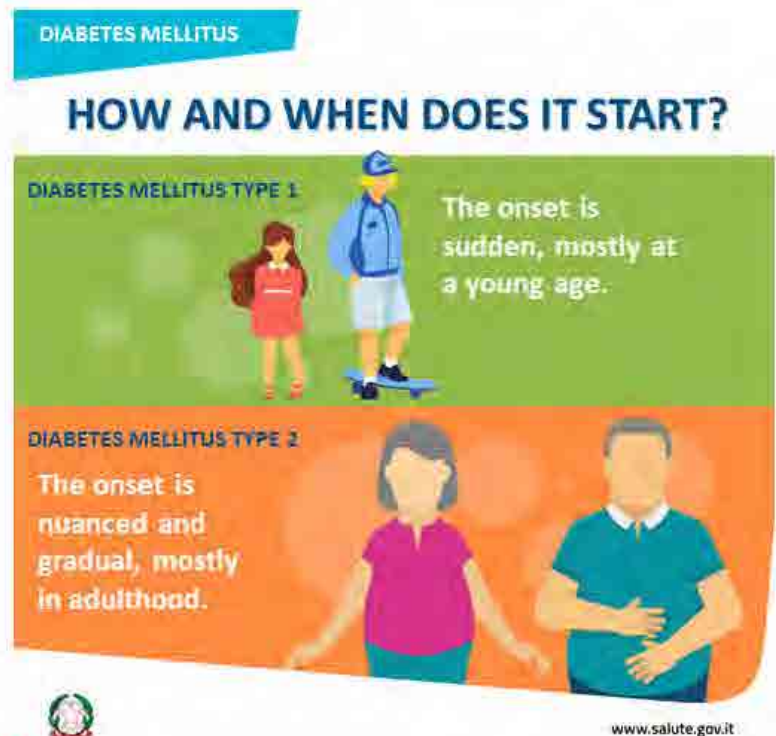


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WHAT IS DIABETES?

Type 2 diabetes is a chronic non-communicable disease, called "adult diabetes" because it is generally diagnosed after the age of 40, but this value has a steadily declining trend.

Diabetes (mellitus, derived from Latin and meaning "sweet") is a chronic disease characterized by the presence of higher than normal blood sugar (glucose) levels (hyperglycemia) due to deficient or inadequate insulin production or a poor ability of tissues to use insulin itself.



☐ CAUSE

☐ SYMPTOMS

☐ PREVENTION

☐ TREATMENT

** Source: Italian Ministry of Health website*

WHAT CAUSES IT?

DIABETES MELLITUS TYPE 1

The cause is an autoimmune reaction in predisposed individuals.



DIABETES MELLITUS TYPE 2

The causes are family history, overweight and obesity, poor diet and sedentary lifestyle, harmful alcohol consumption and smoking.



www.salute.gov.it

WHAT ARE THE FIRST SYMPTOMS?

DIABETES MELLITUS TYPE 1

The initial symptoms are immediately obvious: intense thirst, frequent need to urinate, rapid weight loss, tiredness and drowsiness to the point of unconsciousness.



DIABETES MELLITUS TYPE 2

The symptoms, initially, are not very evident. Then, intense thirst and frequent urge to urinate, increased appetite, feeling of fatigue and blurred vision arise ...



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CAN IT BE PREVENTED?

DIABETES TYPE 1

No, it is not predictable



DIABETES TYPE 2

Its onset can be prevented or delayed by following healthy lifestyles, reducing overweight/obesity and smoking, and increasing physical activity.



www.salute.gov.it

HOW IS IT TREATED?

DIABETES TYPE 1

Therapy is pharmacological with insulin only from the beginning.



DIABETES TYPE 2

Its onset can be prevented or delayed by following healthy lifestyles, reducing overweight/obesity and smoking, and increasing physical activity.



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ROLE OF PHYSICAL ACTIVITY

Low intensity exercises, such as walking, cycling, Nordic walking, free-swimming and swimming are of prime importance for prevention and treatment, consider aerobic activities and because they involve most muscle districts.



THERAPIES

No insulin therapy is provided (it may be necessary to take drugs that reduce blood sugar), but special attention is given to diet, the control of the ratio between lean and fat mass and constant physical activity, This allows you to control your blood sugar values in an optimal way.



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Pictures of breakfast shelves





DOCUMENTO COMMERCIALE
di vendita o prestazione

DESCRIZIONE	IVA	PREZZO(€)
T CROCCETTE DI PATA	10,00%	2,94
T LASAGNE DI CARNE P	10,00%	6,90
T OLIVE RIPIENE	10,00%	5,71
T PICCADOLCE AL TONN	10,00%	5,81
T PANE STINCHI SF SE	4,00%	1,71
T PANE INTEGRALE	4,00%	1,22
T B.A FETTINE SC. IP	10,00%	8,17
T BOV AD. COSTATA 5/	10,00%	10,89
T INSAL TENERA BS200	4,00%	2,59
SCONTO % CLIE 30.00%	4,00%	-0,78
T CICORIA CATALOGNA	4,00%	1,38
SACCHETTO ORTO	22,00%	0,02
T LATTUGA GENTILINA	4,00%	0,86
SACCHETTO ORTO	22,00%	0,02
M-T SPREM COOP AR BION	10,00%	2,15
X prezzo tutelato		
T POM.ROSSO GRAPPOLO	4,00%	2,77
SCONTO % CLIENTI S	4,00%	-0,56
SACCHETTO ORTO	22,00%	0,02
T CAROTE	4,00%	1,80
SACCHETTO ORTO	22,00%	0,02
T POM CILIEG VH KG.1	4,00%	2,48
X TAGLIO PREZZO CL		
T NETTARINE GIALLE S	4,00%	2,86
SACCHETTO ORTO	22,00%	0,02
T SFOGLIAVELO CRU250	10,00%	2,39
X TAGLIO PREZZO CL		
T MOZZ. S.LUC 3X125G	4,00%	4,14
SC.30% 30.00%	4,00%	-1,25
T BANANE CONVENIENZA	4,00%	1,66
SACCHETTO ORTO	22,00%	0,02
T AGLIO SECCO ROSSO	4,00%	0,99
T COTTO CUB BERET 12	10,00%	2,98
SC.40% 40.00%	10,00%	-1,20
T OLIVE NOCELL DENOC	10,00%	3,40
T UOVA NATURELLE 6 P	10,00%	2,19
T FILABELLA BUFAL 70	4,00%	12,60
SCONTO % SOCI 45.24%	4,00%	-5,70
T YOG INT MERANO B 1	10,00%	2,96
T RICOTTA S. LUCIA 2	4,00%	1,47
SC.30% 30.00%	4,00%	-0,45
T CERTOSA GALBANI 16	4,00%	2,27
SC.30% 30.00%	4,00%	-0,69
T CETRIOLI	4,00%	2,39
SACCHETTO ORTO	22,00%	0,02
T ZUCCHINE SCUERE	4,00%	3,07
SACCHETTO ORTO	22,00%	0,02
T MELONI RETATI P.GI	4,00%	2,40
X VINCA VASO 14	10,00%	2,99

Shopping check board



DOCUMENTO COMMERCIALE
di vendita o prestazione

DESCRIZIONE	IVA	PREZZO(€)
CAMPANULA EXTRA	10,00%	4,99
CAMPANULA EXTRA	10,00%	4,99
X GERANIO ZONALE VAS	10,00%	1,99
X B. SC15%DF 16-24/03	NS*	0,01
SCONTO 100.00%	NS*	-0,01
T BANANE CONVENIENZA	4,00%	1,95
SC.15% Ortofrutta	4,00%	-0,30
SACCHETTO ORTO	22,00%	0,02
SC.15% Ortofr 15.00%	22,00%	-0,01
M-T RUCOLA COOP	4,00%	0,79
SC.15% Ortofr 15.00%	4,00%	-0,12
T TAVOLE LINDT FON N	10,00%	1,97
T TAV.LATTE NOCC.ITA	10,00%	1,97
T MIX STUZZIC BOND S	4,00%	2,46
SC.15% Ortofr 15.00%	4,00%	-0,37
SCONTO % CLIE 30.00%	4,00%	-0,63
T POMOD.CUORE DI BUE	4,00%	2,65
SC.15% Ortofrutta	4,00%	-0,40
SACCHETTO ORTO	22,00%	0,02
SC.15% Ortofr 15.00%	22,00%	-0,01
T RADICCHIO PRECOCE	4,00%	1,94
SC.15% Ortofrutta	4,00%	-0,30
SACCHETTO ORTO	22,00%	0,02
SC.15% Ortofr 15.00%	22,00%	-0,01
6 X E 1,39		
COPPETTA MINI TOLE	22,00%	8,34
T FANFETTI COLOR DEC	10,00%	0,98
M-T FARINA COOP DI GRA	4,00%	0,79
X prezzo tutelato		
T FARINA 00 ANTIGR.M	4,00%	1,25
T FARINA GR.TEN.00 K	4,00%	0,98
M-T UOVA TERRA COOP X6	10,00%	2,29
M-T SCALOGNO COOP	4,00%	1,18
SC.15% Ortofr 15.00%	4,00%	-0,18
T PRINGLES ORIGINAL	10,00%	2,17
T PATATINE CLASSICHE	10,00%	2,86
T CAVOLO CAPPUCCIO	4,00%	1,50
SC.15% Ortofrutta	4,00%	-0,23
SACCHETTO ORTO	22,00%	0,02
SC.15% Ortofr 15.00%	22,00%	-0,01
T MELANZANE GLOBOSE	4,00%	1,75
SC.15% Ortofrutta	4,00%	-0,27
SACCHETTO ORTO	22,00%	0,02
SC.15% Ortofr 15.00%	22,00%	-0,01
T ZUCCHINE CHIARE S	4,00%	3,56
SC.15% Ortofrutta	4,00%	-0,54
SACCHETTO ORTO	22,00%	0,02
SC.15% Ortofr 15.00%	22,00%	-0,01
X QUASAR VETRI C/AMM	22,00%	1,99



DOCUMENTO COMMERCIALE
di vendita o prestazione

DESCRIZIONE	IVA	PREZZO(€)
T BANANE COOP SF	4,00%	1,29
SACCHETTO ORTO	22,00%	0,02
T CORNET.MULTICEREAL	10,00%	3,00
T PIZZA MARGHERITA C	10,00%	2,55
M-T SPREM COOP AR ROSS	10,00%	2,30
X prezzo tutelato		
T NUTELLA BISCUITS	10,00%	3,69



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3 PZ x 0,21 EUR/PZ
 ACQUA NATURALE 21 VI*
 5 PZ x 0,49 EUR/PZ
 BAGUETTE 250g VI*
 CARTA IG. 6R. 4V. 15 VI*
 CARTA IG. 6R. 4V. 15 VI*
 Net 1,092kg x 1,39 EUR/kg
 BANANE VI*
 FORM. GRATTUG. MIX 15 VI*
 SFOGLIATINE 200g VI*
 SFOGLIATINE 200g VI*
 EMMENTAL A FETTE 2 VI*
 WAFER NOCC. 240g VI*
 FARFALLE 500g VI*
 CHEWING. ORALCAR 71 VI*
 COSCIOTTO POLLO C. VI*
 CALLETTI DI POLLO VI*
 LIEVITO DI BIRRA 6 VI*
 SALSICCIA 450g VI*
 SALSICCIA 450g VI*
 DITAL. RIGATI 500g VI*
 LASAGNE UOVO 500g VI*
 PASSATA POM. 700g VI*
 MULTIV. ACE 6X200m VI*
 BIRRA PREMIUM BT 6 VI*
 UOVA M TERRA 10PZ VI*
 Net 1,364kg x 1,49 EUR/kg
 CAVOLFIORE VI*
 BIRRA PREMIUM BT 6 VI*
 5 PZ x 0,25 EUR/PZ
 PANINO VIENNESE 55 VI*
 Net 3,540kg x 0,99 EUR/kg
 CAVOLO CAPPUCCIO B VI*
 PR. COTTO 2%GRAS 12 VI*
 MOZZARELLA 4X125g VI*
 SPALMAB. LIGHT 200 VI*
 FAGIOLINI BOBY VER VI*
 PR. COTTO 2%GRAS 12 VI*
 PANCETTA DOLCE 2X1 VI*
 BURRO 125g VI*
 PETTO POLLO 140g VI*
 Net 1,056kg x 1,99 EUR/kg

3 PZ x 1,15 EUR/PZ
 WAFER NOCC. 240g VI*
 4 PZ x 2,39 EUR/PZ
 PINOT NERO 750ml VI*
 6 PZ x 0,99 EUR/PZ
 BIRRA CEGA IGP 50c VI*
 BEV. PESCA UV3x200m VI*
 YOGURT INTERO 8X12 VI*
 CONFETTURA FRAGOLE VI*
 OLIVE TAGGIAS. 180 VI*
 LATTE INTERO BIO 1 VI*
 LATTE INTERO BIO 1 VI*
 NETTARE MIR. 6x125m VI*
 4 PZ x 0,65 EUR/PZ
 LATTE UHT PS 500ml VI*
 GIRASOL. GORG. DOP M VI*
 GIRASOL. GORG. DOP M VI*
 GIRASOL. GORG. DOP M VI*
 BURRATA 150g VI*
 BURRATA 150g VI*
 BURRO S/LATTOS. 200 VI*
 STRACCHI. S/LATT. 16 VI*
 PETTO TACCHINO ARR VI*
 PROSCIUTTO NORCIA VI*
 POMODORO MINI-SAN VI*
 POMODORO CILIEGINO VI*
 HAMBURGER EQ. 200g VI*
 HAMBURG. POLLO 400g VI*
 BRACIOLE DI COPPA VI*
 ROASTBEEF INGLESE VI*
 ROASTBEEF INGLESE VI*
 UOVA M TERRA 10PZ VI*
 FET. MELA DISID. 20 VI*
 FET. MELA DISID. 20 VI*
 FET. MELA DISID. 20 VI*
 PISTACCHI T&S 200g VI*
 FROLLINI INT. 300g VI*
 EMMENT. SVIZZERO 20 VI*
 FET. MELA DISID. 20 VI*
 FET. MELA DISID. 20 VI*
 FET. MELA DISID. 20 VI*
 FET. MELA DISID. 20 VI*
 SALM SELV. SOCK 100 VI*

M-GUANTI NIT MON COO
 M-T CIOCCOBISC COOP NO
 M-T CAPS GIOTTO COOP F
 M-T CAPS COMP MITCH FF
 M-T PLUM CAKE C. COOP N
 M-T CRACKERS S. COOP NP
 M-T PR SO THE 2 PES CO
 M-T CPS COMP CARAV FF
 M-T CAPS GIOTTO COOP F
 M-T THE LIMONE COOP
 M-T CAPS GIOTTO COOP F
 M-T FARINA COOP DI GRA
 M-T BRIOCHES GL. COOP
 M-T CROST INT. COOP NP
 M-T FARINA O MANIT COO
 M-T CPS COM DECA COOP
 M-T CPS COM DECA COOP
 M-VASC. COP COOP CASA
 M-VASC. COP. COOP CASA
 M-VASC. ALL. COOP CASA
 M-VASC. ALL. COOP CASA
 M-VASC. ALL. COOP CASA
 M-T CPS COM DECA COOP
 M-T LATT MICROF INT CO
 M-T LATT MICROF INT CO
 M-TOVAGLIOLO COOP
 M-T CORDON BLEU COOP 2
 M-T CAROTE GS COOP1KG
 M-T CREMOR TARTARO COO
 M-T MOZZARELL COOP 3X12
 M-T TOMININO S/LATT CO
 M-T CARNE SALADA S/A F
 BUON FINE SC. 50 00%
 M-T CARNE SALADA S/A F
 BUON FINE SC. 50 00%
 M-T SPECK AA IGP COOP
 M-T SPECK AA IGP COOP
 M-T PANETTI CROCC. COO
 X B. 10E 25-11/01-12

M-T L'ESCO. S/LATT BENES
 M-T PASS. POM RUST COOP
 M-T TRANCINO LATTE CAC
 M-T PASS. POM RUST COOP
 T COPPA TESTATIPU BO
 M-T CAP COOP ESP 100%
 M-T CAP COOP ESP 100%
 M-T PR. S. DANI. DOP FFCD
 T P COTTO AQ G/TEN C
 T FARINA NUOVA O CA
 T PANEANGELI LIEVITO
 M-T PANNA DA CUCINA CO
 M-T PANNA DA CUCINA CO
 M-T PROT. BAR CIOCC COO
 M-T CER. CROCC. RIP. COOP

DESCRIZIONE
 OLIO MAIS DESPAR
 MORTADELLA BOL. S/P
 PANINO CEREALI
 CAVOLO NERO GROSSO
 POLLO CONTROFILETTO
 CAROTE DESPAR 800 g
 PANE KAISER
 YOG MAGRO VIPITEND
 BURRO DESPAR GR. 250
 F. AFFETTATI 300 g
 YOGURT NATUR. TOTAL
 GDI VIVACE GR200
 PATATE ROSSANA 1,5kg

SUBTOTALE
 ARTICOLI 13

Sconto SPESAMICA
 MELANZANE GR. 600 CRF
 T O T A L 5% 450 GR
 Sconto SPESAMICA
 FAGE T O T A L 0%
 Sconto SPESAMICA
 2 X 2,75
 RINGO CARAMEL TWIST
 Sconto SPESAMICA
 LOC. ZUCCHINE CHIARE
 Sconto LOC. ZUCCHINE CHI
 SAC COMPOSTABILE
 LIMONI GR 500
 NOCI CHE NOCE! NOBER
 ARROSTO LEGATO DI SU
 Sconto ARROSTO LEGATO D
 PISELLINI PRIMAV. FIN
 Sconto SPESAMICA
 PETTO POLLO A FETTE
 GALLETTI GR 800
 LATTE UHT INTERO 1LT
 PEPPERONI CONV KG1
 SALSICCIA ALLA BOLOG
 Sconto SALSICCIA ALLA B
 2 X 2,16
 MINISTR. CLASS VDO PL
 Sconto SPESAMICA
 MOZZ. TRIS SANTA LUCI
 Sconto SPESAMICA
 FAZZOLETTI SCOTTEX 3
 PASTA SFOGLIA BUITON
 SGR. SPR. DISINF. CH. CL
 Sconto SPESAMICA
 SCAMORZA AFFUMICATA
 ORATA CROAZIA 400/60
 ACE DET. LIQ CL. IGIEN
 COO CLASSIC TARTUFO
 Sconto COO CLASSIC TART
 PROSC. CRUDO NAZIONAL
 Sconto PROSC. CRUDO NAZI
 COZZE (NIEDDITTAS)
 SAC PESCHERIA COMPOS
 LUPINO RETE KG. 2 CRF
 Sconto LUPINO RETE KG. 2
 3 X 16,90
 TORTELLINO MIGNON BO
 Sconto TORTELLINO MIGNO
 Sconto TORTELLINO MIGNO
 Sconto TORTELLINO MIGNO

101009 - SL SEMOLA GRANO DURO
759378 - SALVIA TOSCANA 30 G
734634 - PECORINO CHIANTIGIANO
763840 - ZUCCHINE
763840 - ZUCCHINE
101066 - FARINA W350 GAROFALO 1KG
379060 - ESSELUNGA SENAPE MEDIA
109064 - COLFIO LENTICCHIE UMBRIA
311521 - VIPIT. SAPORI STRACCIATX2
154123 - ESSEL. PANÈ MORB. GR. DURO
763592 - PAT. BOLOGNA DOP CASS.
734070 - FONTINA DOP COOP
763187 - CAVOLFIORE VERDE
604353 - TRIS COZZE/VONGOLE/GAMB.
114738 - TAGLIATELLE B2 DELVERDE
678252 - SVELTO LIMONE POUCH NEW
491266 - MURANO NOCC.SGUSC.TOST.
411424 - MUTTI PASSATA GR.700
681053 - QUASAR VETRI EXTRA PROF
734154 - CACIOCAVALLO SILANO DOP
734154 - CACIOCAVALLO SILANO DOP
707210 - V.NE PIEM/TRITA SCELTA
707210 - V.NE PIEM/TRITA SCELTA
433059 - MAREB.SGOMBRO VAP. NAT.
401037 - ESSELUNGA GRANUL.VEGETAL
602057 - PISELLINI
763641 - PEPERONI GIALLI
101065 - FARINA W260 GAROFALO 1KG
731646 - TOTANO INTERO
755445 - MISTIGANZA NAT. 200 G
763156 - CAROTE 1 KG
731228 - FIL. SALMONE
602054 - BONDUELLE SPINACI
379308 - DEV.KETCH.100% INGR. NAT
531351 - AUGUSTINER HELLES 50CL
763117 - BROCCOLETTI
253377 - LINDT GOLD FON-NOCC300
301247 - ESSEL.TOP LAT.FR.AQ 1/2L
114532 - 1/2PACCHERI LEGGENDA RUM
602178 - FINDUS FAGIOLINI PRIMAV.
107051 - SCOTTI CARNAROLI G.SELEZ
604537 - FINDUS FIL.MERLUZZO
707806 - VIT.ITA/FETTINE SOTT

SHOPPER BIO EUROS
SHOPPER BIO EUROS
BOCCONCINI BOV. AD.
PROSC.COITTO AQ CAR
PROSC.COITTO AQ CAR
COTOLETTA FIL. 300g
RAGU' SALSTIC. 2X180
4 PZ x 0,45 EUR/PZ
ARABO 85g
FORM.SALAMOIA 800g
LATTE ITALIANO PS
TIGELLA 250g
UOVA PASTA GIALLA
UOVA PASTA GIALLA
MISTO MIGNON FANT.
PANDORINO 80g
POMODORO DATTERINO
SAL.PROSCIUTTO 100
PROSC.CRUDO 24M CA
BURRO 125g
FUNGHI TRIFOL. 180
BIF.BIANCO CER. 4X1
CARCIOFI CONT. 285
STRACCHINO 2X100g
REGGIANO DOP 30M23
0,354 KG x 1,00 EUR
FINOCCHINA VASSOI
SALE IODATO 250g
PETTO POLLO FETTE
BROCCOLETTI 500g
MAIONESE SQUE 300M
PREZZEMOLO BLISTER
RAVANELLI 200g
INSALATA MISTIGANZ
LATTUGHINO 125g FV
Net 0,856kg x 2,49
ZUCCHINE
Net 0,578kg x 1,99
CETRIOLI
CARTA IG.6R.4V. 15
TORTEL. CRUDO 500g
3 PZ x 0,01 EUR/15

PROFUMA BUCATO
CAROTE VASSOIO
CARTA DA FORNO
CARTA DA FORNO
PASTA FRESCA ASS.
Offerta Lid1 Plus
THE ICELANDER SALMON
PASTA FRESCA ASS.
Offerta Lid1 Plus
TARTARE DI SCOTTONA
TARTARE DI SCOTTONA
FINOCCHIO
1,288 kg x 2,99 EUR/kg
Offerta Lid1 Plus
SACCH.ORTOFR.BIOGRAD
OLIVE VERDI DENOCC.
STRACCIET. PETTO POLLO
FARINA DI CECI
SACCH. CONGEL. CLIPS
TOFU BIO SKG
Sconto Lid1 Plus
PANNO ASSORBICOLORE
BANANE
1,526 kg x 1,39 EUR/kg
SACCH.ORTOFR.BIOGRAD
CLEMENTINE RETE
CLEMENTINE RETE
STEAM BREW BIRRA
SANTA LUCIA RICOTTA
VERZA
0,96 kg x 1,29 EUR/kg
SACCH.ORTOFR.BIOGRAD
MELE ROYAL GALA
1,476 kg x 1,89 EUR/kg
SACCH.ORTOFR.BIOGRAD
ZENZERO
0,176 kg x 4,99 EUR/kg
SACCH.ORTOFR.BIOGRAD
CECI LESSATI
12 PIZ.PAS.SFOG.SAL.
Cad 0,17 Pz. 12
Promo vassoio pizzette sfogl
ANAC. PICC. MIELE, SALE
SFOGLIATINE GLASSATE
Coupon Lid1 Plus

1 UMECCHIETTE BIO 40 4,00%
T ORECCHIETTE BIO 40 4,00%
T TROFIE BIO 400G 4,00%
T RISOT FUNGHI DIMMI 10,00%
X TAGLIO PREZZO CL
T SUCCO PESCA YOGA D 22,00%
X TAGLIO PREZZO CL
M-T POMODORI PELATI COOP 4,00%
T LATTE PS GRANAROLO 4,00%
T LATTE PS GRANAROLO 4,00%
M-T POM.PELATI COOP 40 4,00%
T CAFFE' C&G RICCO L 22,00%
X TAGLIO PREZZO CL
T YOMO INT FBAB 10,00%
X TAGLIO PREZZO CL
T DITALONI RIGATI DI S 4,00%
X TAGLIO PREZZO CL
T MEZZE PENNE RIGATE S 4,00%
X TAGLIO PREZZO CL
T SPAGHETTONI SEMOLA 4,00%
X TAGLIO PREZZO CL
T ZUCCH.SCUR "QUESTO 4,00%
T PENNE RIGATE BARIL 4,00%
X TAGLIO PREZZO CL
T PENNE RIGATE BARIL 4,00%
X TAGLIO PREZZO CL
* BIRRA ICHNUSA N/FI 22,00%
X TAGLIO PREZZO CL
* BIRRA ICHNUSA N/FI 22,00%
X TAGLIO PREZZO CL
* BIRRA ICHNUSA N/FI 22,00%
X TAGLIO PREZZO CL
T SEDANINI RIG. DI SE 4,00%
X TAGLIO PREZZO CL
SH BIOD COOP FICO 22,00%
T ORO CIOK SAIWA ALLA 10,00%
X PREZZO FINITO SO
T NESQUIK POUCH 800G 10,00%
X TAGLIO PREZZO CL
T FIL TON OL. OL. NOST 10,00%
X TAGLIO PREZZO CL



DOCUMENTO COMMERCIALE

di vendita o prestazione

DESCRIZIONE	IVA
T MINISTRONE TRAD FI	4,00%
M-T SALE FINO GS COOP	22,00%
X SHOP COMP COOP LAR	22,00%
T SUF PROSC MOZ FINO	10,00%
M-T HAM CR BOV OR COOP	10,00%
T NUT & GD TI 48G	10,00%
T NUT & GD TI 48G	10,00%
I FAGIOLINI SF	4,00%
SACCHETTO ORIO	22,00%
T BURRO PARMAREGG 20	4,00%
X TAGLIO PREZZO CL	
T SAL STICK CLAS MIN	10,00%
M-T POL PET FET SOT SQ	10,00%
M-T POL PET FET SOT SQ	10,00%
M-T PANNA DA CUCINA CO	10,00%
M-T UOVA TERRA COOP X6	10,00%
T YOG A/Q CEREAL2X12	10,00%
T PANE BIANCO MULINO	4,00%
X TAGLIO PREZZO CL	
T BB MIX BELLEZZA SH	10,00%
T AIR ACTION VIGORSO	10,00%
M-T BEVAN COOP AR/CAR/	22,00%
T FUNGHI TAGLIATI AU	4,00%
M-T POMOD DATI F FIORE	4,00%

Tel 051/564749
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DOCUMENTO COMMERCIALE
di vendita o prestazione

DESCRIZIONE
BASTONCINI FORM G125
DENT. AQUAFRESH
CRACKERS INT. GALB
TERMOPROTETTIVO SPRA
PANEANG LIEVITO 10BS
PEP. ROSSI
SHOPPER ORTOFRUTTA B
PPS BANANE SFUSE
SHOPPER ORTOFRUTTA B
MAIO. TOP DOWN CALVE
MUFFIN PEP. C. MR DAY
SHOPPER GRANDE

SUBTOTALE
10

ARTICOLI

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DOCUMENTO COMMERCIALE
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E
0400010620081
S CIOCC.
BOLOGNESI

TORTELLINI
SPONSOR
PPS BOVINO BOCCON
SALM NOR PREMIUM
SALM NOR PREMIUM
SALM NOR PREMIUM
TORTELLINI BOLOGNESI
SPONSOR
RUCOLA DESPAR
10 KIND. COLAZ. PIU'
10 KIND. COLAZ. PIU'
COLA PEPSI TWIST
PANETTO PUGLIESE
PANETTO PUGLIESE
DIGITAL ATTIVA
CODICE PROMOZIONE
CODICE PROMOZIONE
CODICE PROMOZIONE
12 x 0,29
ACQUA VERA NATI LT.2
SUBTOTALE
PRODOTTI SPONSOR:
ARTICOLI 29

Descrizione	IVA	EURO
BICARBONATO 500g	VI*	
COL ANTIPLACCA 500	VI*	
PAN BAUL. DURO 400g	VI*	
BISCOTTI CANE 400g	VI*	
PAN BAUL. DURO 400g	VI*	
PAN BAUL. DURO 400g	VI*	
CARTA IG. 6R. 4V. 15	VI*	
12 PZ x 0,99 EUR/PZ		
LATTE INTERO 1L	VI*	
CIOCC. C/BISC. 100	VI*	
ZENZERO MACINAT 35	VI*	
SNACK LAT. E. CER. 18	VI*	
8 PZ x 0,89 EUR/PZ		
BIRRA STRONG 500ml	VI*	
CIPOLLA GRANULI 45	VI*	
PANDOLCIANDO 336g	VI*	
MISTO MIGNON FANT.	VI*	
CROISS. C/PAST 500	VI*	
PANNA CUCINA 200ml	VI*	
YOGURT VANIGLIA 15	VI*	
FETT. FORM. LIGH. 200	VI*	
YOGURT FRAGOLA 150	VI*	
2 PZ x 0,29 EUR/PZ		
PANINO MULTICER. 52	VI*	
CONFET FRAGOLA 370	VI*	
BAST. COTONATI 300	VI*	
YOGURT FRAGOLA 150	VI*	
AGLIO ROSSO 150g	VI*	
AGLIO ROSSO 150g	VI*	
Net 0,478kg x 1,49	EUR/kg	
MELE FUJI	VI*	
Net 0,596kg x 2,99	EUR/kg	
POMODORO GRAPPOLO	VI*	
DETERGENTE PIATTI	VI*	
Net 0,294kg x 1,49	EUR/kg	
CACHI PERSIMON	VI*	
Net 0,142kg x 1,49	EUR/kg	
CAROTE	VI*	
Net 0,186kg x 1,69	EUR/kg	
CETRIOLI	VI*	



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40126 BOLOGNA (BO)

LATTE PAKZ. 300g. 11 VI*
 RAVIOLI PO/BAS 550 VI*
 PENN.SALM/GAMB 600 VI*
 RAVIOLI PO/BAS 550 VI*
 PENN.SALM/GAMB 600 VI*
 MAIONESE TUBO 150m VI*
 BARR.SEMI MIELE120 VI*
 TORTA CIOCC. 600g VI*
 TORTA CIOC ZUC 430 VI*
 CONIGLIO VI*
 SALSICCIA NORCINA VI*
 ARISTA AROMATIZZAT VI*
 MACINATO SCELTO VI*
 MACINATO SCELTO VI*
 ARISTA AROMATIZZAT VI*
 SALSICCIA NORCINA VI*
 ARISTA AROMATIZZAT VI*
 PELATI 2500g VI*
 FAGIOLINI FIN. 600 VI*
 PREP PANE DOLCI 1k VI*
 VELLUTATA VERD. 600 VI*
 FAGIOLI BIANCHI 40 VI*
 Net 1,764kg x 0,99 EUR/kg
 CAVOLO CAPPUCCIO B VI*
 PEPERONCINI 125g VI*
 PETALI SFOGLIA 220 VI*
 PETALI SFOGLIA 220 VI*
 MOUSSE SALMONE 135 VI*
 FAGIOLI BIANCHI 40 VI*
 SPALMAB. LIGHT 200 VI*
 POLENTA INST. 500g VI*
 FROLLINI GRANU 700 VI*
 WURSTEL SERVELADE VI*
 SENAPE M/F 300ML VI*
 BURRO 500g VI*
 ARANCE NAVEL 3kg VI*
 CLEMENTINE 1,5kg VI*
 POP CORN PER MICRO VI*
 Net 1,092kg x 1,99 EUR/kg
 FINOCCHI VI*
 VINO BIANCO BRIK 1 VI*
 PELATI 800g VI*

T. PASTA PASTA 4,00%
 LENOR UNSTOPP DASH 22,00%
 T COCA COLA 450ML 22,00%
 T MOZZARELLA VALLELA 4,00%
 T MOZZ VALLELATA BOC 4,00%
 T KINDER KINDERINI 10,00%
 T NUTELLA BISCUITS 10,00%
 T FARINA PIZZERIA CO 4,00%
 M-T SALSA BOSC COOP 10,00%
 T TACCHINO FESA FETT 10,00%
 T KEB'S KEBAB DI POL 10,00%
 X TAGLIO PREZZO CL 10,00%
 T MILK KEFIR MIX 10,00%
 T BISC MALTO BUONI C 10,00%
 X TAGLIO PREZZO CL 10,00%
 T SUINO PANCETTA MAC 10,00%
 T YOGURT BERE MULTIF 10,00%
 T ACQUA BRILLANTE RECO 22,00%
 T FICHI SECCHI GRECI 4,00%
 T GUANCIALE GARDANI 10,00%
 T GUANCIALE GARDANI 10,00%
 T CIPOL ROSSE TRECCI 4,00%
 T CLEMENTINE CALABRI 4,00%
 T POM.COSTOLUTO FVG 4,00%
 SACCHETTO ORTO 22,00%
 M-T SCALOGNO COOP 4,00%
 M-T BURRO FIOR FIORE 2 4,00%
 M-T BURRO FIOR FIORE 2 4,00%
 T LIEVITO FRES. LIEVI 10,00%
 DEO AMBICAR AUTO N 22,00%
 T MACINATO DI BOV. 10,00%
 T MILK KEFIR MIX MUE 10,00%
 T DOPPIO CONC MUTTI 4,00%
 T TORTILLAS MEJICANA 10,00%
 T VIVIDENT XYLIT 10,00%
 T VENERE SNACK PAPRI 4,00%
 T VENERE SNACK PAPRI 4,00%
 T UOVA A TERRA L X6 10,00%
 MAXI SPIR. MON. PL 22,00%
 M-T PAT. EMILIA ROMAGNA 4,00%
 M-T SORB MANDARIN 10,00%

T. PASTA PASTA 4,00%
 T PAGNOTTELL MUL. BIA 4,00%
 T DITALINI RIGATI DI S 4,00%
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 M-T LENTICCHIE VVERDE 4,00%
 M-T PASSATA DI POMODORO 4,00%
 M-T PASSATA EX. FINE MA 4,00%
 M-T PASSATA EX. FINE MA 4,00%
 M-T PASSATA EX. FINE MA 4,00%
 M-T B.C./GOC CIOC COOP 10,00%
 D-DENTIFR PARODONTAX 22,00%
 M-T PAT. EMILIA ROMAGNA 4,00%
 T PAGNOTTELL MUL. BIA 4,00%
 M-T UOVA TERRA COOP X6 10,00%
 M-T LATTE COOP UHT 4,00%
 M-T MOZZARELL COOP 3X12 4,00%
 M-T MORT S/A DOPO SVEZ 10,00%
 M-T MORT S/A DOPO SVEZ 10,00%
 M-T FIOC PROS FFCDOP11 10,00%
 X TAGLIO PREZZO CL
 T SNACKS PARMIG 4,00%
 M-T SPINACI CUBETTI CO 4,00%
 T BANANE COOP SF 4,00%
 SACCHETTO ORTO 22,00%
 T FINOCCHI CAL 8/10 4,00%
 SACCHETTO ORTO 22,00%
 6 x E 0,30
 M-T ACQUA NAT COOP M.C. 22,00%
 6 x E 0,30
 M-T ACQUA NAT COOP M.C. 22,00%
 T FAGIOLINI SF 4,00%
 SACCHETTO ORTO 22,00%
 T CACHI POLPA SODA S 4,00%
 SACCHETTO ORTO 22,00%
 T LAT. ICEBERG FILM S 4,00%

CARTA IGJEN. 3 VELI 22%
 STELLINE 4%
 TARTARE DI SCOTTONA 10%
 TARTARE DI SCOTTONA 10%
 RISOTTO AL FORMAGGIO 10%
 Coupon Plus 10%
 LATTE PS UHT 100% 11 4%
 LATTE PS UHT 100% 11 4%
 LATTE PS UHT 100% 11 4%
 GEL DISGORGANTE 22%
 Coupon Plus 22%
 ANAC. PICC. MIELE, SALE 10%
 GUANTI CASALINGHI 22%
 SACCHETTI PATTUMIERA 22%
 SACCHETTI PATTUMIERA 22%
 BIANCOBRIK 22%
 FICHI ESSICATI 4%
 TORTIGLIONI 4%
 NOVI TAV. CIOCC. FOND. 10%
 NOVI TAV. CIOCC. FOND. 10%
 PESTO 10%
 PESTO 10%
 CONFETTURE LIGHT 10%
 CONFET. EXTRA CILIEG. 10%
 DG CAF. EF. BOX ESPRES 22%
 DG CAF. EF. BOX ESPRES 22%
 VALORE SCONTI
 SUBTOTALE

DESCRIZIONE
 OSSA DI VITELLONE
 OSSA DI VITELLONE
 PPS-ACQUA NAT 1,5x6
 OSSA DI VITELLONE
 OSSA DI VITELLONE
 BIANCOSTATO TASTO
 BIANCOSTATO TASTO
 PPS SUINO PUNTINE
 POLLO ALI
 INS. MEDITER. DS G250
 INS. MEDITER. DS G250
 TISANA VITAL DTG G40
 TISANA VITAL DTG G40



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Horizontal

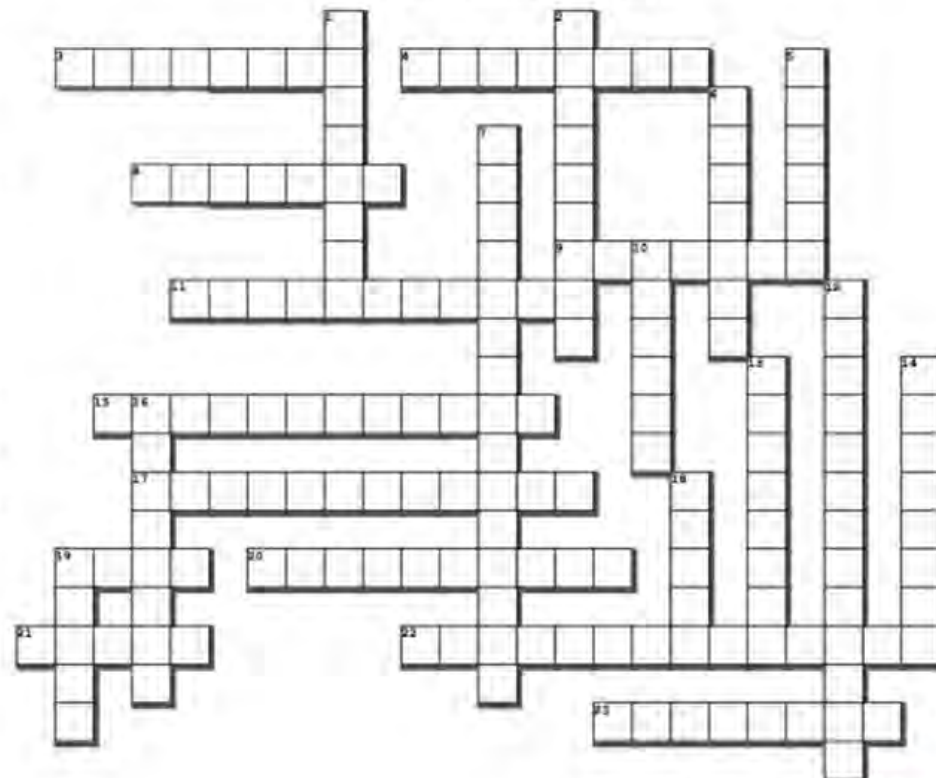
3. Level of physical activity that greatly increases heart rate and breathing, making it difficult to speak
4. Essential nutrients for tissue growth and repair
8. Nutrient-rich plant foods, essential for a balanced diet
9. Units of measurement of energy supplied by food
11. Nutrients that provide quick energy to the body
15. Chronic disease characterized by high blood sugar levels due to insulin resistance
17. Lifestyle characterized by low physical activity and long periods of inactivity
19. Chemical compound used to flavor and preserve food, commonly known as sodium chloride
20. Food modified by cooking, storing or adding ingredients to improve shelf life or taste
21. Natural state of rest of the body and mind, characterized by a reduction in consciousness
22. Any movement of the body that requires energy, such as walking, running, or playing sports
23. Organic substances needed in small amounts for various bodily functions

Vertical

1. Intensity level of physical activity that increases heart rate and breathing, but allows you to talk
2. Advantage or positive effect obtained from a certain activity or behavior
5. Foods rich in vitamins and fiber, often consumed as healthy snacks
6. Brain's ability to store and retrieve information
7. Highly industrially processed food, often with additives and preservatives, ready for consumption
10. Another term for fats, a long-term source of energy
12. Process of taking and using food to get the nutrients the body needs
13. Inorganic Elements Essential for Bone Health and Other Bodily Functions
14. Blood sugar level, an important indicator of metabolic health
16. Regulates blood sugar levels
18. All foods habitually consumed by a person
19. Organized and competitive physical activity, often practiced for fun or to improve physical fitness

DUSE crossword

Complete the crossword! ...in ITALIAN

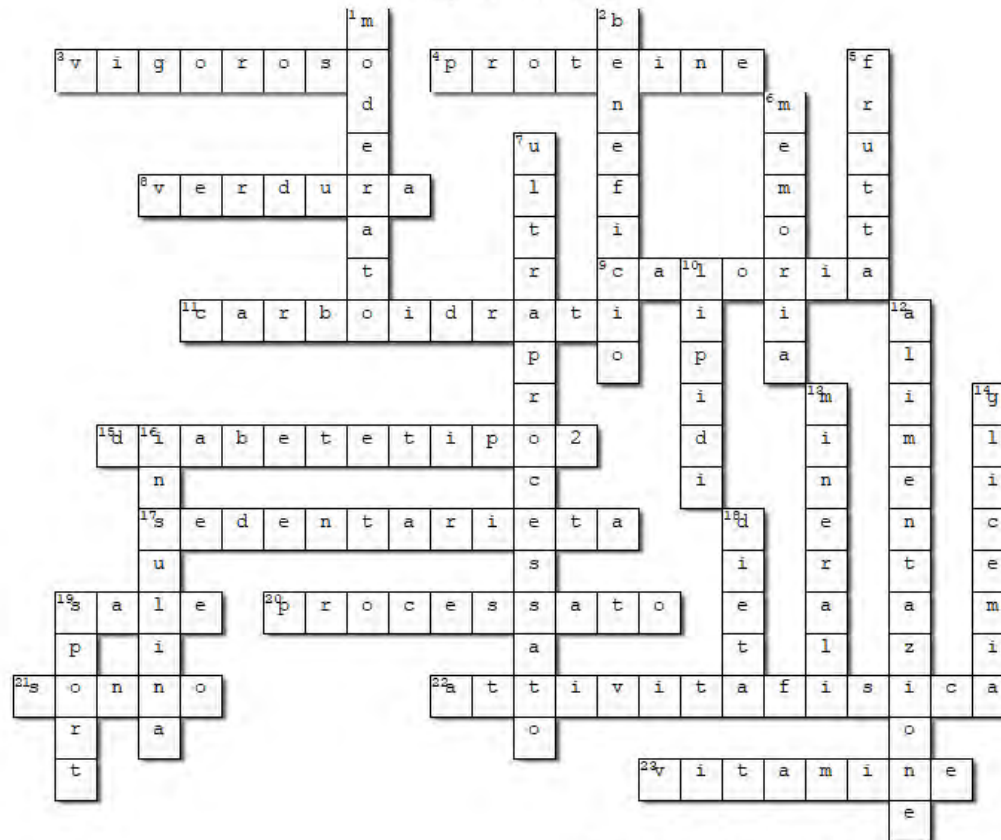


(Credits: using the Dictionary of Physics by The Physics Community)



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Completa il cruciverba!

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9. Educational material developed by UNIBO for 15-16 years old kids





Counteracting diabetes using interdisciplinary educative programs – DUSE

[HOME](#)
[PROJECT](#)
[PARTNER](#)
[EVENTS](#)
[CONTACTUS](#)



The European DUSE project

The European DUSE project aims at developing new educational strategies to increase awareness in children and adolescents on how maintaining a healthy lifestyle can counteract the onset on NCD such as diabetes. Thus, the DUSE project aims at promoting self-efficacy of younger generations making them able to incorporate good nutrition and the constant practice of sport activity in their daily routine.



COUNTERING DIABETES BY EDUCATION



Co-funded by the European Union

EU4H

The EU4Health programme is an unparalleled EU financial support in the health area. EU4Health is a clear message that public health is a priority for the EU and it is one of the main instruments to pave the way to a European Health Union.

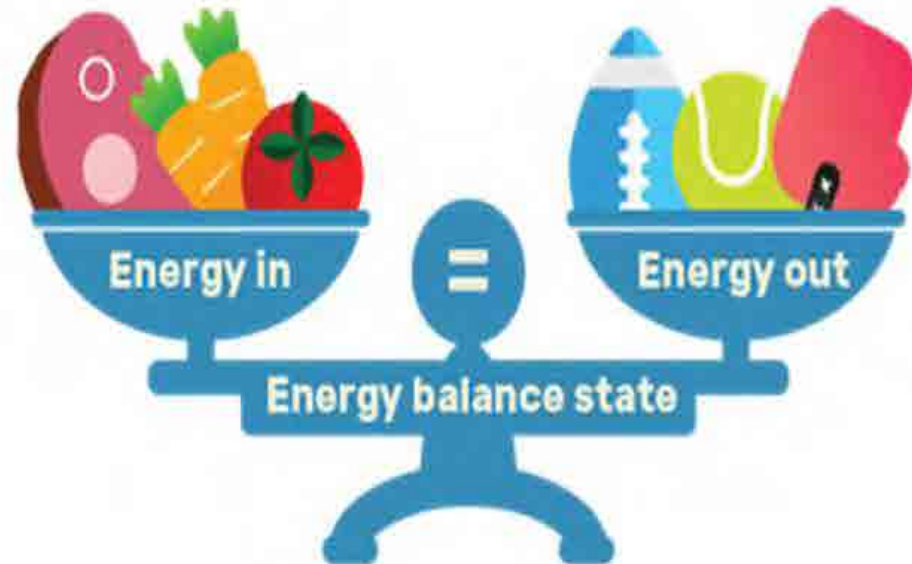
[Go to page](#)







It's all about ENERGY!



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WHAT'S ON TODAY'S LESSON PLAN?



- ☐ MEDITERRANEAN DIET
- ☐ FOOD, MAIN CHARACTERISTICS
- ☐ COMPLETE AND BALANCED PLATE
- ☐ DISTRIBUTION OF MEALS DURING THE DAY
- ☐ LESS IS MORE
- ☐ HYDRATATION
- ☐ HUNTING FOOD LABELS

NUTRITIONAL EDUCATION

Diet (*from the Greek "diaita"*) way of life, understood as daily rule for health care, with guidelines governing every aspect of everyday life.

NUTRITION

HYDRATATION

PHYSICAL ACTIVITY

SLEEP



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Intangible
Cultural
Heritage

Ancel Keys (1904-2004) an American physiologist, was the first to explain to the world why people in certain regions were longer-lived.



UNESCO 2010

Mediterranean Diet

Intangible Cultural Heritage of Humanity

Mediterranean Diet is much more than just food. It promotes social interaction, as communal meals form the basis of social customs and festivities shared by a given community, and has given rise to a wealth of knowledge, songs, sayings, tales and legends. The Diet is founded on respect for the territory and biodiversity and ensures the preservation and development of traditional activities and crafts related to fishing and agriculture in Mediterranean communities.



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NUTRITIONAL PRINCIPLES

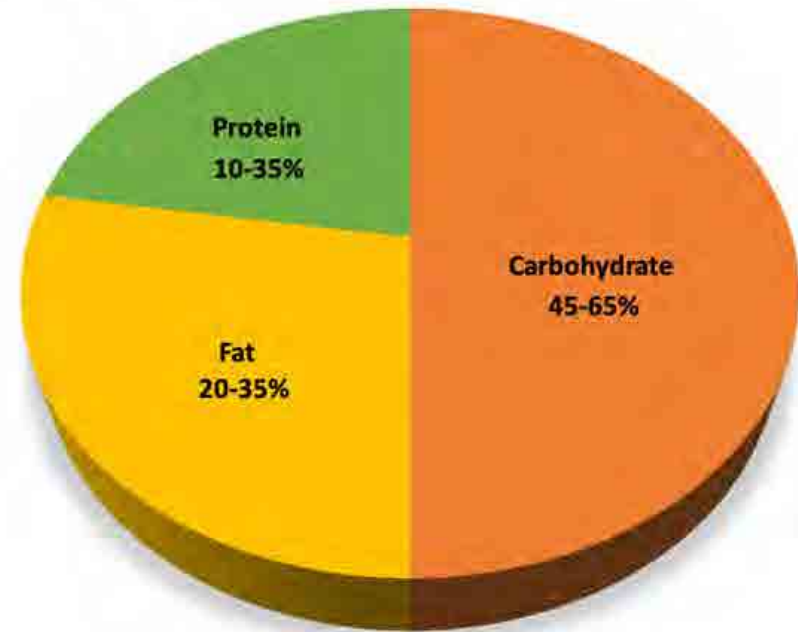
▪ Macronutrients

Necessary to provide the body with the energy it needs and the material for tissue growth and regeneration.

CARBOHYDRATES

FATS

PROTEINS



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NUTRITIONAL PRINCIPLES

▪ Micronutrients

ESSENTIAL

VITAMINS



MINERALS



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FOOD AND GROUPS

Foods can be divided into food groups, based on the nutrients of which they are the main source.

- CEREALS, BY-PRODUCTS AND TUBERS

- FRUIT AND VEGETABLES

- MEAT, FISH, EGGS AND LEGUMES

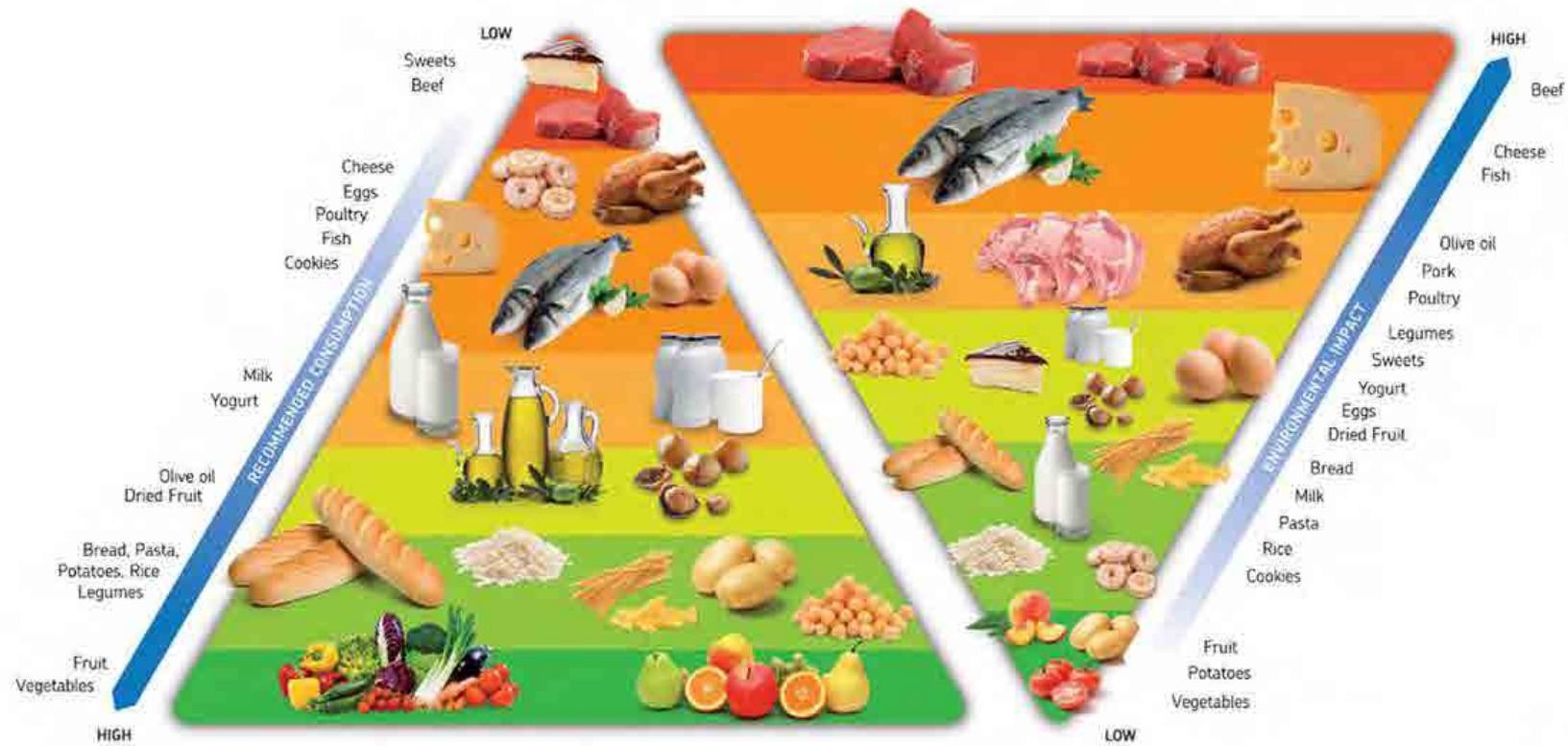
- MILK AND DAILY PRODUCTS

- COOKING FATS



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ENVIRONMENTAL PYRAMID



FOOD PYRAMID



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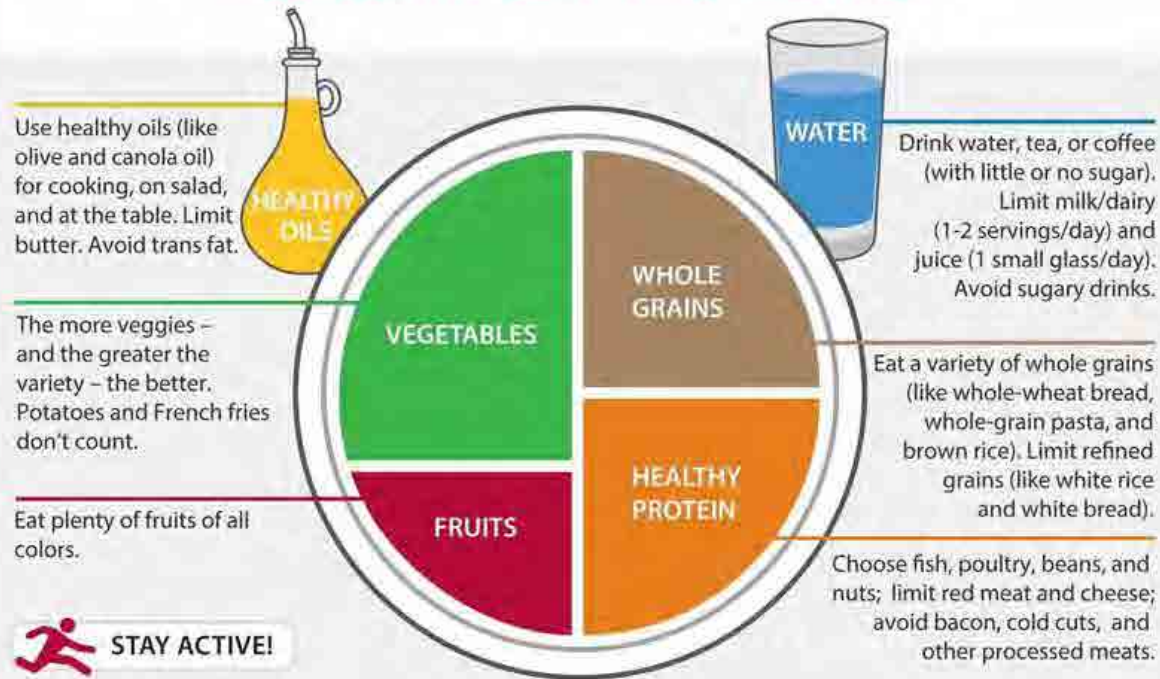


**HOW TO
COMPOSE THE
PLATE IN A
BALANCED AND
COMPLETE WAY?**



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HEALTHY EATING PLATE



STAY ACTIVE!

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Harvard T.H. Chan School of Public Health
The Nutrition Source
www.hsph.harvard.edu/nutritionsource

Harvard Medical School
Harvard Health Publications
www.health.harvard.edu



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UNIVERSITATIS BUDAPESTENSIS
CAPITULUM (H. RIVANI)

Copyright © 2011, Harvard University. For more information about The Healthy Eating Plate, please see The Nutrition Source, Department of Nutrition, Harvard T.H. Chan School of Public Health, www.thenutritionsource.org, and Harvard Health Publications, www.health.harvard.edu. (Source: <https://nutritionsource.hsph.harvard.edu/healthy-eating-plate/>)

PRINCIPI NUTRITIVI

▪ Micronutrienti

Indispensabili

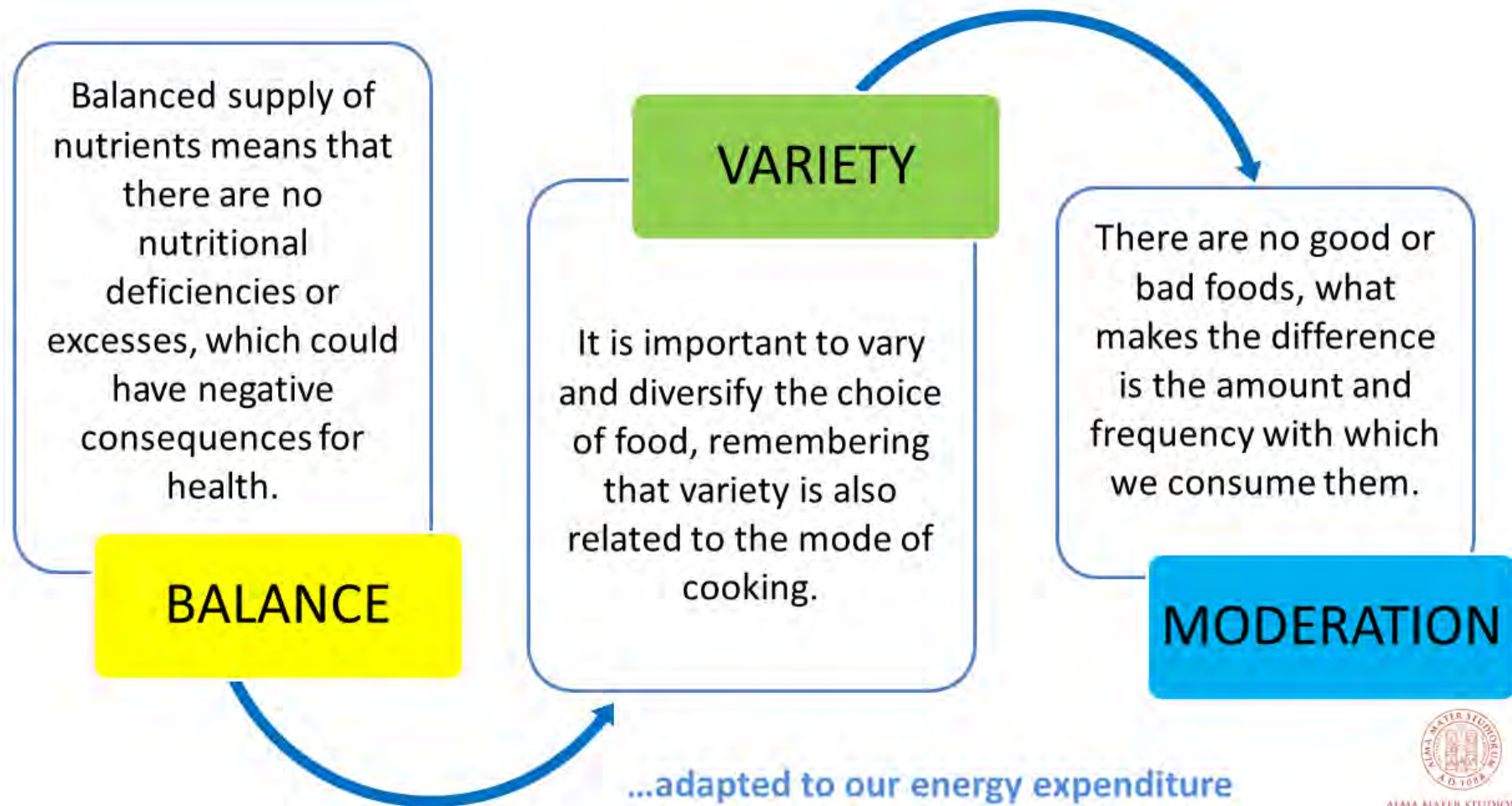
VITAMINE



MINERALI

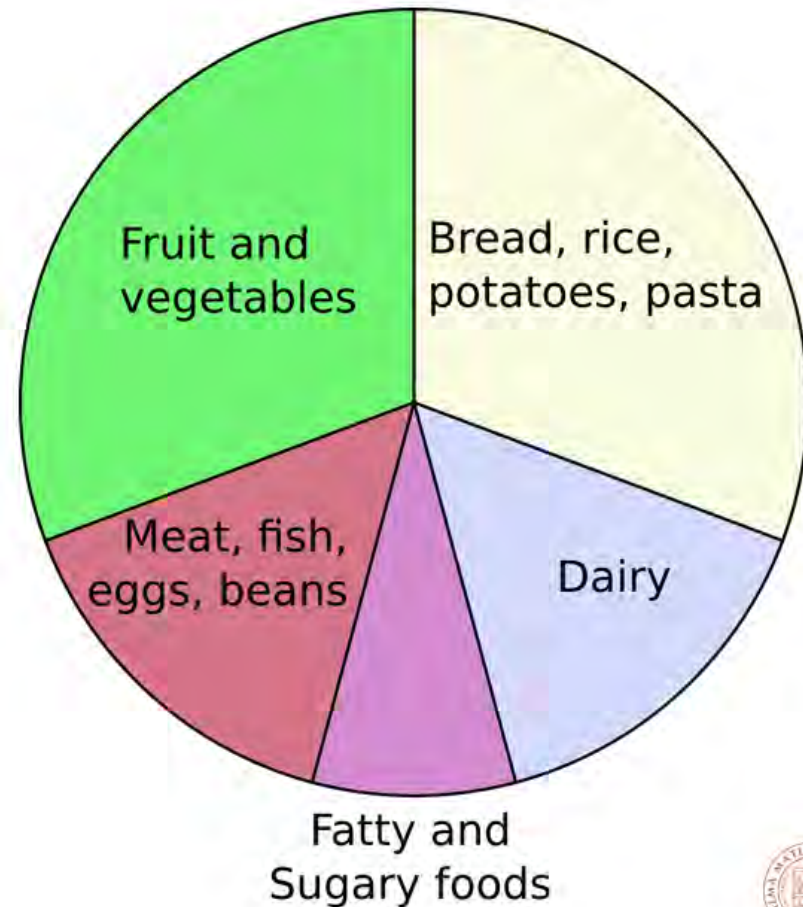


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BALANCED PLATE

- prevalence of **carbohydrates**, preferably from **fruits, vegetables** and **cereals**.
- It is preferable to choose **whole**, unrefined **cereals**.
- **Proteins** are also of **vegetable origin** (legumes, soy and some cereals), not only animal, and are a useful alternative to the latter.



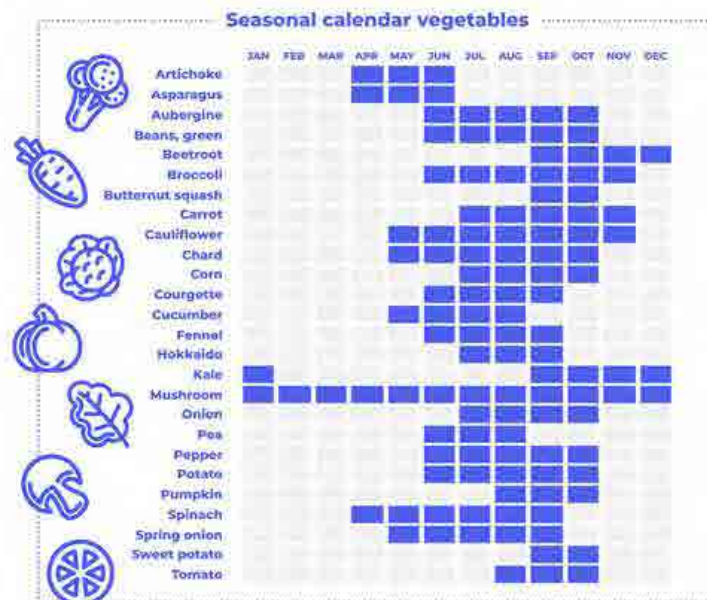
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- **Fruits and vegetables** are a **great source** of **carbohydrates**. They facilitate the intestinal flow thanks to the high percentage of **fiber** and are the **best source** of **vitamins** and **minerals**.
- *World Health Organization recommends 5 servings of fruits and vegetables per day, each with a different colour.*

EAT IN COLOR!





Eating Seasonally Chart

Summer		Fall		Winter		Spring	
Avocados	Lettuce	Apples	Lettuce	Apricots	Mushrooms	Apricots	Lettuce
Bananas	Lima Beans	Bananas	Limes	Avocados	Onions	Avocados	Limes
Bell Peppers	Mangos	Beets	Mangos	Bananas	Oranges	Bananas	Oranges
Blackberries	Mushrooms	Broccoli	Mushrooms	Brussels Sprouts	Pears	Brussels Sprouts	Pears
Blueberries	Okra	Brussels Sprouts	Parsnips	Celery	Potatoes	Celery	Potatoes
Cantaloupe	Peaches	Carrots	Pears	Collard Greens	Pumpkin	Collard Greens	Pumpkin
Celery	Pineapples	Cauliflower	Pear	Grapes	Rutabagas	Grapes	Rutabagas
Cherries	Plums	Celery	Pumpkin	Kale	Sweet Potatoes	Kale	Sweet Potatoes
Corn	Raspberries	Cranberries	Radishes	Kiwi	Swiss Chard	Kiwi	Swiss Chard
Cucumbers	Strawberries	Ginger	Sweet Potatoes	Leeks	Turnips	Leeks	Turnips
Eggplant	Summer Squash	Grapes	Swiss Chard	Lemons	Winter Squash	Lemons	Winter Squash
Garlic	Tomatillos	Green Beans	Turnips	Limes	Yams	Limes	Yams
Grapes	Tomatoes	Kale	Winter Squash				
Green Beans	Zucchini	Lemons	Yams				
Honeydew Melon							
Lemons							
Lettuce							

HOW MANY MEALS PER DAY?



BREAKFAST

The first opportunity to replenish energy essential for starting the day well both physical and mental: the brain consumes only carbohydrates.

SNACKS

They are to be inserted between a meal to ensure our body the right energy at all times and not get to the main meals too hungry.

Avoid pre-packaged snacks and sugary drinks.



LUNCH AND DINNER

Together with breakfast are part of the main meals.



LESS IS BETTER...

**FOODS RICH IN SIMPLE
SUGARS**



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SHALL WE TALK ABOUT SUGAR?

WHAT HAPPENS ONE HOUR AFTER DRINKING A CAN OF COKE

1 FIRST 10 MINUTES

10 teaspoons of sugar hit your system, 100% of your recommended daily intake. You don't immediately vomit from the overwhelming sweetness because phosphoric acid clothe the taste allowing you to keep it down.

2 20 MINUTES

Your blood sugar spikes, saving an insulin burst. Your liver responds to this by turning any sugar it can get its hands on into fat. (That's plenty of that at this particular moment)

3 40 MINUTES

Caffeine absorption is complete. Your pupils dilate, your blood pressure rises, as a response your blood vessels move sugar into your bloodstream. The adenosine receptors in your brain are now blocked preventing drowsiness.

4 45 MINUTES

Your body upps your dopamine production stimulating the pleasure centers of your brain. This is all exactly the same way heroin works, by the way.

5 60 MINUTES

The phosphoric acid binds sodium, magnesium and zinc in your lower intestine preventing a further boost in metabolism. This is compounded by high doses of sugar and artificial sweeteners also increasing the urinary excretion of sodium.

6 >60 MINUTES

The caffeine's diuretic properties come into play. It makes you have to pee. It is now exposed that you've excreted the bonded calcium, magnesium and zinc that was bonded to your bones as well as sodium, electrolyte and water.

7 >60 MINUTES

As the rare birds of you dies spend you'll start to have a sugar crash. You may become irritable and/or sluggish. You're also now literally soaked away all the water that was in the Coke. If at not before turning it into valuable nutrients your body could have used for things like even losing the ability to hydrate your system or build strong bones and teeth.



45 MINUTES

5

6

7



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LESS IS MORE...

**FOODS HIGH IN
SATURATED FAT AND SALT**



GODD FATS



Olive Oil



Avocado



Nuts



Salmon



Coconut

BAD FATS



Corn Oil



Beef



Margarine



Shortening



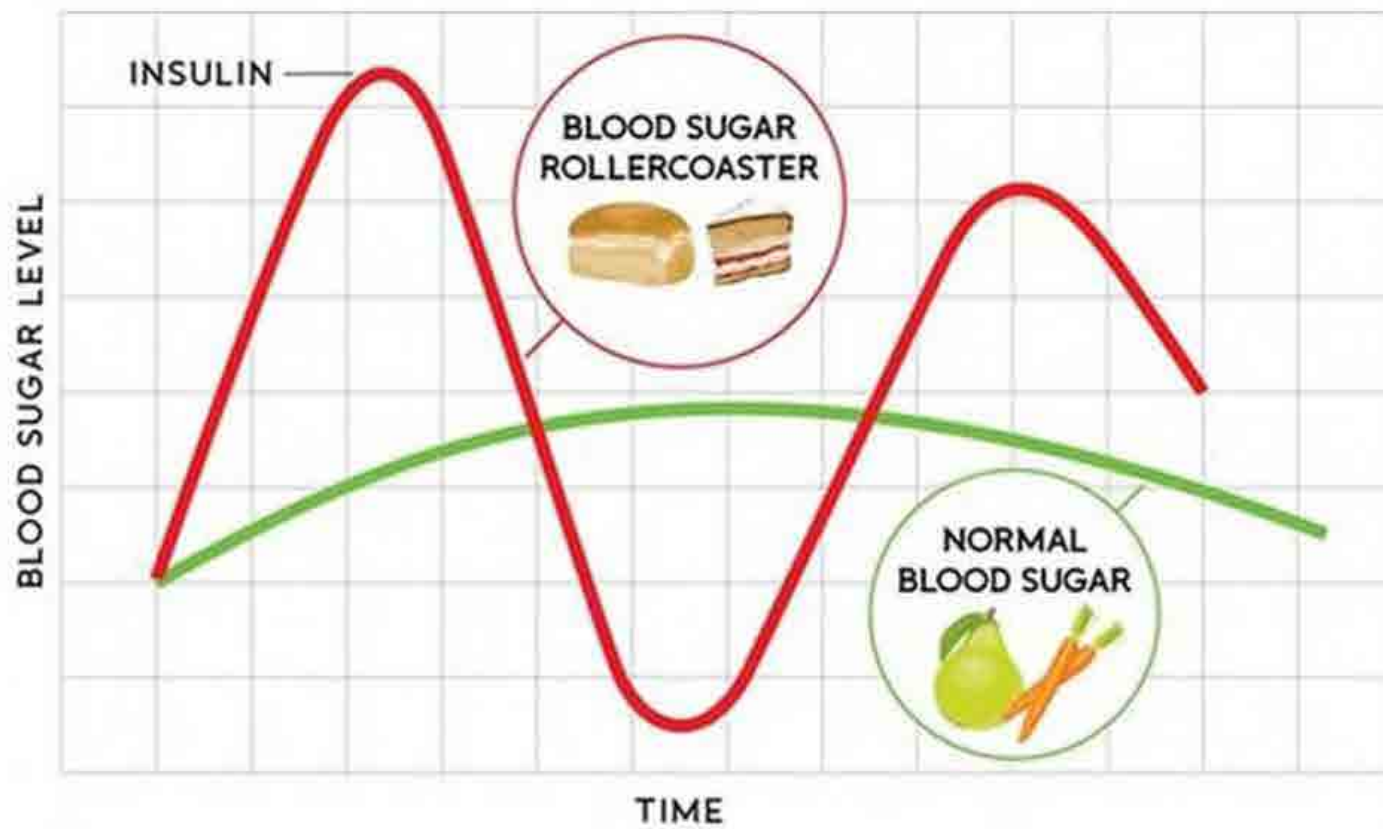
Soybean Oil

HIGH-FAT

FOODS...



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Hand Guide to Portion Control



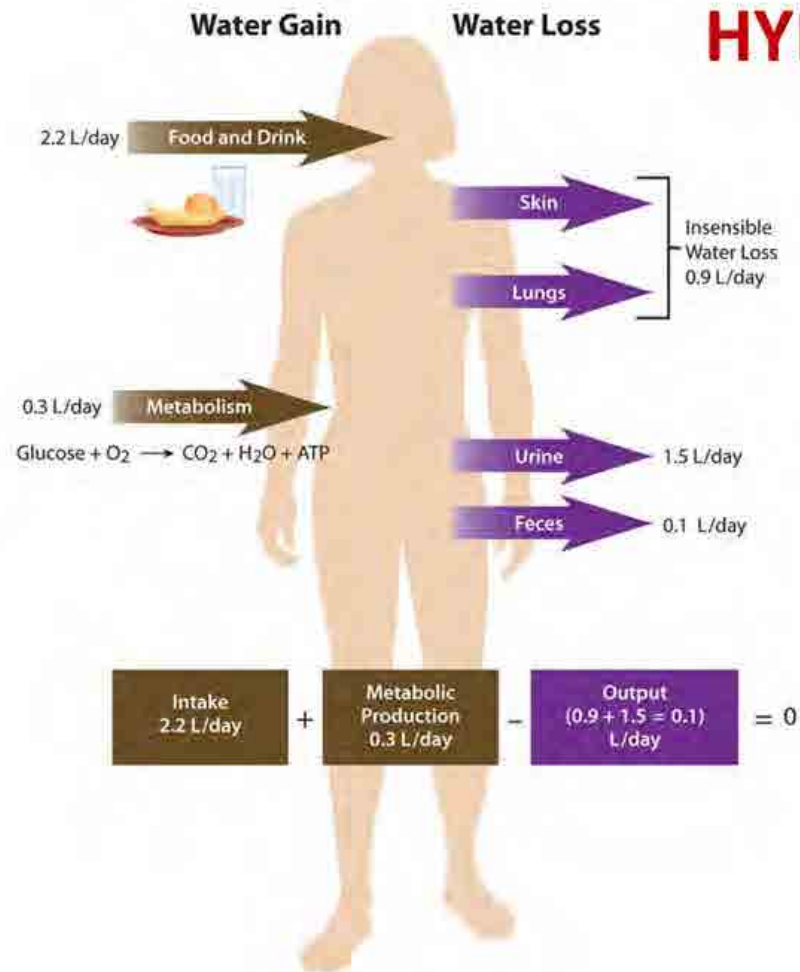
THE HAND AS A TOOL FOR ESTIMATING PORTIONS

Sources:
<http://www.cnpp.usda.gov/Publications/DietaryGuidelines/2000/2000DGBrochureHowMuch.pdf>
<http://www.health.arkansas.gov/programsServices/chronicDisease/Nutrition/Pages/ServingSizes.aspx>

www.GuardYourHealth.com



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HYDRATION

WATER - How much you and your kids should drink each day

Nursing	             	(13 cups, 3.1 L)
Men 19+	             	(12 cups, 3.0 L)
Boys 14-18	             	(11 cups, 2.6 L)
Pregnant	             	(10 cups, 2.4 L)
Women 19+	             	(9 cups, 2.2 L)
Girls 14-18	             	(8 cups, 1.9 L)
Boys 9-13	             	(8 cups, 1.9 L)
Girls 9-13	             	(7 cups, 1.7 L)
Children 4-8	             	(6 cups, 1.4 L)
Toddlers 1-3	             	(4.5 cups, 1.0 L)

Based on Total Water Adequate intake, as set by the Institute of Medicine "Dietary Reference Intakes for Water, Potassium, Sodium, Chloride and Sulfate", Washington DC, The National Academies Press, 2005

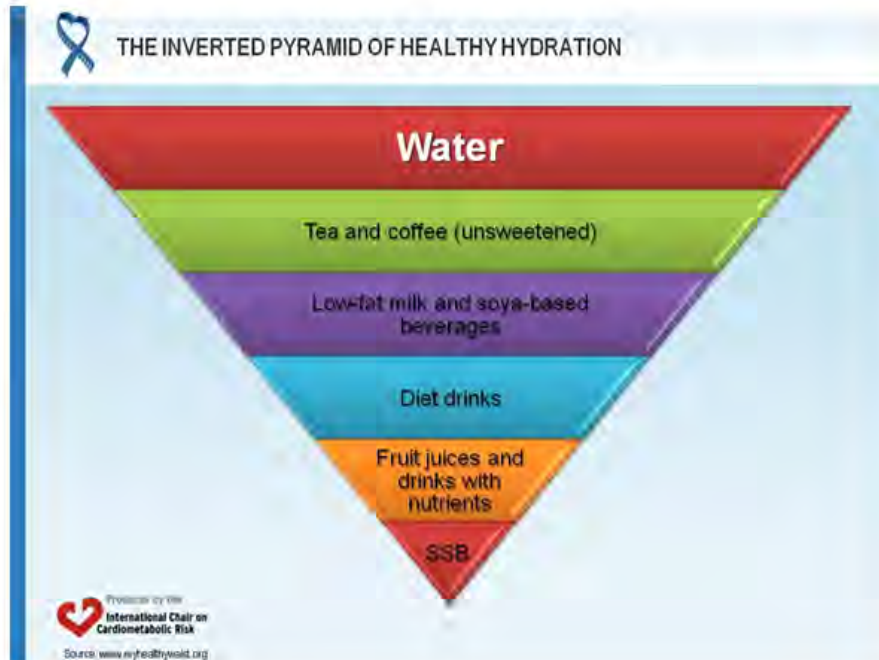


Our body is composed of more than **70% water**, that's why you have to drink to keep it hydrated, efficient and healthy: **at least 2 liters of water** a day, remembering to drink little and frequently.



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HYDRATION



The physiological need to drink water during various daily activities should be taken into account:

- prefer non-carbonated drinks
- drink cold but not cold
- Drink regularly before and during sport

Hydration and sport: the water losses suffered by evaporation of sweat during physical activity should not be overlooked. Weighing without clothes before and after the activity allows you to calculate how much fluid must be refilled at the end of the exercise.



How dehydrated are you?

A quick way to test how well
you're hydrated is to check
the colour of your urine.



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WATCH THE LABELS

HOW TO READ A FOOD LABEL

If living with high cholesterol, pay close attention to the fat, sugar, and calorie lines.

SERVING INFORMATION

Servings in entire package, and the size of each serving

TOTAL FAT

The amount of saturated (bad) and unsaturated (good) fat that is in one serving

NUTRIENTS

Key nutrients in one serving of the food

Nutrition Facts	
8 servings per container	
Serving Size	10 pieces (60g)
Amount per serving	
Calories	220
% Daily Value*	
Total Fat 5g	10%
Saturated Fat 0.5g	1%
Trans Fat 0g	
Cholesterol 5mg	1%
Sodium 270mg	12%
Total Carbohydrate 41g	15%
Dietary Fiber 4g	14%
Total Sugars 2g	
Includes 0g Added Sugars	0%
Protein 2g	
Vitamin D 0.3mcg	0%
Calcium 40mg	2%
Iron 1.5mg	8%
Potassium 170mg	2%

CALORIES

The amount of energy you get from one serving

% DAILY VALUE

The amount a nutrient contributes to your total daily diet based on a 2,000 calorie a day diet.

TOTAL SUGARS + ADDED SUGARS

The amount of sugar that is in a product naturally and how much is added

MEDICALNEWSToday

What's on a food label?

Date Marking

This is the 'Use By', 'Sell By' and 'Best Use Before' date. It gives the date by which the food should be eaten.

Product Name

Usually beside the brand name. Tells you what the food is.

Net Weight

This gives the actual weight of the food excluding the packaging. For canned foods packed in liquid, the net weight is the weight of the drained food.

USE BY

Ingredient List

This shows all the ingredients that make up the product. The ingredients are listed in descending order by weight.

Nutrition Information

This panel shows the nutrients found in one serving or in 100 g / 100 ml of the food.

Usage Instructions

These are instructions for storing or using the product.

Manufacturer's Details

Every label includes the name and address of the manufacturer, importer or distributor.



2



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Summing up...

**THE PILLARS FOR
A HEALTHY
LIFESTYLE:**



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WHAT'S ON TODAY'S LESSON PLAN?



- ☐ PHYSICAL ACTIVITY
- ☐ INTENSITY, FREQUENCY AND BENEFITS
- ☐ BODY COMPOSITION
- ☐ BODY MASS INDEX
- ☐ SLEEP
- ☐ DIABETES

HEALTH CONCEPT



A condition of complete physical, mental and social well-being and not exclusively the absence of illness or infirmity.

World Health Organization definition



159



Sedentary behaviour

Waking state in which one is sitting or reclining with low energy expenditure ($< 1,5$ MET)

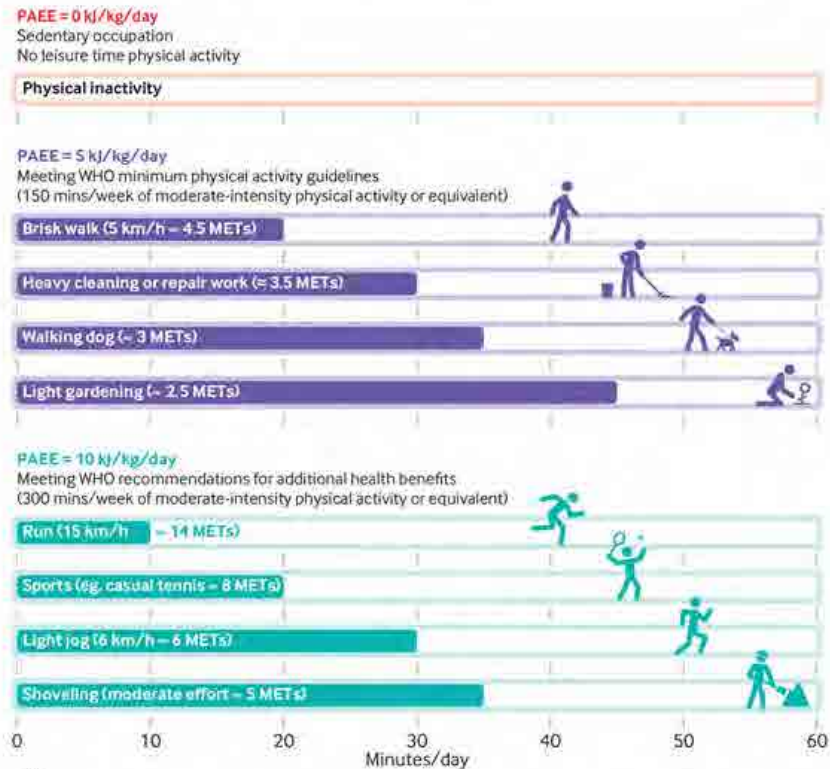
Physical activity is any movement of the body produced by skeletal muscles that involves energy expenditure

The WHO defines exercise as any movement of the body produced by muscles and requiring energy expenditure. It is a «subcategory» of physical activity, which is planned, structured and repetitive and has the objective to improve or maintain one or more aspects of physical fitness.

Physical inactivity

Those who do not reach the WHO-established levels of physical activity. 4° global mortality risk factor

HOW DO WE MISURE PHYSICAL EFFORT?



#	Level of Perceived Exertion Scale		
	Original RPE Scale		Revised RPE Scale
6	No exertion	0	Nothing at all
7	Very, very light	0.5	Very, very weak
8		1	
9	Very light	2	Very weak
10		3	
11	Light	4	Somewhat strong
12		5	Strong
13	Somewhat hard	6	
14		7	Very strong
15	Hard (heavy)	8	
16		9	
17	Very hard	10	Very, very strong
18			
19	Extremely hard		
20	Maximal		



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 ENERGY REQUIRED (METS) FOR LIGHT TO MODERATE EXERCISE from the Compendium of Physical Activities		
	Light gardening	2.3
	General cleaning & straightening up	2.5
	Washing dishes, clearing the table	2.5
	Putting away groceries	2.5
	Walking 2.0 mph	2.8
	Walking 3.0 mph	3.3
	Scrubbing the floor	3.8
	Gardening, weeding	4.0
	Multiple household tasks at once with vigorous effort	4.3
	Salsa or swing dancing	4.5
	Softball	5.0
	Walking 4.0 mph*	5.0
	Walking with a light (15 lb) load	5.0
	Walking 3.0 mph at 3-5% grade (uphill)	5.3
	Golf: walking and pulling clubs	5.3

	Mowing the lawn	5.5
	Moving furniture and carrying boxes	5.8
	Biking 9-10 mph	5.8

 ENERGY REQUIRED (METS) FOR VIGOROUS AND INTENSE EXERCISE from the Compendium of Physical Activities		
	Hiking (light pack)	6.0
	Weightlifting (vigorous)	6.0
	Ballet or modern dance (vigorous)	6.8
	Stationary bike: 100 watts	6.8
	Backpacking	7.8
	Boxing, sparring	7.8
	Climbing stairs	8.0
	Biking 13 mph	*8.0
	Competitive beach volleyball	8.0
	Basketball	8.0
	Tennis, singles	8.0
	Rock climbing	8.0
	Circuit training / body weight exercises	8.0
	Swimming 50 yd / min	8.3
	Rowing: 150w or 8.6 mph	8.5
	Running 6 mph or 10:00/mile	9.8
	Rollerblading 11 mph	9.8
	Biking 15 mph	10.0
	Competitive Soccer	10.0
	Swimming 75 yd / min	10.0
	Breaststroke	10.3
	Martial arts	10.3
	Jumping rope	11.0
	Rowing: 200w or 9.3 mph	12.0
	Biking 17-18 mph	12.0
	Running 8.6 mph or 7:00/mile	12.3
	Rollerblading 13+ mph	12.3

Intensity levels in sports vary from person to person. Visit <https://sites.google.com/site/compendiumofphysicalactivities/home> for a more complete list of activities.

whyexercise.com



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EVERY MOVE COUNTS

Being active has significant health benefits for hearts, bodies and minds, whether you're walking, wheeling or cycling, dancing, doing sport or playing with your kids.



WHO guidelines on physical activity and sedentary behaviour (2020).

For more information, visit: www.who.int/health-topics/physical-activity

LET'S
Be active
Everyone
Everywhere
Everyday



World Health
Organization



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Physical activity for children and young people (5–18 Years)

 BUILDS CONFIDENCE & SOCIAL SKILLS	 STRENGTHENS MUSCLES & BONES	 MAINTAINS HEALTHY WEIGHT
 DEVELOPS CO-ORDINATION	 IMPROVES HEALTH & FITNESS	 IMPROVES SLEEP
 IMPROVES CONCENTRATION & LEARNING	 IMPROVES HEALTH & FITNESS	 MAKES YOU FEEL GOOD

Be physically active

Spread activity throughout the day

Aim for at least 60 minutes everyday

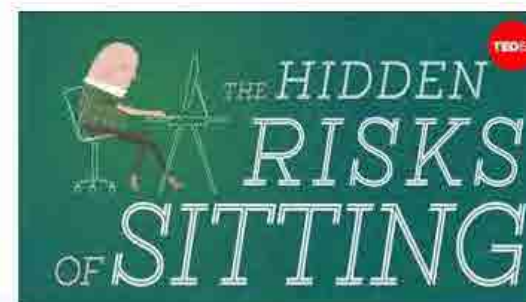
All activities should make you breathe faster & feel warmer

 PLAY	 RUN/WALK	 BIKE	 ACTIVE TRAVEL
 SWIM	 SKATE	 SPORT	 PE
 SKIP	 CLIMB	 WORKOUT	 DANCE

Sit less  **Move more**

Include muscle and bone strengthening activities 3 TIMES PER WEEK

Find ways to help all children and young people accumulate at least 60 minutes of physical activity everyday



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BMI Body Mass Index

It is a parameter that allows to obtain a GENERIC estimate of one's body composition by relating the weight and the height. You calculate by dividing your weight in kg by the square of your height in metres.

Formula for body mass index (BMI):

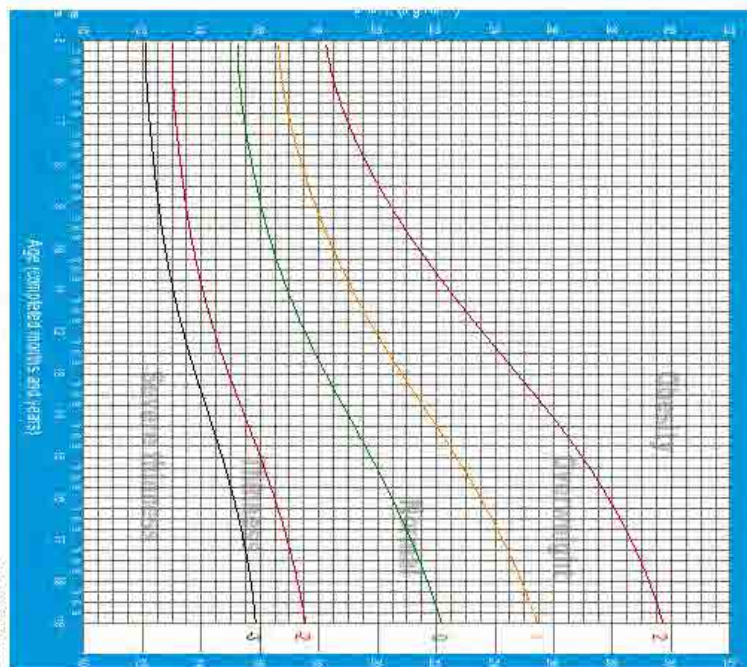
$$BMI = \frac{weight}{height^2}$$

Write a Python Program that asks the user for weight and height and then displays **weight class** based on BMI (use the table below for this).

BMI	Weight class
below 18.5	underweight
18.5 - 24.9	normal
25.0 - 29.9	overweight
30.0 and up	Very overweight

BMI-for-age BOYS

5 to 19 years (z-scores)



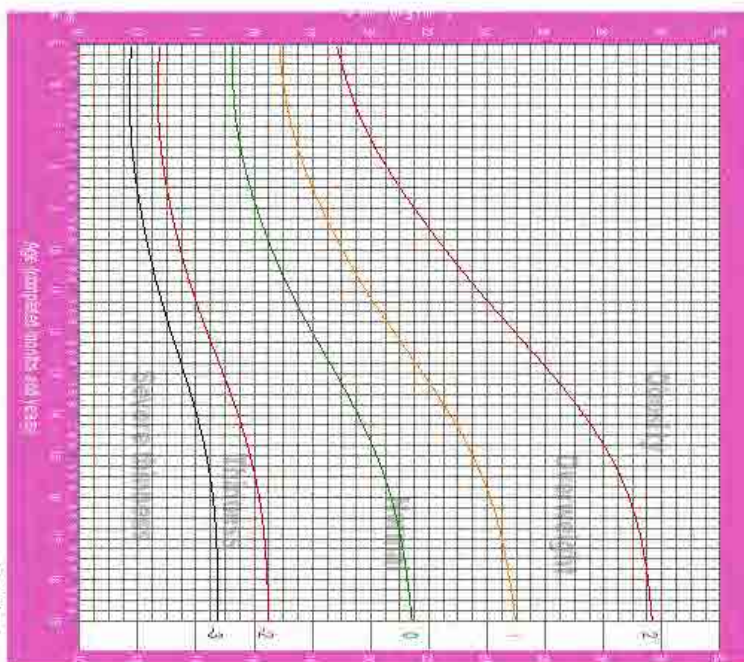
2007 WHO Reference



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BMI-for-age GIRLS

5 to 19 years (z-scores)



2007 WHO Reference

PERCENTILES MEASURE GROWTH PARAMETERS

HOW DO WE CONSUME ENERGY WHEN WE DO SPORTS?

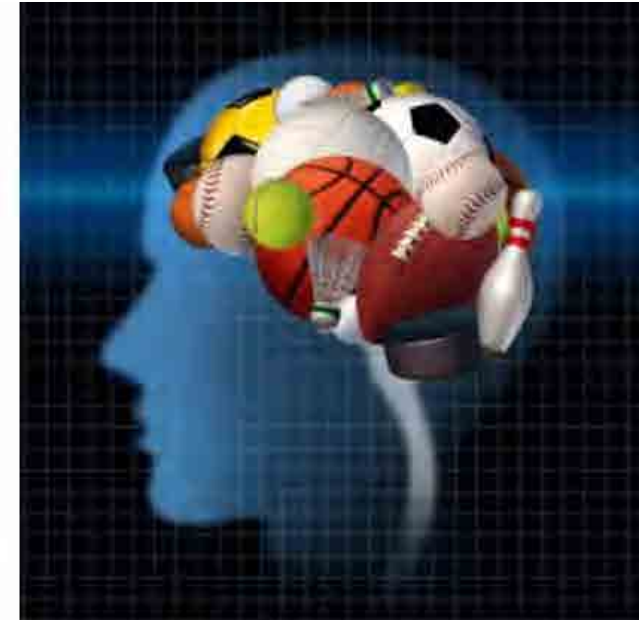
Activities	Calories Consumption
Brisk walking (5-6 km/h)	200-300 kcal
Running (8 km/h)	750 kcal
Cycling (16-19 km/h)	300-450 kcal
Swimming (stile libero)	400-600 kcal
Basketball	600 kcal
Volleyball	360 kcal
Soccer	400 kcal
Dance (moderate intensity)	200-400 kcal
Skating	600-700 kcal
Tennis	400 kcal
Ropping	500-700 kcal

Approximate values that may vary according to intensity and body weight.

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WHY IS IT GOOD TO MOVE?

- Essential for the smooth functioning of joints
- It improves:
 - blood circulation and oxygen
 - ...do you know how to measure heart rate?
- the lung capacity
 - ...you know how to measure the breathing rate?
- digestion (better not to do intense activity after eating)
- the body's defenses
- the ability to concentrate



Increases **cognitive functions**

Allows greater control over **emotions**

Improves learning and memorization

at muscle level, strength, trophism and elasticity are acquired



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IMPORTANCE OF SLEEP

HOURS OF SLEEP:

School age (6-13 years): 9-11 hours

Teenagers (14-17 years): 8-10 hours

BENEFITS:

Recovery and conservation of energy

Improves attention, learning and memory

Regulates mood

Improves physical health



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<https://app.wooclap.com/events/PJNAUJ/questions/6783f64cdb93aaa635de3fa1>



Tri-ing

to be Athletic



I'm not lazy...

I'm a recovered workaholic

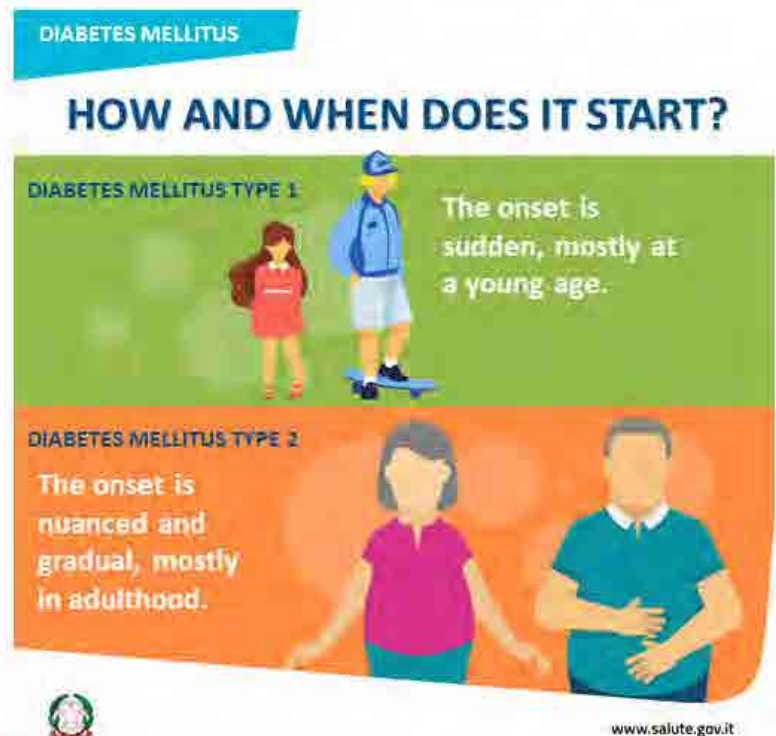


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WHAT IS DIABETES?

Type 2 diabetes is a chronic non-communicable disease, called "adult diabetes" because it is generally diagnosed after the age of 40, but this value has a steadily declining trend.

Diabetes (mellitus, derived from Latin and meaning "sweet") is a chronic disease characterized by the presence of higher than normal blood sugar (glucose) levels (hyperglycemia) due to deficient or inadequate insulin production or a poor ability of tissues to use insulin itself.



- ☐ CAUSE
- ☐ SYMPTOMS
- ☐ PREVENTION
- ☐ TREATMENT

** Source: Italian Ministry of Health website*



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<https://www.diabete.com/il-diabete-di-tipo-2-in-crescita-tra-adolescenti-e-giovani-adulti/>

WHAT CAUSES IT?

DIABETES MELLITUS TYPE 1

The cause is an autoimmune reaction in predisposed individuals.



DIABETES MELLITUS TYPE 2

The causes are family history, overweight and obesity, poor diet and sedentary lifestyle, harmful alcohol consumption and smoking.



www.salute.gov.it

WHAT ARE THE FIRST SYMPTOMS?

DIABETES MELLITUS TYPE 1

The initial symptoms are immediately obvious: intense thirst, frequent need to urinate, rapid weight loss, tiredness and drowsiness to the point of unconsciousness.



DIABETES MELLITUS TYPE 2

The symptoms, initially, are not very evident. Then, intense thirst and frequent urge to urinate, increased appetite, feeling of fatigue and blurred vision arise ...



www.salute.gov.it



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CAN IT BE PREVENTED?

DIABETES TYPE 1

No, it is not predictable



DIABETES TYPE 2

Its onset can be prevented or delayed by following healthy lifestyles, reducing overweight/obesity and smoking, and increasing physical activity.



www.salute.gov.it

HOW IS IT TREATED?

DIABETES TYPE 1

Therapy is pharmacological with insulin only from the beginning.



DIABETES TYPE 2

Its onset can be prevented or delayed by following healthy lifestyles, reducing overweight/obesity and smoking, and increasing physical activity.



www.salute.gov.it



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ROLE OF PHYSICAL ACTIVITY

Low intensity exercises, such as walking, cycling, Nordic walking, free-swimming and swimming are of prime importance for prevention and treatment, consider aerobic activities and because they involve most muscle districts.



THERAPIES

No insulin therapy is provided (it may be necessary to take drugs that reduce blood sugar), but special attention is given to diet, the control of the ratio between lean and fat mass and constant physical activity, This allows you to control your blood sugar values in an optimal way.



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Horizontal

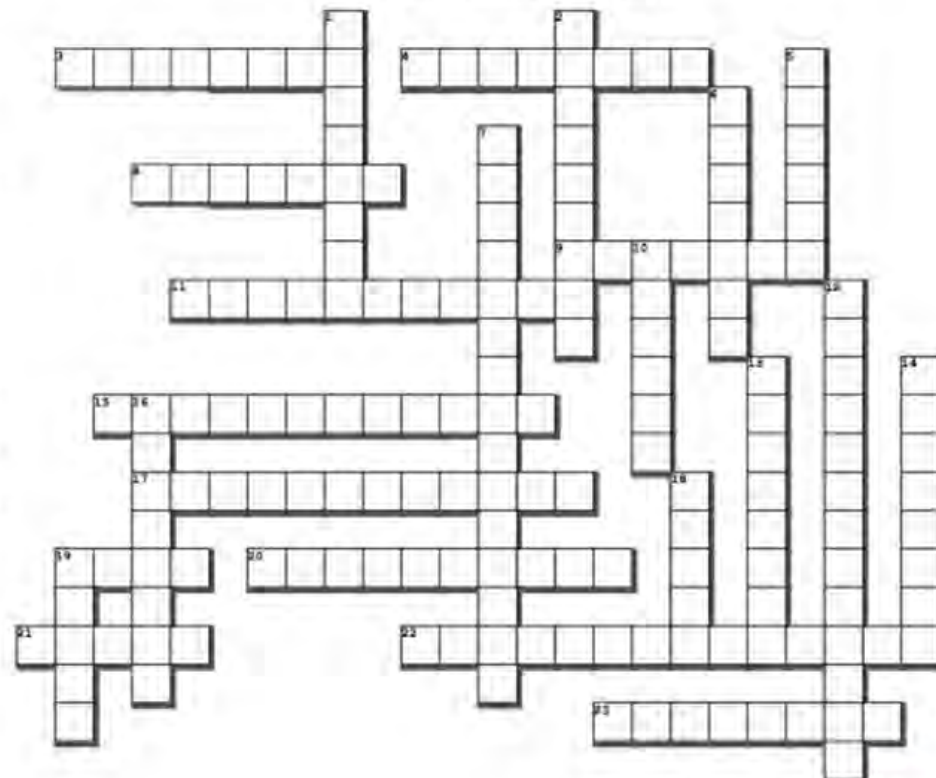
3. Level of physical activity that greatly increases heart rate and breathing, making it difficult to speak
4. Essential nutrients for tissue growth and repair
8. Nutrient-rich plant foods, essential for a balanced diet
9. Units of measurement of energy supplied by food
11. Nutrients that provide quick energy to the body
15. Chronic disease characterized by high blood sugar levels due to insulin resistance
17. Lifestyle characterized by low physical activity and long periods of inactivity
19. Chemical compound used to flavor and preserve food, commonly known as sodium chloride
20. Food modified by cooking, storing or adding ingredients to improve shelf life or taste
21. Natural state of rest of the body and mind, characterized by a reduction in consciousness
22. Any movement of the body that requires energy, such as walking, running, or playing sports
23. Organic substances needed in small amounts for various bodily functions

Vertical

1. Intensity level of physical activity that increases heart rate and breathing, but allows you to talk
2. Advantage or positive effect obtained from a certain activity or behavior
5. Foods rich in vitamins and fiber, often consumed as healthy snacks
6. Brain's ability to store and retrieve information
7. Highly industrially processed food, often with additives and preservatives, ready for consumption
10. Another term for fats, a long-term source of energy
12. Process of taking and using food to get the nutrients the body needs
13. Inorganic Elements Essential for Bone Health and Other Bodily Functions
14. Blood sugar level, an important indicator of metabolic health
16. Regulates blood sugar levels
18. All foods habitually consumed by a person
19. Organized and competitive physical activity, often practiced for fun or to improve physical fitness

DUSE crossword

Complete the crossword! ...in ITALIAN

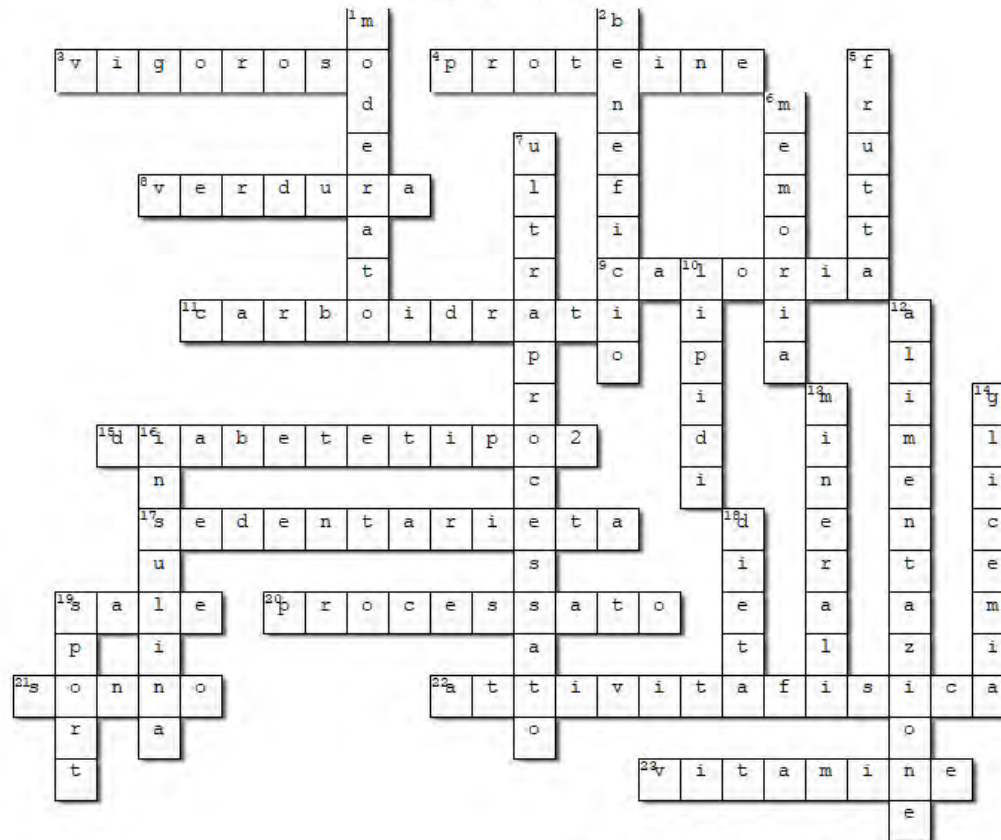


(Credits: using the Dictionary of Physics by The Physics Community)



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Completa il cruciverba!

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10. Educational material developed by UNIBO for teachers





Counteracting diabetes using interdisciplinary educative programs – DUSE

[HOME](#)
[PROJECT](#)
[PARTNER](#)
[EVENTS](#)
[CONTACTUS](#)



The European DUSE project

The European DUSE project aims at developing new educational strategies to increase awareness in children and adolescents on how maintaining a healthy lifestyle can counteract the onset on NCD such as diabetes. Thus, the DUSE project aims at promoting self-efficacy of younger generations making them able to incorporate good nutrition and the constant practice of sport activity in their daily routine.



COUNTERING DIABETES BY EDUCATION

EU4H

The EU4Health programme is an unparalleled EU financial support in the health area. EU4Health is a clear message that public health is a priority for the EU and it is one of the main instruments to pave the way to a European Health Union.

[Go to page](#)



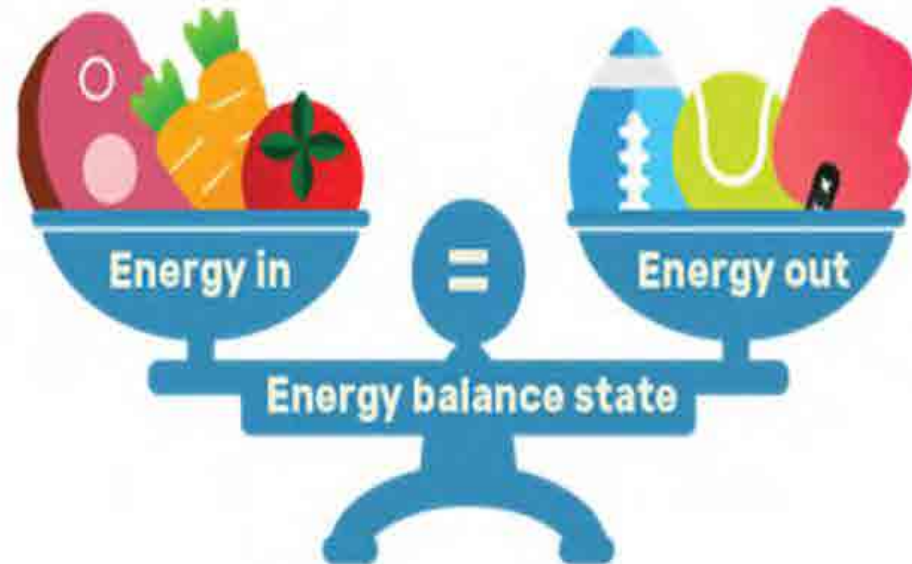
**Co-funded by
the European Union**







It's all about ENERGY!



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WHAT'S ON TODAY'S LESSON PLAN?



- ☐ MEDITERRANEAN DIET
- ☐ FOOD, MAIN CHARACTERISTICS
- ☐ COMPLETE AND BALANCED PLATE
- ☐ DISTRIBUTION OF MEALS DURING THE DAY
- ☐ LESS IS MORE
- ☐ HYDRATATION
- ☐ HUNTING FOOD LABELS

NUTRITIONAL EDUCATION

Diet (*from the Greek "diaita"*) way of life, understood as daily rule for health care, with guidelines governing every aspect of everyday life.

NUTRITION

HYDRATATION

PHYSICAL ACTIVITY

SLEEP



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Intangible
Cultural
Heritage

Ancel Keys (1904-2004) an American physiologist, was the first to explain to the world why people in certain regions were longer-lived.



UNESCO 2010

Mediterranean Diet

Intangible Cultural Heritage of Humanity

Mediterranean Diet is much more than just food. It promotes social interaction, as communal meals form the basis of social customs and festivities shared by a given community, and has given rise to a wealth of knowledge, songs, sayings, tales and legends. The Diet is founded on respect for the territory and biodiversity and ensures the preservation and development of traditional activities and crafts related to fishing and agriculture in Mediterranean communities.



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NUTRITIONAL PRINCIPLES

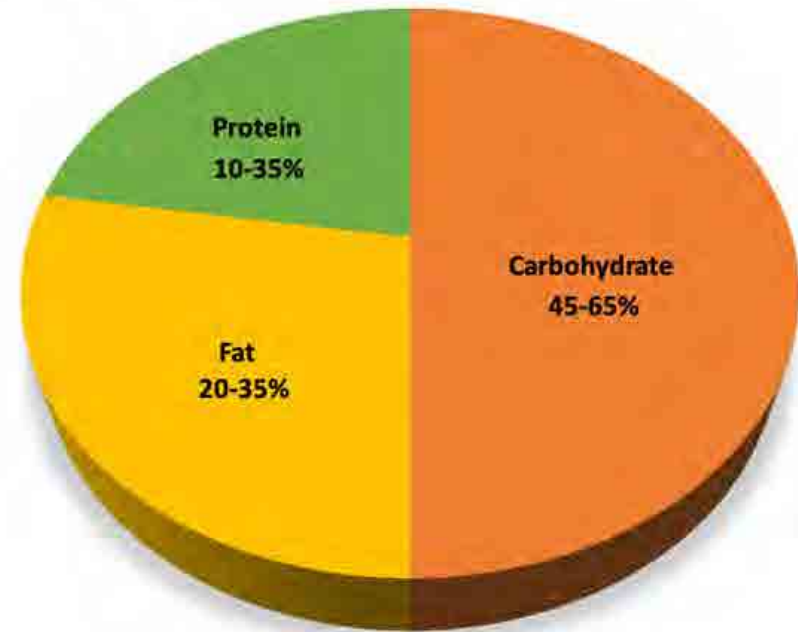
▪ Macronutrients

Necessary to provide the body with the energy it needs and the material for tissue growth and regeneration.

CARBOHYDRATES

FATS

PROTEINS



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NUTRITIONAL PRINCIPLES

▪ Micronutrients

ESSENTIAL

VITAMINS



MINERALS



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FOOD AND GROUPS

Foods can be divided into food groups, based on the nutrients of which they are the main source.

- CEREALS, BY-PRODUCTS AND TUBERS

- FRUIT AND VEGETABLES

- MEAT, FISH, EGGS AND LEGUMES

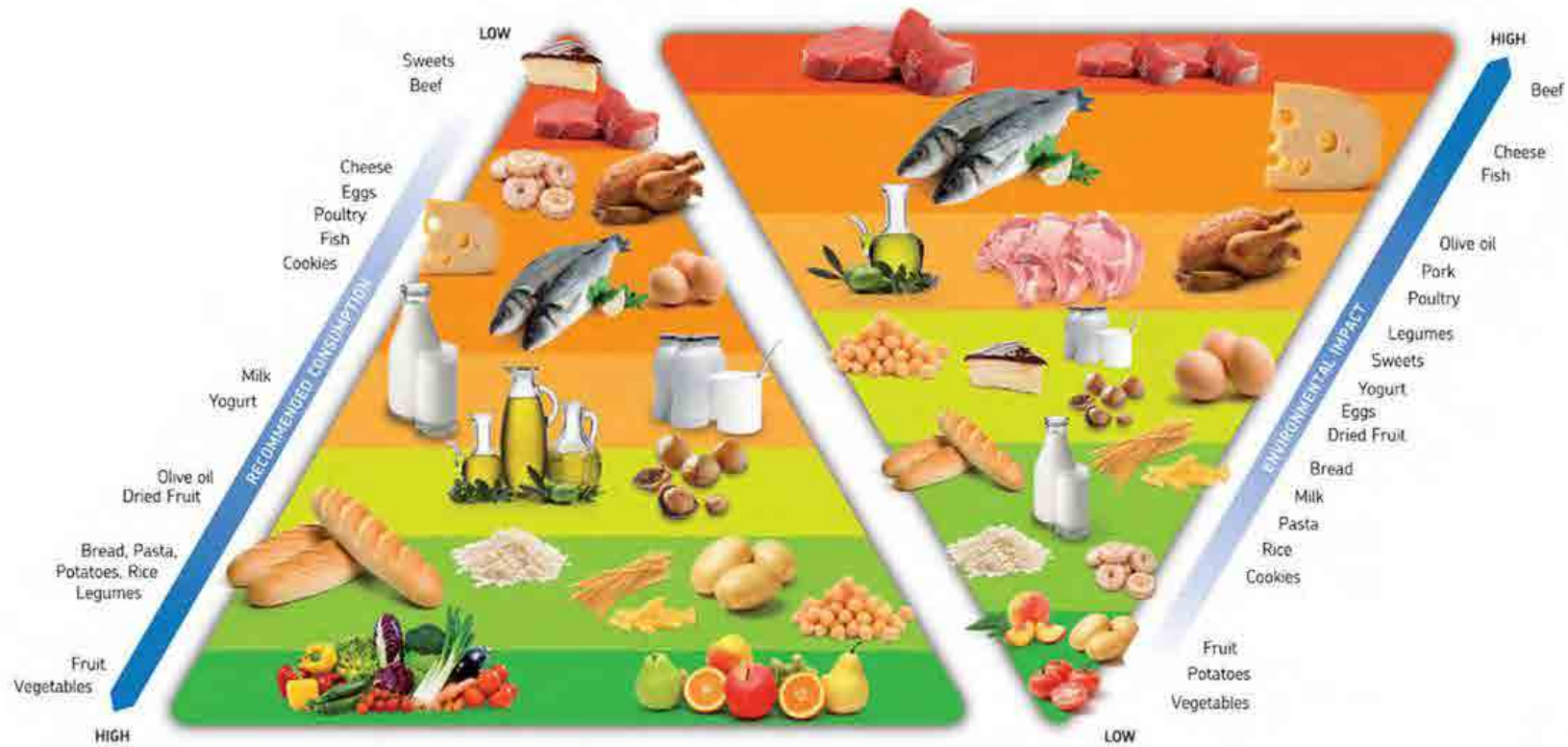
- MILK AND DAILY PRODUCTS

- COOKING FATS



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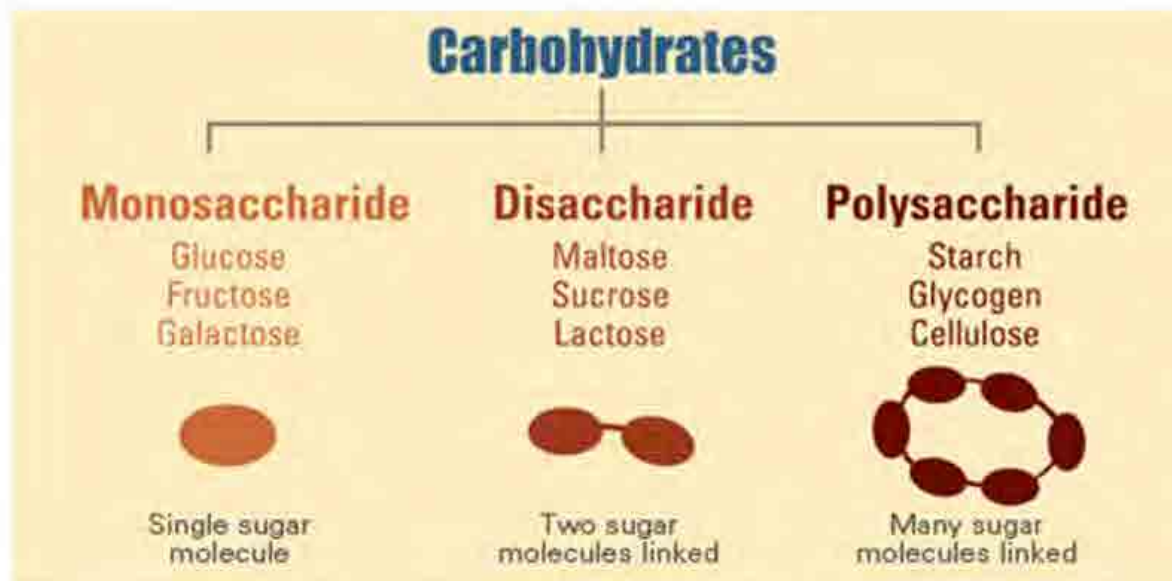
ENVIRONMENTAL PYRAMID



FOOD PYRAMID



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4 kcal/gr

FUNCTIONS

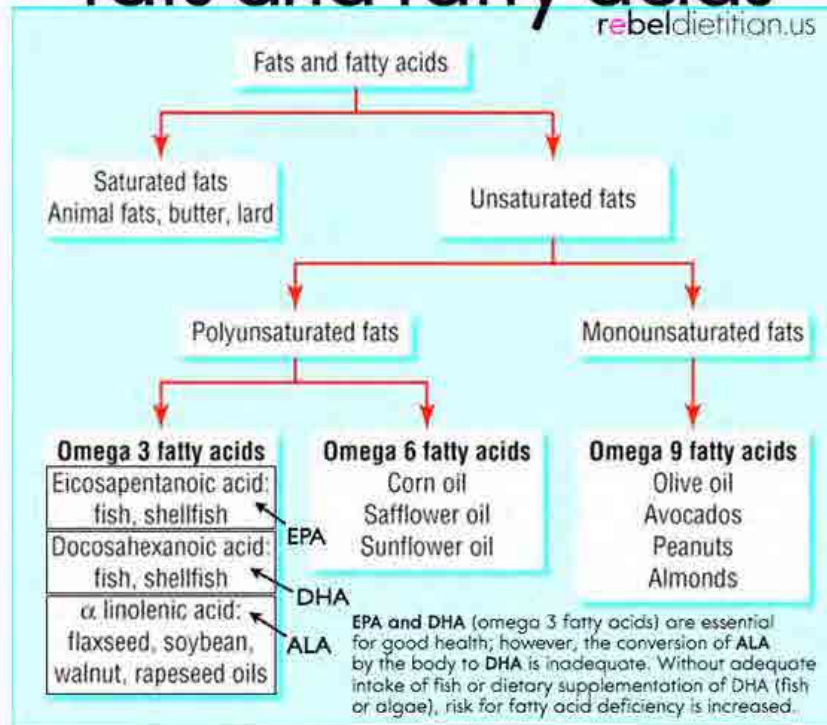
- They are the fastest and most efficient energy source (4kcal/gr)
- A carbohydrate-based diet preserves muscle mass
- Maintain blood glucose (glycogenolysis > 4 hours after a meal)

Fats, Oils, and Other Lipids

9 kcal/gr

fats and fatty acids

rebeldietitian.us



FUNCTIONS

- Saturated fat, trans fats, and cholesterol intake should be limited
- Store and provide energy (9kcal/gr)
- thermal insulation
- Play a role in transporting fat-soluble nutrients in the blood
- Chemical messenger





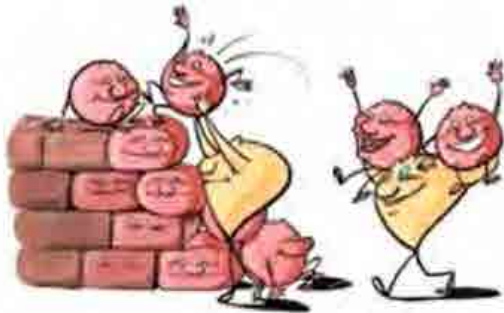
PROTEINS

4 kcal/gr

- They are formed by the union of structural elements called **amino acids**, which consist of an amino group and an acid group. The number is limited to **20**, but the possibilities of creating more are endless.
- Eight **ESSENTIAL** amino acids cannot be synthesized by the body but must be taken with the diet and are present in animal and plant foods.
- Protein sources:
 - eggs, milk, meat (animals)
 - lentils, beans, cereals, soya (vegetable)



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- They are formed by the union of structural elements called **amino acids**, which consist of an amino group and an acid group. The number is limited to **20**, but the possibilities of creating more are endless.
- **9 essential** amino acids cannot be synthesized in the body but must be taken with the diet and are present in animal and plant foods, and **11 nonessential** amino acids.
- Protein sources:
 - eggs, milk, meat (animals)
 - lentils, beans, cereals, soya (vegetable)

PROTEINS

4 kcal/gr



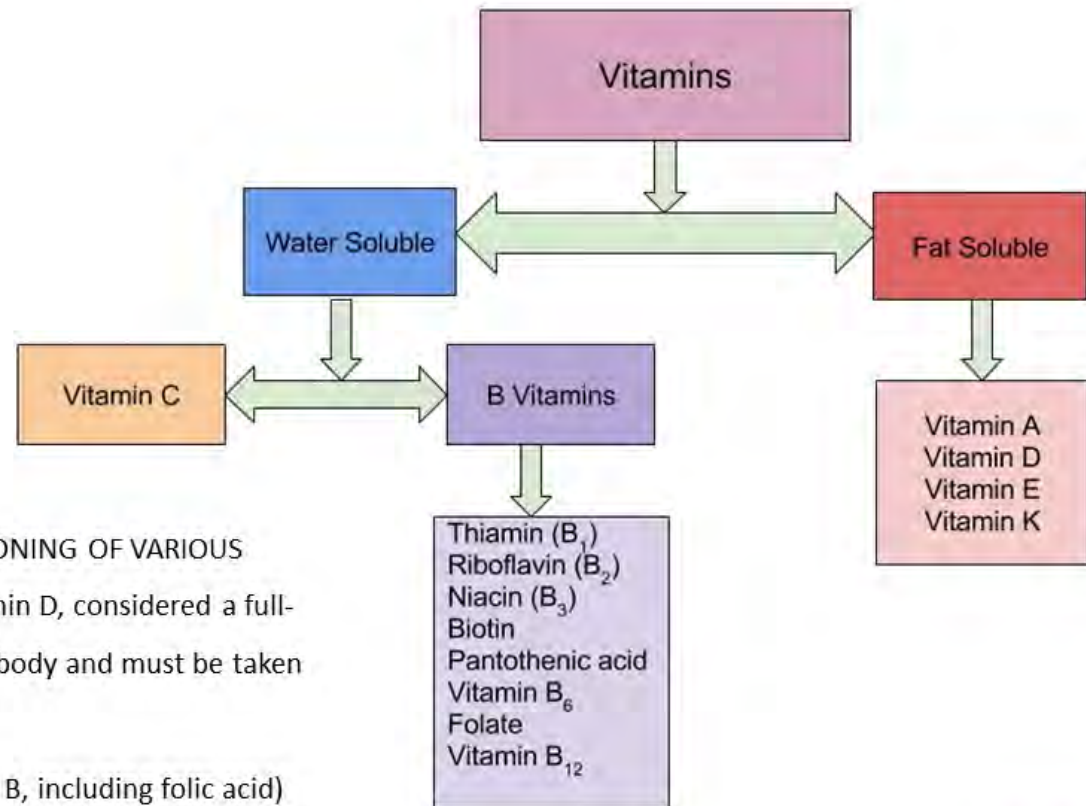
FUNCTIONS

- Structural components of cells and tissues
- Structural or support
- Immune, protective
- Transport 8haemoglobin in blood cells)
- Hormonal, anzymatic activity
- contractile



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VITAMINS



ORGANIC SUBSTANCES ESSENTIAL for the FUNCTIONING OF VARIOUS CELLULAR METABOLIC PROCESSES. Except for vitamin D, considered a full-fledged hormone, they are not synthesized by the body and must be taken with the diet.

There are 13: some water-soluble (vit. C, vit. group B, including folic acid) and other fat-soluble (vit. A, D, E, K).



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Mineral	RDA/AI		Best Sources	Functions
	Men	Women		
Calcium	1,000mg	1,000mg	Milk and milk products	Strong bones, teeth, muscle tissue; regulates heart beat, muscle action, and nerve function; blood clotting
Chromium	35ug	25ug	Corn oil, clams, whole-grain cereals, brewer's yeast	Glucose metabolism (energy); increases effectiveness of insulin
Copper	900ug	900ug	Oysters, nuts, organ meats, legumes	Formation of red blood cells; bone growth and health; works with vitamin C to form elastin
Fluoride	4mg	3mg	Fluorinated water, teas, marine fish	Stimulates bone formation; inhibits or even reverses dental caries
Iodine	150ug	150ug	Seafood, iodized salt	Component of hormone thyroxine, which controls metabolism
Iron	8mg	18mg	Meats, especially organ meats, legumes	Hemoglobin formation; improves blood quality; increases resistance to stress and disease
Magnesium	420mg	320mg	Nuts, green vegetables, whole grains	Acid/alkaline balance; important in metabolism of carbohydrates, minerals, and sugar (glucose)
Manganese	2.3mg	1.8mg	Nuts, whole grains, vegetables, fruits	Enzyme activation; carbohydrate and fat production; sex hormone production; skeletal development
Molybdenum	45ug	45ug	Legumes, grain products, nuts	Functions as a cofactor for a limited number of enzymes in humans
Phosphorus	700mg	700mg	Fish, meat, poultry, eggs, grains	Bone development; important in protein, fat, and carbohydrate utilization
Potassium	4700mg	4700mg	Lean meat, vegetables, fruits	Fluid balance; controls activity of heart muscle, nervous system, and kidneys
Selenium	55ug	55ug	Seafood, organ meats, lean meats, grains	Protects body tissues against oxidative damage from radiation, pollution, and normal metabolic processing
Zinc	11mg	8mg	Lean meats, liver, eggs, seafood, whole grains	Involved in digestion and metabolism; important in development of reproductive system; aids in healing

15

MINERALS

Inorganic nutrients, they are **ESSENTIAL** for the body's functions, constitute **4% of the body mass**, heartbeat the chemical structure of enzymes, hormones and vitamins, bind to haemoglobin (iron) and are found in bones (calcium phosphate).

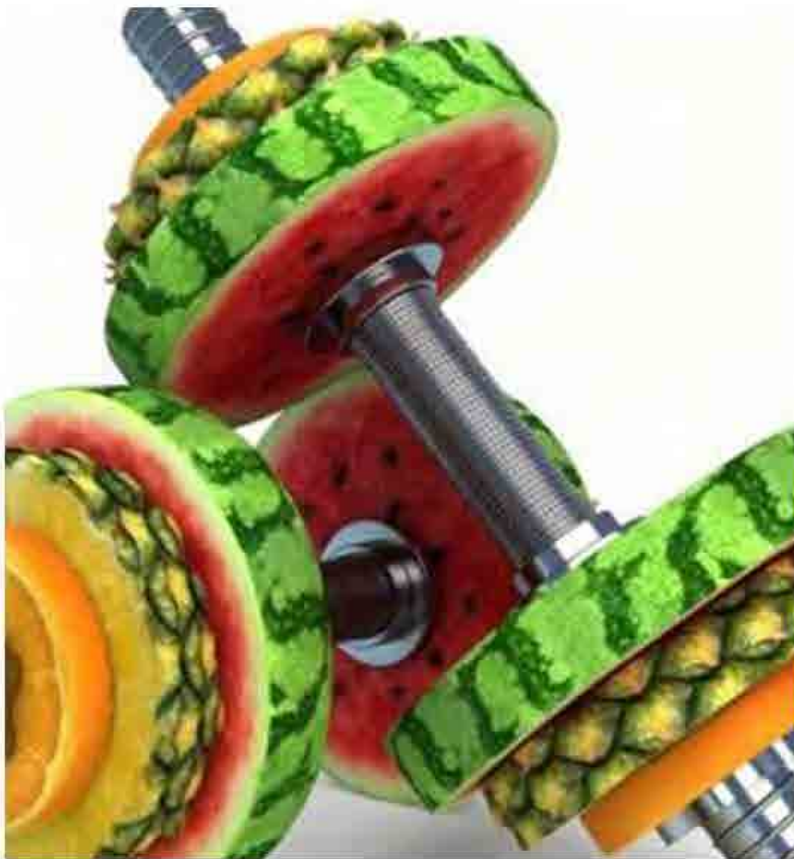
In particular environmental conditions such as the loss of mineral salts through sweating in a hot, humid and ventilated (or pressurised) environment, deficiencies may appear that require specific supplementation.

FUNCTIONS:

- Help chemical reactions take place in cells
- Help muscles contract
- Keep the heart beat



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Consuming a diet lacking in fiber, poor hydration or sedentary behavior can lead to high blood pressure, diabetes and weight gain.

Lack of antioxidants in the form of fruit and vegetables can increase oxidative stress that impairs cognitive function, delaying reaction times and causing disruption to long-term vision and cardiovascular system.

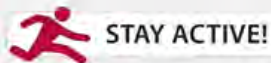
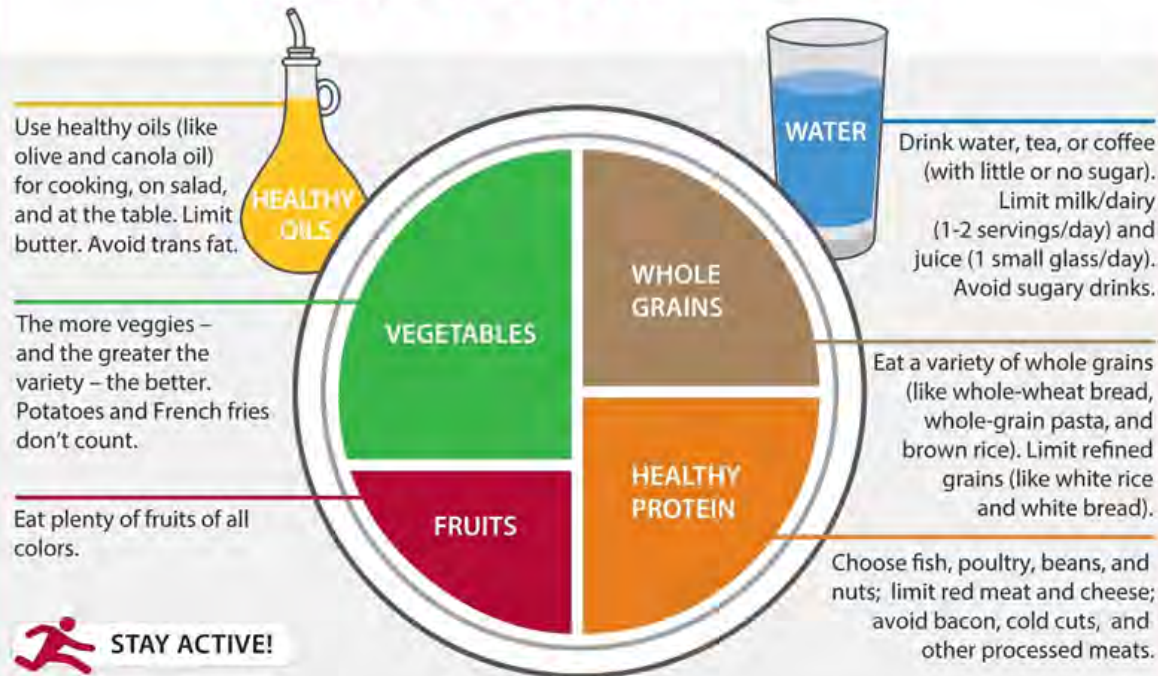


**HOW TO
COMPOSE THE
PLATE IN A
BALANCED AND
COMPLETE WAY?**



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HEALTHY EATING PLATE



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Harvard T.H. Chan School of Public Health
The Nutrition Source
www.hsph.harvard.edu/nutritionsource

Harvard Medical School
Harvard Health Publications
www.health.harvard.edu

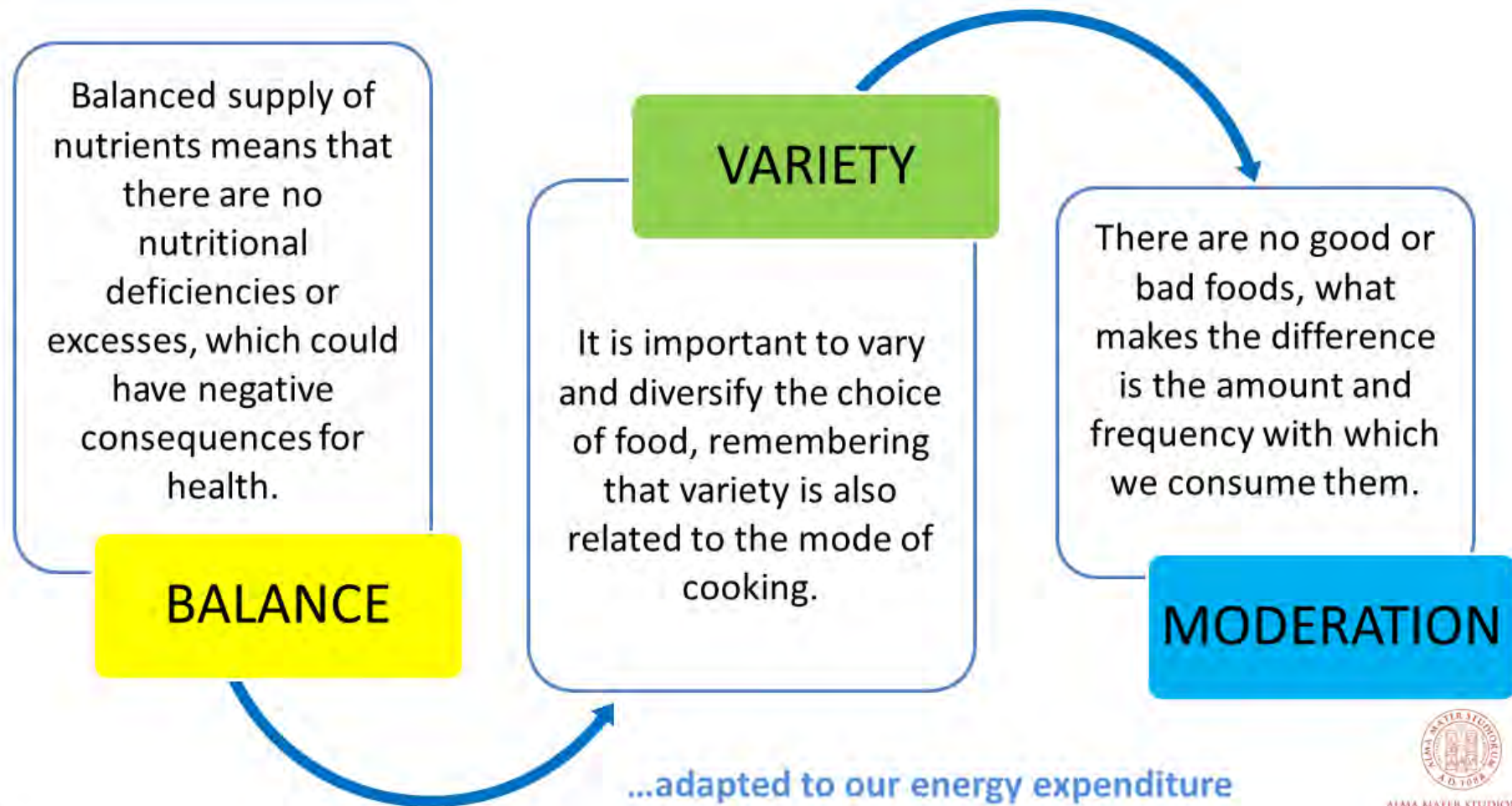


Copyright © 2011, Harvard University. For more information about The Healthy Eating Plate, please see The Nutrition Source, Department of Nutrition, Harvard T.H. Chan School of Public Health, www.thenutritionsource.org, and Harvard Health Publications, www.health.harvard.edu. (Source: <https://nutritionsource.hsph.harvard.edu/healthy-eating-plate/>)

- with a prevalence of **carbohydrates**, preferably from **fruits**, **vegetables** and **cereals**, rather than simple sugar.
- It is preferable to choose **whole grains**, not refined.
- **Proteins**, we remember are also of **plant origin** (legumes, soy and some cereals), not only animal, and constitute a **useful alternative** to the latter.



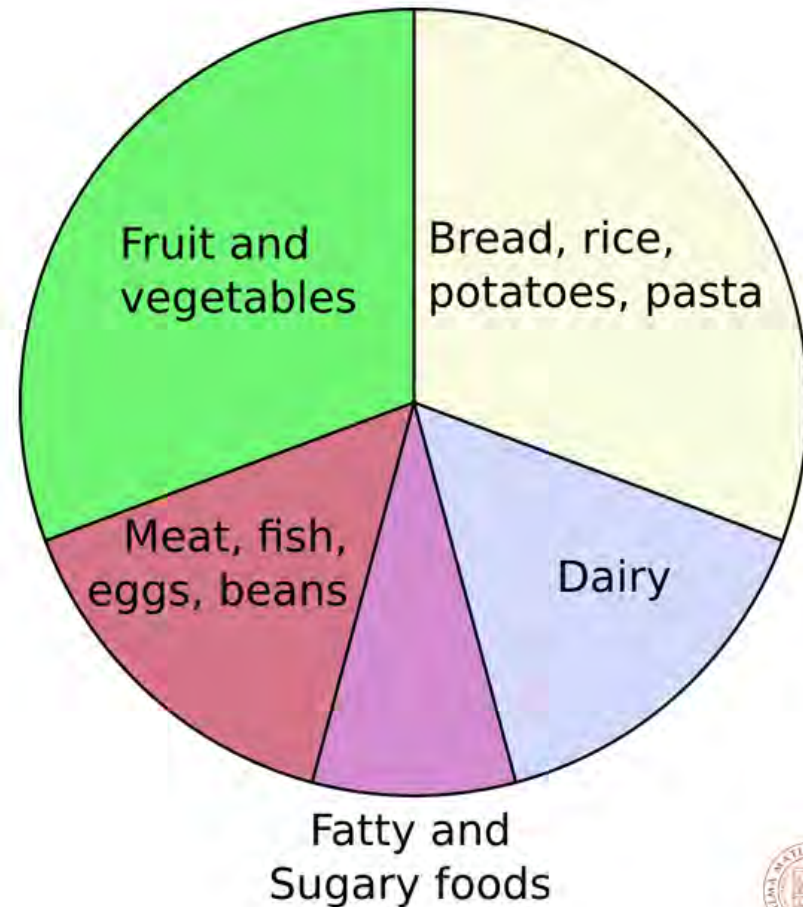
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BALANCED PLATE

- prevalence of **carbohydrates**, preferably from **fruits, vegetables** and **cereals**.
- It is preferable to choose **whole**, unrefined **cereals**.
- **Proteins** are also of **vegetable origin** (legumes, soy and some cereals), not only animal, and are a useful alternative to the latter.



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Hand Guide to Portion Control



THE HAND AS A TOOL FOR ESTIMATING PORTIONS

Sources:
<http://www.cnpp.usda.gov/Publications/DietaryGuidelines/2000/2000DGBrochureHowMuch.pdf>
<http://www.health.arkansas.gov/programsServices/chronicDisease/Nutrition/Pages/ServingSizes.aspx>

www.GuardYourHealth.com



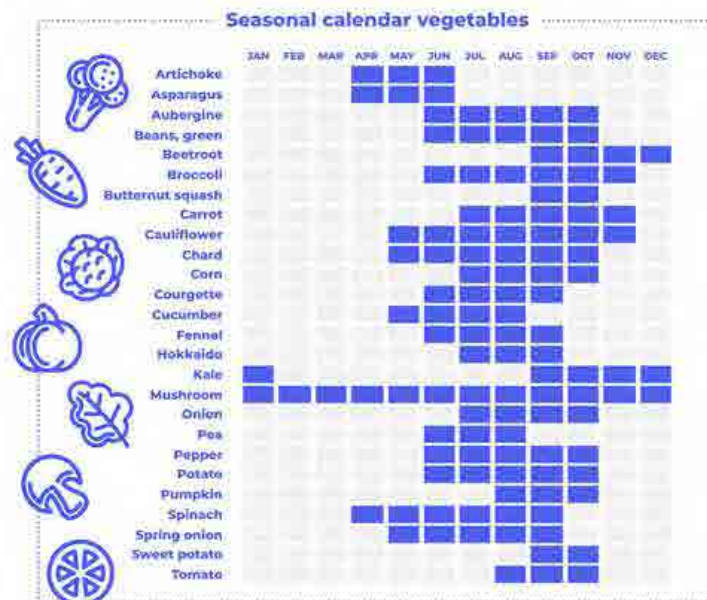
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- **Fruits and vegetables** are a **great source** of **carbohydrates**. They facilitate the intestinal flow thanks to the high percentage of **fiber** and are the **best source** of **vitamins** and **minerals**.
- *World Health Organization recommends 5 servings of fruits and vegetables per day, each with a different colour.*

EAT IN COLOR!





Eating Seasonally Chart

Summer		Fall		Winter		Spring	
Avocados	Lettuce	Apples	Lettuce	Apricots	Mushrooms	Apricots	Lettuce
Bananas	Lima Beans	Bananas	Limes	Avocados	Onions	Asparagus	Limes
Bell Peppers	Mangos	Beets	Mangos	Bananas	Oranges	Avocados	Mushrooms
Blackberries	Mushrooms	Broccoli	Mushrooms	Brussels Sprouts	Pears	Bananas	Onions
Blueberries	Okra	Brussels Sprouts	Parsnips	Celery	Potatoes	Broccoli	Pears
Cantaloupe	Peaches	Carrots	Pears	Collard Greens	Pumpkin	Cabbage	Raspberries
Celery	Pineapples	Cauliflower	Pear	Grapes	Rutabagas	Celery	Rhubarb
Cherries	Plums	Celery	Pumpkin	Kale	Sweet Potatoes	Collard Greens	Spinach
Corn	Raspberries	Cranberries	Radishes	Kiwi	Swiss Chard	Kale	Swiss Chard
Cucumbers	Strawberries	Ginger	Sweet Potatoes	Leeks	Turnips	Lemons	Lemons
Eggplant	Summer Squash	Grapes	Swiss Chard	Limes	Yams		
Garlic	Tomatillos	Green Beans	Turnips				
Grapes	Tomatoes	Kale	Winter Squash				
Green Beans	Watermelon	Lemons	Yams				
Honeydew Melon	Zucchini						
Lemons							
Lettuce							



HOW MANY MEALS PER DAY?



BREAKFAST

The first opportunity to replenish energy essential for starting the day well both physical and mental: the brain consumes only carbohydrates.

SNACKS

They are to be inserted between a meal to ensure our body the right energy at all times and not get to the main meals too hungry.

Avoid pre-packaged snacks and sugary drinks.



LUNCH AND DINNER

Together with breakfast are part of the main meals.



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LESS IS BETTER...

FOODS RICH IN SIMPLE SUGARS



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SHALL WE TALK ABOUT SUGAR?

WHAT HAPPENS ONE HOUR AFTER DRINKING A CAN OF COKE



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LESS IS MORE...

**FOODS HIGH IN
SATURATED FAT AND SALT**



	Sugars	Fat	Saturates	Salt
What is HIGH per 100g?	Over 15g	Over 20g	Over 5g	Over 1.5g
What is MEDIUM per 100g?	Between 5g and 15g	Between 3g and 20g	Between 1.5g and 5g	Between 0.3g and 1.5g
What is LOW per 100g?	5g and below	3g and below	1.5g and below	0.3g and below

Source: Food Standards Agency



Focus on Energy

Sugar
Fats
Saturated Fats
Salt

Per serving:	Energy 1046kJ 250kcal	Sugar 5g	Fat 15g	Saturates 6g	Salt 0.2g	1046kJ 250kcal	15%
% of adult's reference intake Typical values per 100g. Energy 450kJ/750kcal	15%	18%	2%	39%	19%	Sugar 5g	18%
						Fat 15g	2%
						Saturates 6g	39%
						Salt 0.2g	19%
Per 30g cereal:	Energy 1046kJ 250kcal	Sugar 5g	Fat 15g	Saturates 6g	Salt 0.2g		
The % Daily Value (DV) tells you how much a nutrient in a serving of food contributes to a daily diet. 2,000 calories a day is used for general nutrition advice.	15%	18%	2%	39%	19%		



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GODD FATS



Olive Oil



Avocado



Nuts



Salmon



Coconut

BAD FATS



Corn Oil



Beef



Margarine



Shortening



Soybean Oil

HIGH-FAT

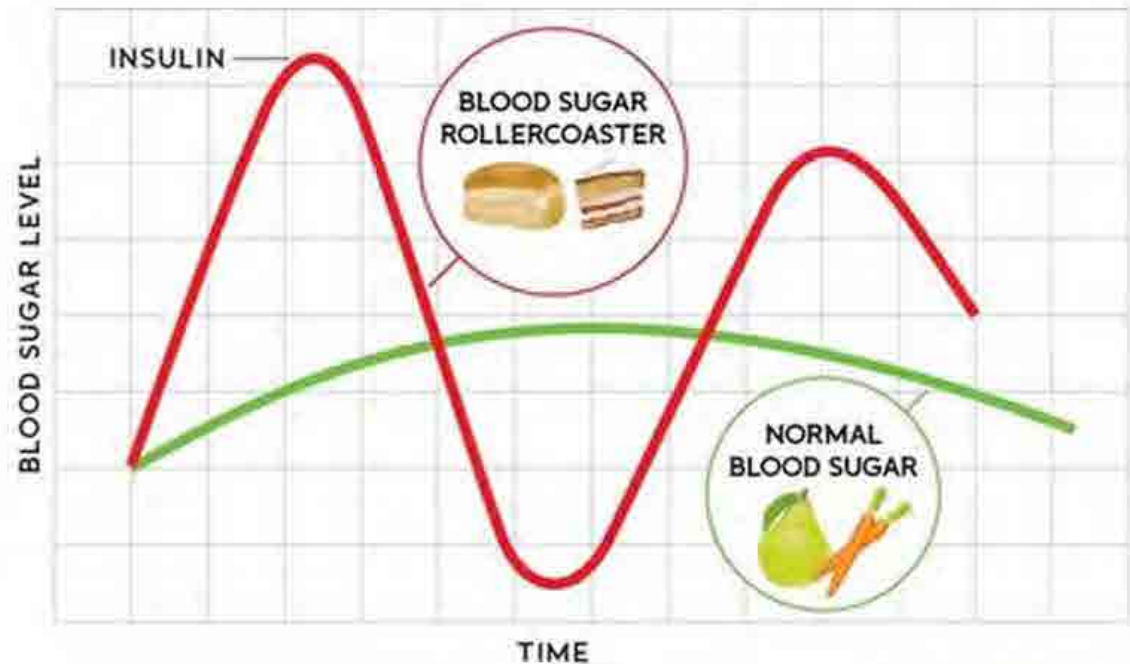
FOODS...



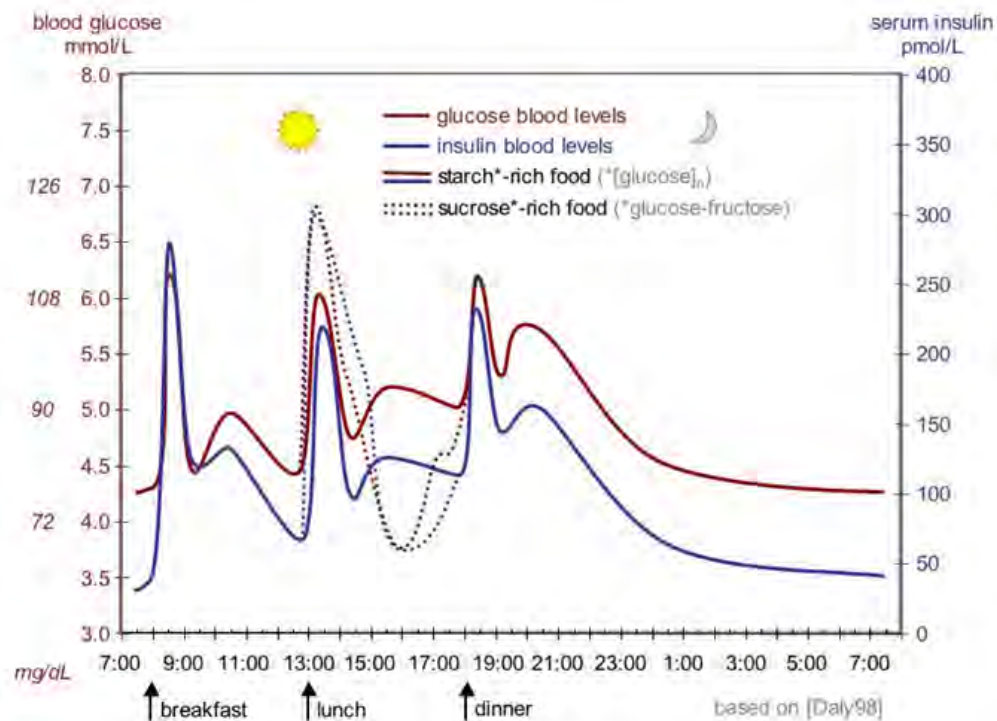
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SOME SIMPLE RULES

- **Healthy, varied, balanced diet** appropriate to personal energy expenditure.
- Variety is important to **avoid** possible nutritional **deficiencies**.
- **Balanced throughout the day:** the peaks in blood sugar following a meal exclusively glycidic stimulate the pancreas to produce **insulin** that facilitates rapid absorption of **glucose**. The person with a thicker layer of fat will develop an increased feeling of hunger between meals.



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- **GLYCEMIC LOAD** is the parameter that indicates the impact of a food on glycemia, taking into account both the quality (glycemic index) and the amount of carbohydrates present in the food; that is combines the I.G. of a food with the quantity of carbohydrates it contains, Providing a more complete indication of how a food may affect blood sugar levels.
- **PEAK BLOOD GLUCOSE** is the highest level of glucose in the blood reached after a meal.
- **INSULIN PEAK** follows the glycemic peak and is characterized by an increase in the secretion of insulin (hormone that helps to reduce blood glucose levels) from the pancreas.
- **DROP IN BLOOD SUGAR:** This refers to a rapid decrease in blood glucose levels. The most common symptoms are tremors, fatigue, sweating, palpitations, intense hunger, physical decline and mental decline.

- Our body uses GLUCOSE (one of the main sources of energy for living organisms) as fuel that, depending on the food consumed, can cause more or less rapid changes in blood sugar levels. Essential for energy metabolism, it is absorbed into the blood through the intestinal walls and distributed to tissues, where it can be used to produce energy or stored as glycogen (in the liver and muscles). The blood glucose concentration is regulated by hormones such as insulin and glucagon.
- GLYCEMIC INDEX is a value that measures the rate at which carbohydrates in foods increase blood glucose concentration (GLYCEMIA) after being consumed.



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Nutrient:	kcal per 100 gr of product
Grapes	69
Spinach	23
Peppers	31
Aubergines	25
Yogurt	59
Nuts	654
Almond	579
Quinoa	368
Farro	340
Barley	354
Cheese (feta)	264
Zucchini	17
Apples	52
Salmon	206
Tuna	144
Anchovies	131
Chicken breast	165
Beef	250
Pork	180
Calf	150
Pork sausage	250



Calories

VS

Calories



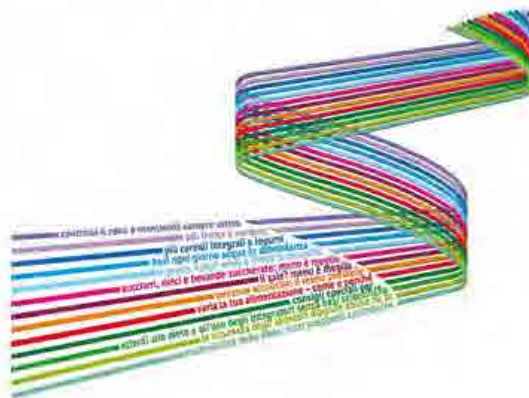
Nutrient:	kcal per 100 gr of product
Fries	536
Hamburger (fast food)	250
Pizza (fast food)	266
Milk Chocolate	535
Packaged cookies	500
Gummy Candy(bipack)	394
Salty Snacks	500
Donuts	452
Chips (packaged)	500



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Linee guida per una sana alimentazione



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In Italy, the document published by **CREA** is regularly updated with dietary advice and recommendations, the main objective is the **prevention of overeating and obesity**, which, especially in the **younger** population, shows worrying data.

It also deals with the **protection of chronic degenerative diseases**, the protection of health and longevity, social and environmental sustainability, improves quality of life.

Latest news, focus on:

- More fruits and vegetables
- Sustainable diet
- Attention to diets and use of supplements without scientific basis.

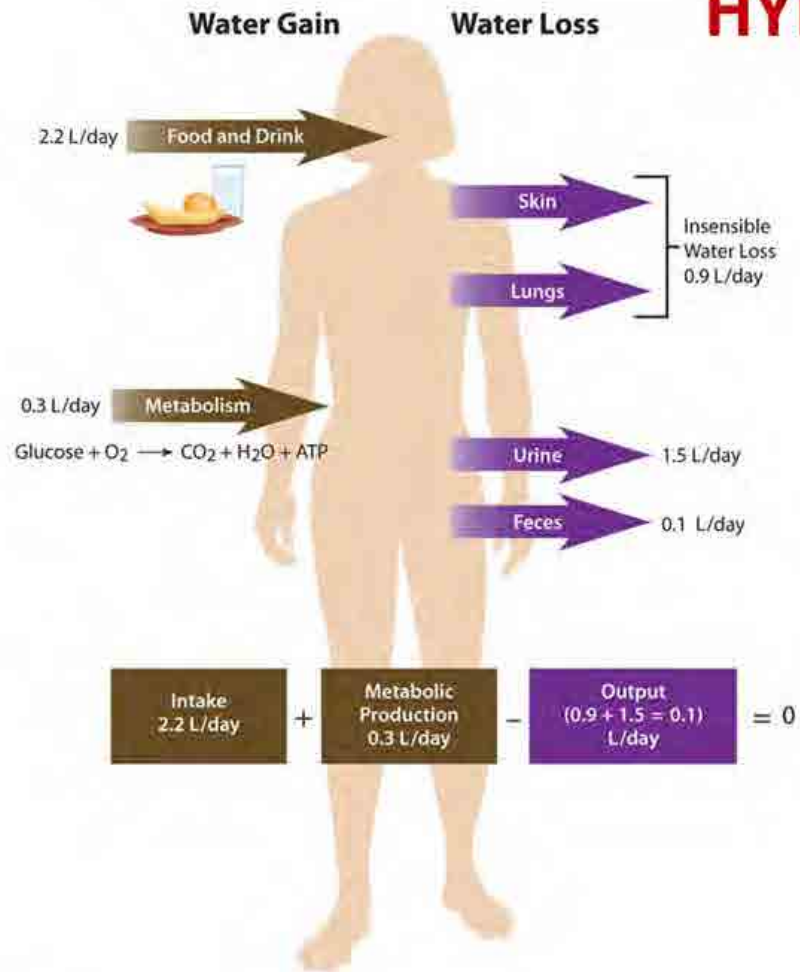


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SUGGESTED BEHAVIOUR

- Always eat plant-based foods (**fruits, vegetables and legumes**)
- **Avoid** adopting **unbalanced** and **monotonous eating patterns**, perhaps following the trends of the moment
- Be especially **careful**, especially if you are a girl, to cover your increased needs in **iron and calcium**
- Regularly consume **foods sources of calcium** (milk and yogurt, cheese, fish, plants rich in calcium)
- Make a proper **breakfast** every day
- Always prefer **water** to quench your thirst, **limiting the intake of sugary drinks**
- **Limit** the consumption of foods rich in **fat, sugar and salt**
- **Limit** your time to **sedentary activities** and do not neglect **adequate sleep**, always do **moderate-vigorous physical activity** for at least **1 hour a day** (such as walking, running, climbing stairs, etc.), adding at least **3 times a week** a **vigorous activity** that strengthens muscles and skeleton, remember that physical activity is not only sports activity and has a fundamental role for psycho-physical well-being
- **Do not use alcoholic beverages** for the serious health damage it may cause.

HYDRATION



WATER - How much you and your kids should drink each day

Nursing	              	(13 cups, 3.1 L)
Men 19+	              	(12 cups, 3.0 L)
Boys 14-18	              	(11 cups, 2.6 L)
Pregnant	              	(10 cups, 2.4 L)
Women 19+	              	(9 cups, 2.2 L)
Girls 14-18	              	(8 cups, 1.9 L)
Boys 9-13	              	(8 cups, 1.9 L)
Girls 9-13	              	(7 cups, 1.7 L)
Children 4-8	              	(6 cups, 1.4 L)
Toddlers 1-3	              	(4.5 cups, 1.0 L)

Based on Total Water Adequate intake, as set by the Institute of Medicine "Dietary Reference Intakes for Water, Potassium, Sodium, Chloride and Sulfate", Washington DC, The National Academies Press, 2005



Our body is composed of more than **70% water**, that's why you have to drink to keep it hydrated, efficient and healthy: **at least 2 liters of water** a day, remembering to drink little and frequently.



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HYDRATION



THE INVERTED PYRAMID OF HEALTHY HYDRATION



The physiological need to drink water during various daily activities should be taken into account:

- prefer non-carbonated drinks
- drink cold but not cold
- Drink regularly before and during sport

Hydration and sport: the water losses suffered by evaporation of sweat during physical activity should not be overlooked. Weighing without clothes before and after the activity allows you to calculate how much fluid must be refilled at the end of the exercise.



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How dehydrated are you?

A quick way to test how well
you're hydrated is to check
the colour of your urine.



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WATCH THE LABELS

HOW TO READ A FOOD LABEL

If living with high cholesterol, pay close attention to the fat, sugar, and calorie lines.

SERVING INFORMATION

Servings in entire package, and the size of each serving

TOTAL FAT

The amount of saturated (bad) and unsaturated (good) fat that is in one serving

NUTRIENTS

Key nutrients in one serving of the food

Nutrition Facts	
8 servings per container	
Serving Size	10 pieces (60g)
Amount per serving	
Calories	220
% Daily Value*	
Total Fat 50g	4%
Saturated Fat 0.5g	4%
Trans Fat 0g	
Cholesterol 5mg	2%
Sodium 270mg	12%
Total Carbohydrate 41g	15%
Dietary Fiber 4g	14%
Total Sugars 2g	
Includes 0g Added Sugars	0%
Protein 2g	
Vitamin D 0.3mcg	0%
Calcium 40mg	2%
Iron 15mg	8%
Potassium 170mg	2%

CALORIES

The amount of energy you get from one serving

% DAILY VALUE

The amount a nutrient contributes to your total daily diet based on a 2,000 calorie a day diet.

TOTAL SUGARS + ADDED SUGARS

The amount of sugar that is in a product naturally and how much is added.

MEDICALNEWSToday

What's on a food label?

Date Marking

This is the 'Use By', 'Sell By' and 'Best Use Before' date. It gives the date by which the food should be eaten.

Product Name

Usually beside the brand name. Tells you what the food is.

Net Weight

This gives the actual weight of the food excluding the packaging. For canned foods packed in liquid, the net weight is the weight of the drained food.

USE BY



Ingredient List

This shows all the ingredients that make up the product. The ingredients are listed in descending order by weight.

Nutrition Information

This panel shows the nutrients found in one serving or in 100 g / 100 ml of the food.

Usage Instructions

These are instructions for storing or using the product.

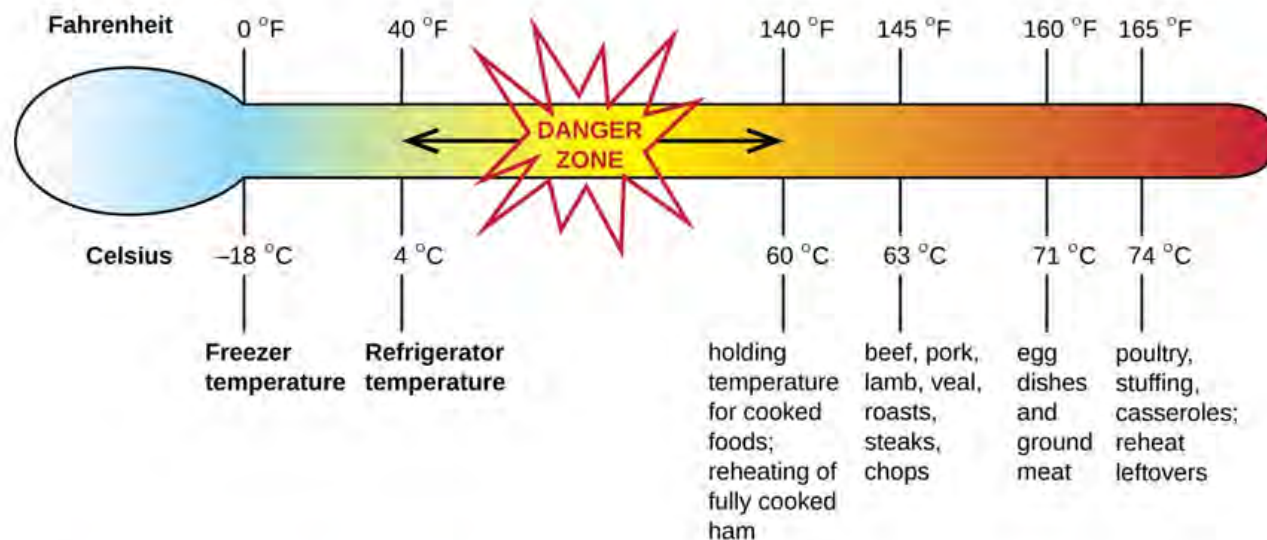
Manufacturer's Details

Every label includes the name and address of the manufacturer, importer or distributor.

2



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- Be careful with the **expiration date** on the **labels**!
- At each food its own temperature:
- Do **not store hot** products
- Avoid contaminating cooked foods with raw foods)
- **Do not over-fill**
- The fridge should be **cleaned** periodically
- The rules of "**first in, first out**" apply: the first one who enters is the first one who leaves.
- The freezer also has its own rules, especially regarding to **storage times** at a temperature of **-18°**.

Learning to read food labels is essential to make informed and healthy choices.

- 1. Sales name:** product description
- 2. List of ingredients:** in descending order of weight. Avoid those that contain many additives and preservatives.
- 3. Nutritional Values:** provides information about energy (expressed in kcal-kilocalories and kJ kilojoules), fats (including saturated fats), carbohydrates (including sugars), proteins and salt.
- 4. Portion:** supplied per 100 grams or millilitres per portion
- 5. Expiry date:** until the product is safe to consume (may be expressed as «to be consumed within» (for perishable products) or «to be consumed preferably within» (for less perishable products»)
- 6. Storage Method:** indications for how to store the product and keep it fresh and safe to consume.
- 7. Origin of the product:** indicates where it was produced or packaged. (Useful to buy local products)
- 8. Allergens:** must be clearly indicated, often in bold or different colours, for those with food allergies.
- 9. Additives and preservatives:** often indicated by a code (e.g. E100, E200)
- 10. Production batch:** useful in case of product recalls for food safety reasons.



Pantry's pics (breakfast shelf)



Summarizing...

**PILLARS FOR A
HEALTHY
LIFESTYLE :**



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WHAT'S ON TODAY'S LESSON PLAN?



- ☐ EXPLORING THE FRIDGE...
- ☐ PHYSICAL ACTIVITY
- ☐ INTENSITY, FREQUENCY AND BENEFITS
- ☐ BODY COMPOSITION
- ☐ BODY MASS INDEX
- ☐ SLEEP
- ☐ DIABETES
- ☐ WHAT ABOUT THE SUPERMARKET RECEIPTS



EXPLORING THE FRIDGE...





FRIDGE DOOR

Condiments such as ketchup, mayonnaise, salad dressings, jams, pickles and chutneys. They contain preservatives and can cope with the changes in temperature. Store water, juice and wine here too.



TOP SHELF

Cheese, yoghurt and dips such as houmous

MIDDLE SHELVES

Cooked meats, butter, milk, leftovers, fruit, ready meals

BOTTOM SHELVES

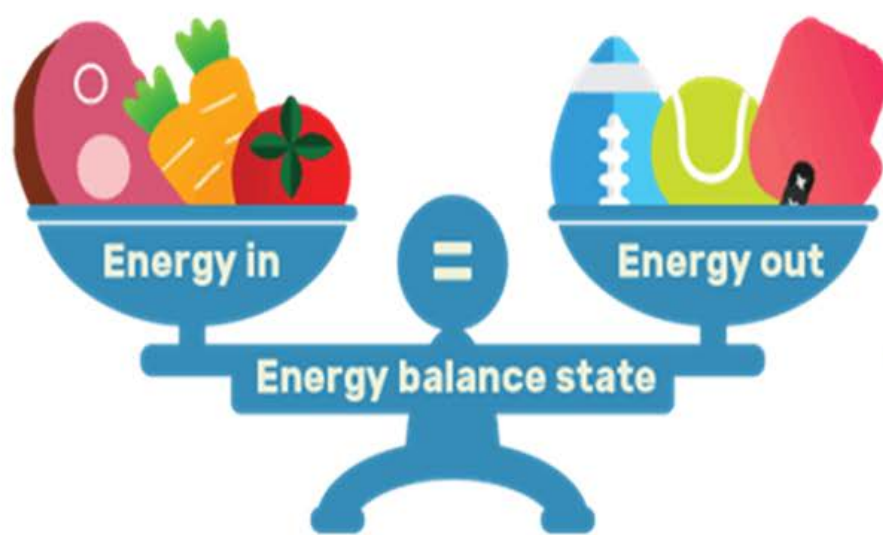
Raw meat, poultry, fish

FRUIT AND VEG DRAWERS

Store fruit and veg in separate drawers if possible



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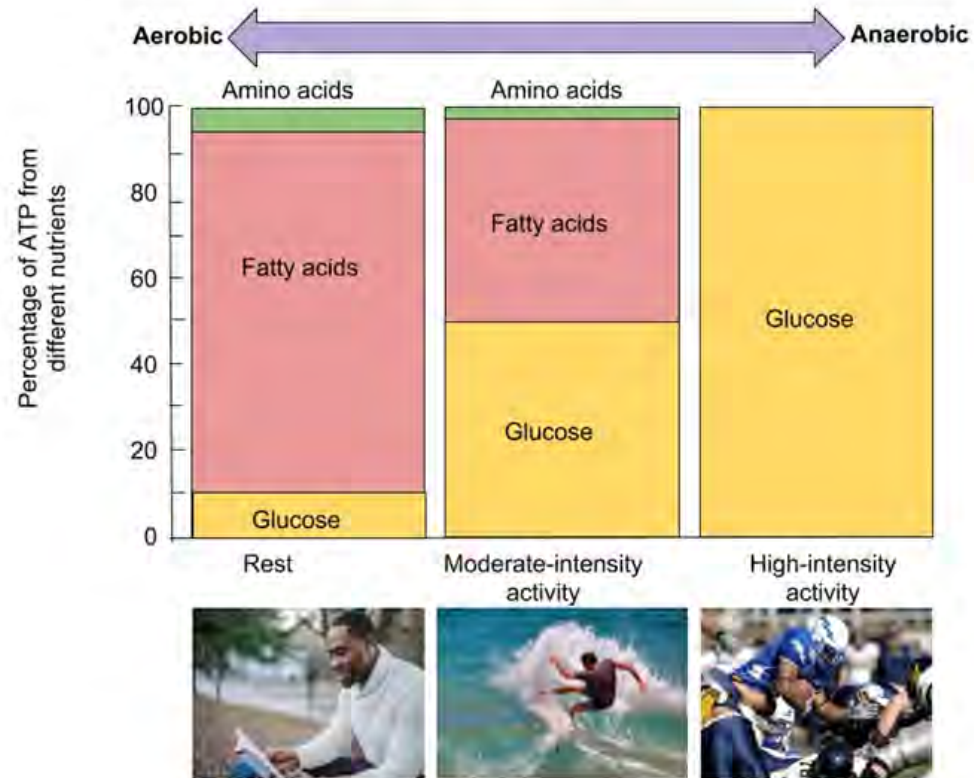


PHYSICAL ACTIVITY AND ENERGY BALANCE

HOW WE PRODUCE ENERGY...

1. **Nutrition** - It all starts with the food we eat. Foods contain nutrients such as carbohydrates, proteins and fats, which are the main sources of energy.
2. **Digestion** - During digestion, food is broken down into smaller molecules, carbohydrates are converted into glucose, proteins into amino acids and fats into fatty acids and glycerol.
3. **Absorption** - These smaller molecules are absorbed into the blood through the intestine and transported to the cells of the body.
4. **Metabolism** - within cells, glucose is used in the process called cellular respiration. This process takes place in the mitochondria, the "power plants" of cells, where glucose is combined with oxygen to produce energy in the form of a molecule called ATP (adenosine triphosphate).

HOW WE CONSUME ENERGY...



- 1. Physical Activity:** When we exercise, the muscles use ATP to contract and produce movement. The more intense the activity, the more energy is consumed.
- 2. Vital Functions:** Even at rest, our body consumes energy to maintain vital functions such as breathing, blood circulation, digestion and body temperature regulation.
- 3. Growth and Repair:** Energy is also needed for tissue growth and repair. For example, when we are injured, the body uses energy to heal the wound.



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NUTRITION AND FITNESS

Energy expenditure: is obtained by measuring the oxygen consumption of a subject.

Basal metabolism: the minimum level of energy expenditure necessary to maintain vital functions and wakefulness.

Influence of physical activity: for each decade of life there is a **reduction** of about **3%** in the basal metabolism. Aerobic resistance and muscle building activity can counteract the decrease in basal metabolism and aging.

Intensity levels: intensity and duration define the degree of heaviness of a specific physical work.

- **RPA Rate of Perceived Exertion** - Borg scale
- **MET Metabolic Equivalent Task** as a multiple of resting energy consumption
- **Vo2Max** or the maximum oxygen consumption that a human being can use in the unit of time for muscle contraction.

In the 15-50 age group, average daily consumption for males is around 2800 kcal, while for females it is 2100 kcal.



Sedentary behaviour

Waking state in which one is sitting or reclining with low energy expenditure ($< 1,5$ MET)

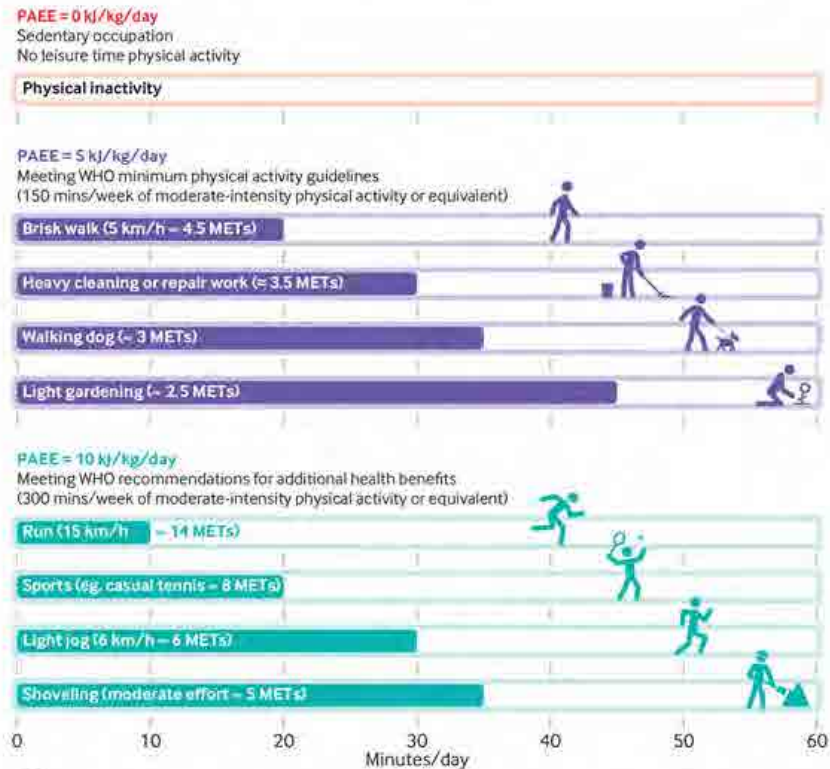
Physical activity is any movement of the body produced by skeletal muscles that involves energy expenditure

The WHO defines exercise as any movement of the body produced by muscles and requiring energy expenditure. It is a «subcategory» of physical activity, which is planned, structured and repetitive and has the objective to improve or maintain one or more aspects of physical fitness.

Physical inactivity

Those who do not reach the WHO-established levels of physical activity. 4° global mortality risk factor

HOW DO WE MISURE PHYSICAL EFFORT?



#	Level of Perceived Exertion Scale		
	Original RPE Scale		Revised RPE Scale
6	No exertion	0	Nothing at all
7	Very, very light	0.5	Very, very weak
8		1	
9	Very light	2	Very weak
10		3	
11	Light	4	Somewhat strong
12		5	Strong
13	Somewhat hard	6	
14		7	Very strong
15	Hard (heavy)	8	
16		9	
17	Very hard	10	Very, very strong
18			
19	Extremely hard		
20	Maximal		



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EVERY MOVE COUNTS

Being active has significant health benefits for hearts, bodies and minds, whether you're walking, wheeling or cycling, dancing, doing sport or playing with your kids.



WHO guidelines on physical activity and sedentary behaviour (2020)

For more information, visit: www.who.int/health-topics/physical-activity



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BMI Body Mass Index

It is a parameter that allows to obtain a GENERIC estimate of one's body composition by relating the weight and the height. You calculate by dividing your weight in kg by the square of your height in metres.

Formula for body mass index (BMI):

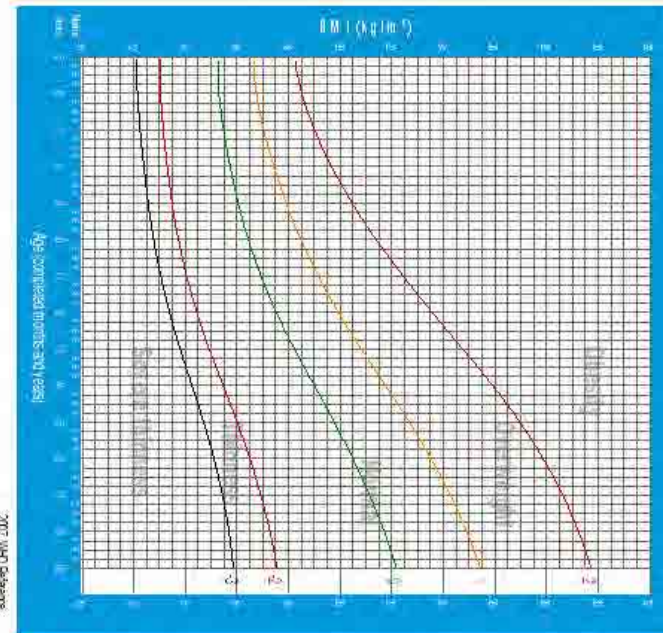
$$BMI = \frac{weight}{height^2}$$

Write a Python Program that asks the user for weight and height and then displays **weight class** based on BMI (use the table below for this).

BMI	Weight class
below 18.5	underweight
18.5 - 24.9	normal
25.0 - 29.9	overweight
30.0 and up	Very overweight

BMI-for-age BOYS

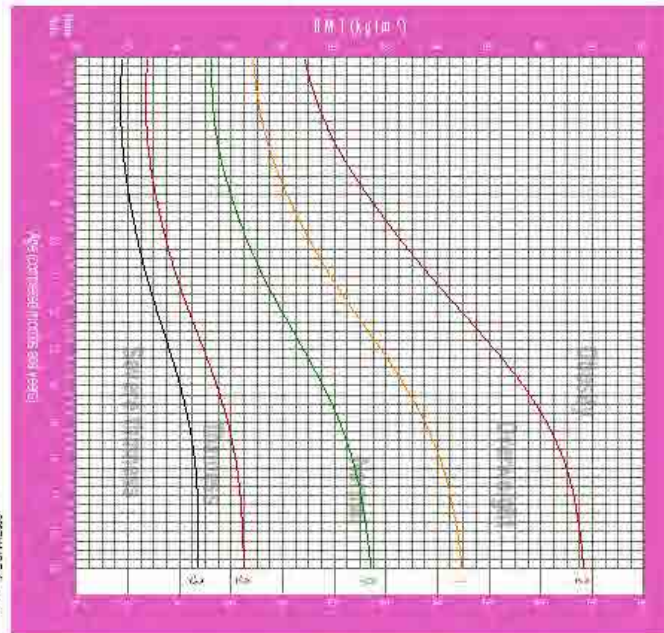
5 to 19 years (z-scores)



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BMI-for-age GIRLS

5 to 19 years (z-scores)



PERCENTILES MEASURE GROWTH PARAMETERS

HOW DO WE CONSUME ENERGY WHEN WE DO SPORTS?

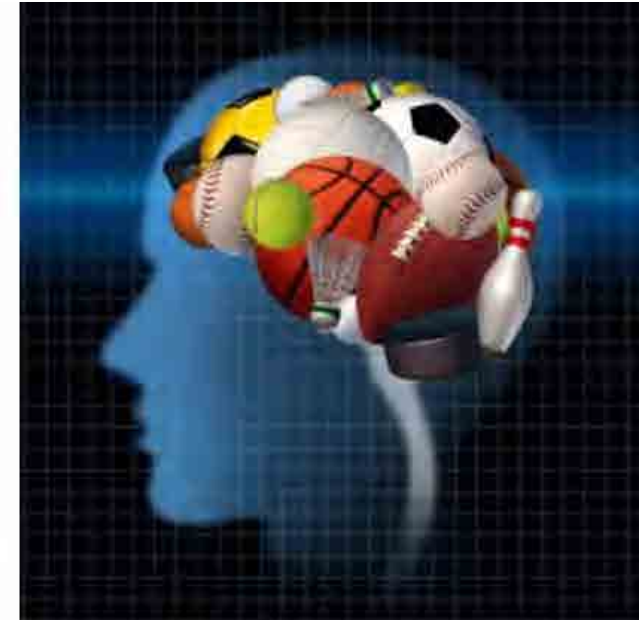
Activities	Calories Consumption
Brisk walking (5-6 km/h)	200-300 kcal
Running (8 km/h)	750 kcal
Cycling (16-19 km/h)	300-450 kcal
Swimming (stile libero)	400-600 kcal
Basketball	600 kcal
Volleyball	360 kcal
Soccer	400 kcal
Dance (moderate intensity)	200-400 kcal
Skating	600-700 kcal
Tennis	400 kcal
Ropping	500-700 kcal

Approximate values that may vary according to intensity and body weight.

AFMA RESEARCH STUDIOS
UNIVERSITY OF BOHIOGA
CAMPUS OF BOHIOGA

WHY IS IT GOOD TO MOVE?

- Essential for the smooth functioning of joints
- It improves:
 - blood circulation and oxygen
 - ...do you know how to measure heart rate?
- the lung capacity
 - ...you know how to measure the breathing rate?
- digestion (better not to do intense activity after eating)
- the body's defenses
- the ability to concentrate



Increases **cognitive functions**

Allows greater control over **emotions**

Improves learning and memorization

at muscle level, strength, trophism and elasticity are acquired



IMPORTANCE OF SLEEP

HOURS OF SLEEP:

School age (6-13 years): 9-11 hours

Teenagers (14-17 years): 8-10 hours

BENEFITS:

Recovery and conservation of energy

Improves attention, learning and memory

Regulates mood

Improves physical health



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Physical activity has many benefits

- the **cardiovascular system** is better controlled for blood pressure, arrhythmias and reduction of major cardio and cerebrovascular events
- **Metabolic control** of lipid profile is improved
- Improves the **osteo-articular** function
- Improves **general well-being** and **quality of life** through the alleviation of depression and anxiety, and **increased self-esteem and socialization**
- Physical activity influence positively the **body composition**, inducing a reduction of fat mass and a maintenance/increase of lean. Both aerobic exercise (weight loss) and resistance exercise (muscle mass gain) play a key role in reducing weight.

We should give preference to activities such as water exercises, gymnastics on the ground, cycling (it is not advisable to run to not overload the locomotor system).

It is advisable to divide physical activity throughout the day, this allows you to reduce sedentary levels, adopt a more active lifestyle and break down some barriers.

The performance of any type of physical activity must be evaluated by the specialist, through the collaboration of several health professionals.

SOME DATA...

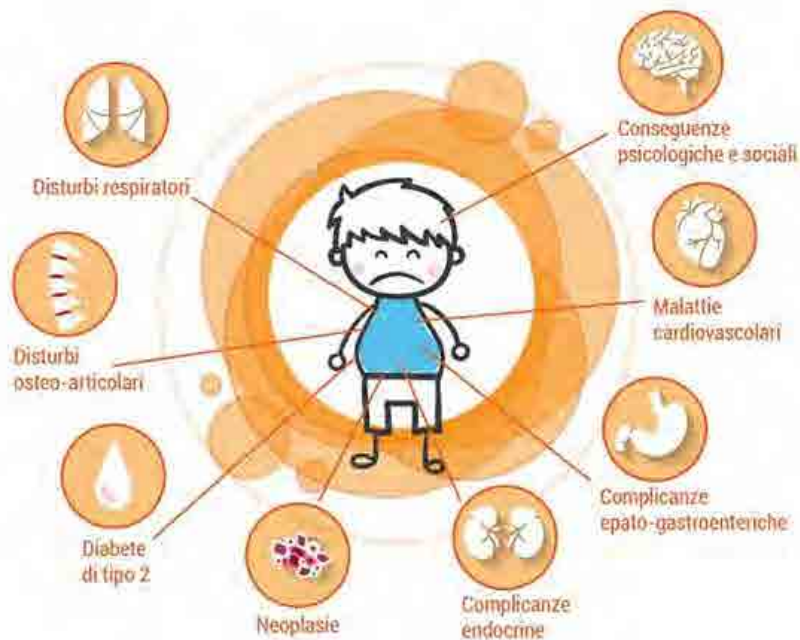
- Globally, it is estimated that 20% of the population is obese
- 61% of deaths in 2001 were caused by chronic non-communicable diseases, in 2019 the percentage rose to 74%
- In Europe 1 adult out of 3 does not meet physical activity levels
- By 2050 there will be an estimated 11.5 million new cases of MCNT (including 1 million diabetes cases) with an average annual cost to the European Union member states of 0.6% of the health budget
- Obese children and adolescents are 1.4 times more likely to have prediabetes, 1.7 times more likely to have asthma and 4.4 times more likely to have high blood pressure.

In Italy:

- cost of overweight equals 9% of health expenditure and reduces GDP by 2.8%
- 25 million people are overweight (more than 46%)
- 26.3% are children and adolescents between 3 and 17 years (2,200,000)
- Physical activity level among lowest in Europe



OBESITY



- There is a strong correlation between body mass index and mortality risk.
- Obesity is defined by the WHO as a real disease because it can be a powerful risk factor for the appearance of chronic, cardiovascular and cancer diseases, as well as a cost to society.
- Growing phenomenon: it is one of the main public health problems in the world, constantly increasing.
- According to the WHO, since 1980 the prevalence of obesity among young people has doubled.
- It is estimated that 44% of type 2 diabetes cases, 23% of ischaemic heart disease cases and up to 41% of some cancers are attributable to obesity or overweight: represents the **FIFTH MOST IMPORTANT RISK FACTOR FOR OVERALL MORTALITY** with a total of at least 2,8 million deaths worldwide per year.



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DIABETES

WHAT IT IS?

SYMPTOMS

CAUSES

TREATMENTS

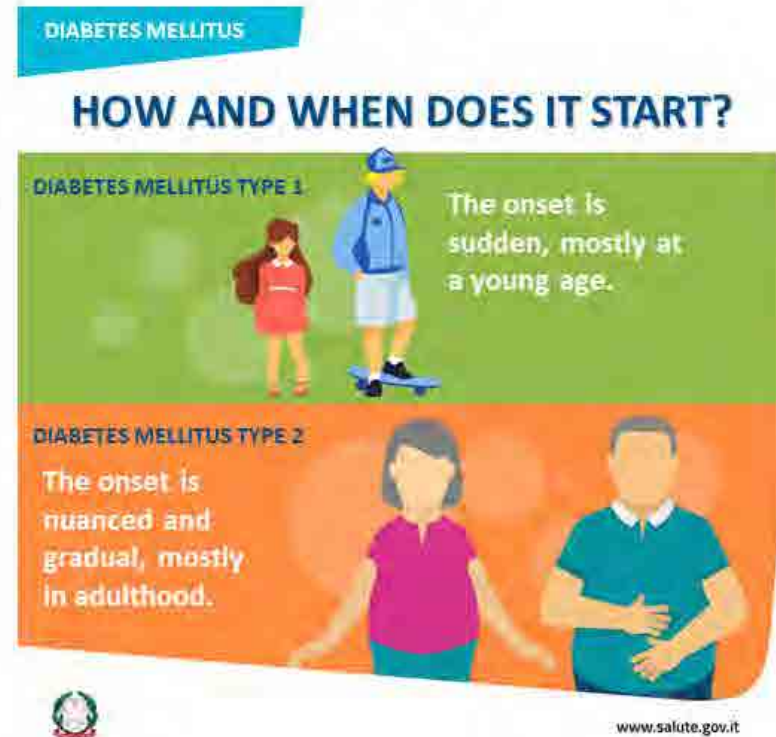
PREVENTION



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Type 2 diabetes is a chronic non-communicable disease, sometimes called «adult diabetes» because it is usually diagnosed after the age of 40, but this figure has a constant downward trend. According to the Italian Society of Diabetology in Italy are 3 million people diagnosed with diabetes, while it is estimated that at least 1.5 million suffer unknowingly.

90-95% with type 2 diabetes.



<https://www.diabete.com/il-diabete-di-tipo-2-in-crescita-tra-adolescenti-e-giovani-adulti/>

** Source: Italian Ministry of Health website*



Diabetes (mellitus, derived from Latin and meaning 'sweet') is a chronic disease characterised by the presence of higher-than-normal blood sugar (glucose) levels (hyperglycaemia) due to deficient or inadequate insulin production or poor tissue capacity to utilise insulin (type 2 diabetes).

DIABETES MELLITUS

WHAT CAUSES IT?

DIABETES MELLITUS TYPE 1

The cause is an autoimmune reaction in predisposed individuals.



DIABETES MELLITUS TYPE 2 !

The causes are family history, overweight and obesity, poor diet and sedentary lifestyle, harmful alcohol consumption and smoking.



www.salute.gov.it



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- Feeling of tiredness
- Frequent need to urinate even at night
- Unusual thirst
- Sudden and unmotivated weight loss
- Blurred vision
- Slow healing in wounds

DIABETES MELLITUS

WHAT ARE THE FIRST SYMPTOMS?

DIABETES MELLITUS TYPE 1

The initial symptoms are immediately obvious:

intense thirst, frequent need to urinate, rapid weight loss, tiredness and drowsiness to the point of unconsciousness.



DIABETES MELLITUS TYPE 2

The symptoms, initially, are not very evident. Then, intense thirst and frequent urge to urinate, increased appetite, feeling of fatigue and blurred vision arise ...

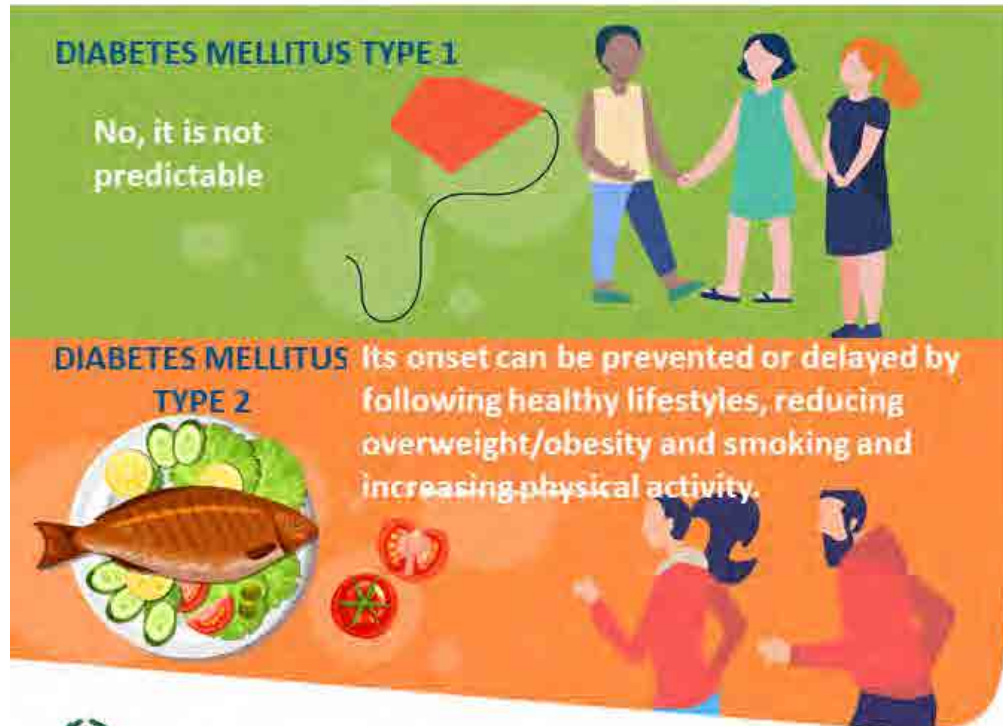


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CAN IT BE PREVENTED?



www.salute.gov.it

CAUSES

increasing age accompanied by sedentariness positively influences the occurrence of the disease; obese people are ten times more likely to develop diabetes than normal-weight people.

RISK FACTORS:

- First-degree relatives with type 2 diabetes
- Suboptimal blood glucose or glycated haemoglobin
- Previous gestational diabetes
- Excess body weight
- Sedentary lifestyle
- Overfeeding
- Cigarette smoking
- Hypertension
- Low HDL cholesterol
- High triglycerides
- High uricemia or gout



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THERAPIES

no insulin therapy is provided (it may be necessary to take blood glucose-lowering drugs), but special attention is paid to diet, control of the ratio of lean mass to fat mass, and constant physical activity, which allows blood glucose values to be optimally controlled.

ROLE OF PHYSICAL ACTIVITY

Of fundamental importance for prevention and treatment, low-intensity exercises such as brisk walking, cycling, Nordic walking, free exercise and swimming are preferable, as they are considered aerobic activities and because they involve most muscle groups.

DIABETES MELLITUS

HOW IS IT TREATED?

DIABETES MELLITUS TYPE 1

Therapy is only pharmacological with insulin from the beginning.



DIABETES MELLITUS TYPE 2

Therapy is based on the correction of unhealthy lifestyles and the possible administration of oral anti-diabetics.



www.salute.gov.it



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DIABETES MELLITUS AND PHYSICAL ACTIVITY

Physical activity in the diabetic person has numerous benefits:

- better control of blood pressure and arrhythmias
- better body weight control and weight loss (especially in overweight or obese patients)
- on a metabolic level, it improves the glycaemic and lipid profile
- improves/preserves osteo-articular function by increasing muscle strength and endurance
- aerobic and strength physical activities are important for both the prevention and treatment of diabetes and their combination increases the benefits
- constant blood glucose monitoring is the first precaution to be taken in the diabetic individual who engages in physical activity
- physical activity should be carried out daily if possible, avoiding two consecutive days of inactivity.





- Walking for at least 30 minutes a day (individually or in groups) reduces the risk of developing diabetes in individuals with metabolic syndrome
- Regularly interrupting (e.g. every 20-30 minutes) the time spent sitting and/or reclining
- Adult patients with good glycaemic control can safely engage in many activities (of moderate to vigorous intensity), including various types of sport after appropriate medical assessment
- Elderly people should perform exercises adapted in type and intensity to conditions and objective limitations.

from «The new Guidelines for Teaching Civic Education»
(from the 2024-2025 school year)

1. *Italian Constitution*

The Italian Republic recognizes the educational, social and promotion value of the psycho-physical well being of sports activities in all its forms. (Italian Constitution art. 33 paragraph 7)

2. *Economic development and sustainability*

«Always in the perspective of protecting health and collective and individual well-being are inserted in civic education both food education for the realization of the correct relationship between nutrition, sports activities and psycho-physical well-being,»

3. *Digital Citizenship*

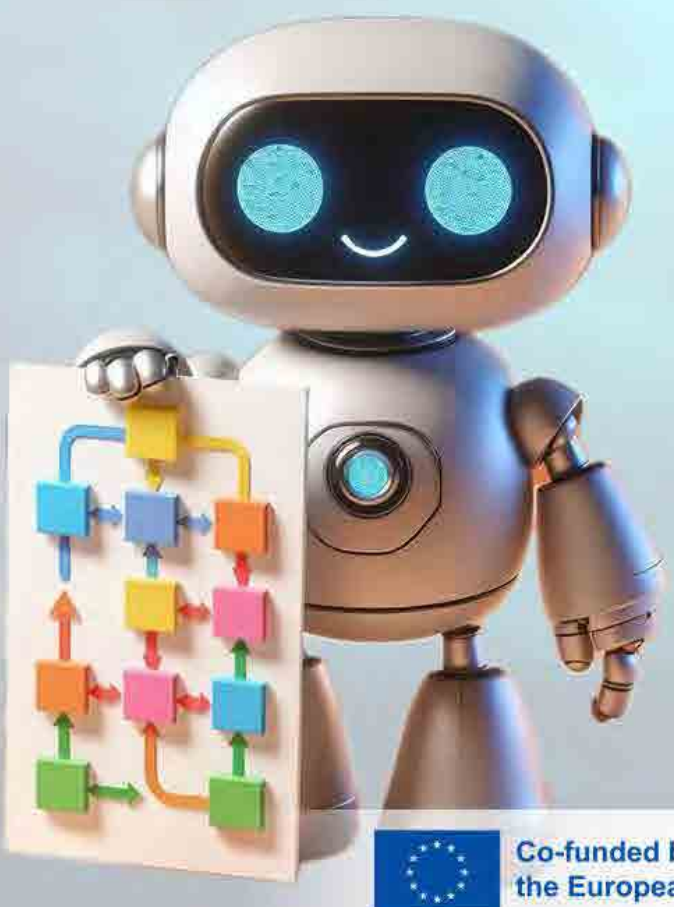
«... Particular attention can be put in helping students to critically evaluate data and news on the net, identifying reliable sources and appropriate research methods».



Skills development target n. 4 DEVELOP RESPONSIBLE ATTITUDES AND BEHAVIOUR FOR THE PROTECTION OF HEALTH AND PHYSICAL AND MENTAL WELL-BEING	
LEARNING GOLAS	
SECONDARY SCHOOL Iº	SECONDARY SCHOOL IIº
... Identify the principles, and individual and collective behaviors for health, safety, psycho-physical well-being of people; learn a healthy lifestyle even in healthy environments and a proper diet.	... Adopt healthy behaviors and positive lifestyles through proper nutrition, constant physical activity and sports.

11. Educational material developed by ATHENA RESEARCH for App Inventor Technology

11.1 Lesson 1: Algorithmic thinking



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Step by Step: An Introduction to Algorithmic Thinking

Learning how to think like
a computer!

Or...are you already a
computer?

 Co-funded by
the European Union

“Algorithm”

- Around 825 AD
 - Persian scientist and polymath Muḥammad ibn Mūsā al-Khwārizmī
 - Published influential books on mathematics
- Early 12th century
 - Latin translations of said al-Khwarizmi texts
 - John of Seville: Liber **Alghoarismi** de practica arismetrice
 - Adelard of Bath: Liber **Algorismi** de numero Indorum
 - **alghoarismi** or **algorismi** appeared as *Latinization of Al-Khwarizmi's name*
- Around 1230
 - the French and English word **algorism** appeared
- In the 15th century
 - under the influence of the Greek word ἀριθμός (arithmos, "number")
 - the Latin word was altered to **algorithmus**
- Late 17th century
 - Final version **algorithm**



What is an Algorithm (today)?

- A step-by-step process or set of rules to solve a problem or accomplish a task



What does an Algorithm include?



Step-by-step problem solving:

Breaking tasks into smaller steps.



Decisions:

Using "yes/no" choices.



Sequencing:

Correct order of instructions.



Loops:

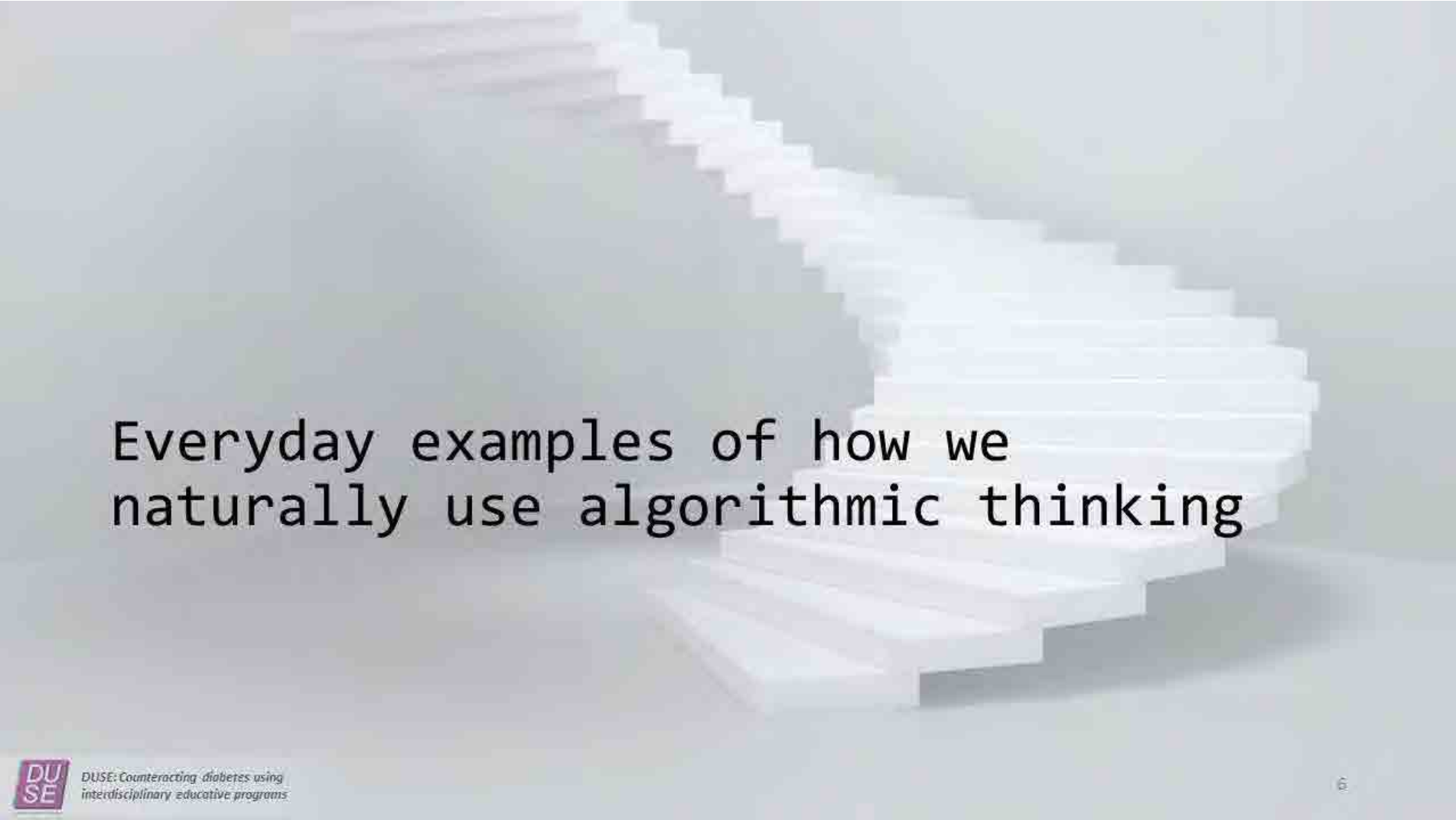
Repeating actions.



What is Algorithm Thinking?

- A problem-solving approach that involves breaking down a task into smaller, manageable steps
- Can you think of a daily task that requires step-by-step instructions?





Everyday examples of how we
naturally use algorithmic thinking



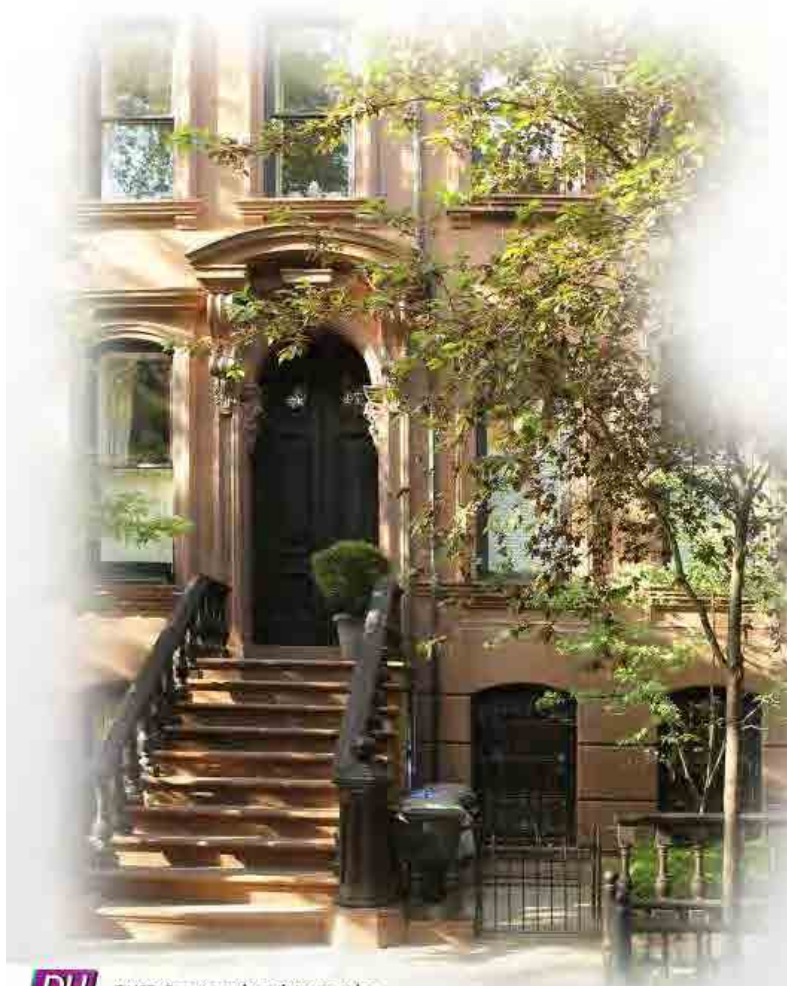
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Cooking (recipes): Making a butter and jelly toast

1. Prepare Ingredients and Tools:
 - Gather a slice of bread, butter, jelly, a butter knife, and a toaster (if desired).
2. Toast the Bread (Optional):
 - Place the bread in the toaster, start it, and wait for the toast to pop up.
3. Spread Butter:
 - Use the butter knife to evenly spread butter over the toast.
4. Spread Jelly:
 - Use the butter knife to evenly spread jelly over the buttered toast.
5. Serve and Enjoy:
 - Place the toast on a plate and enjoy your butter and jelly toast.





Choosing a way to go home: Walking home from school

1. Leave the school and turn left
2. Walk straight **until** you reach the park
3. **If** you see the park, **then** keep walking to the next street
4. Cross the street at the crosswalk
5. Walk **until** you reach your house



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Getting dressed for cold weather

1. Put on your socks
2. Put on your pants
3. Put on your shirt
4. Put on your sweater
5. Put on your coat



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Brushing your teeth

1. Pick up your toothbrush
2. Put toothpaste on the brush
3. Turn on the water and wet the brush
4. Brush your teeth **for** two minutes
5. Spit out the toothpaste
6. Rinse your mouth with water
7. Rinse your toothbrush

Jumping over an obstacle

1. Look at the obstacle
2. Estimate how high it is
3. Bend your knees
4. Jump over it
5. Land safely on the other side



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Packing your school bag

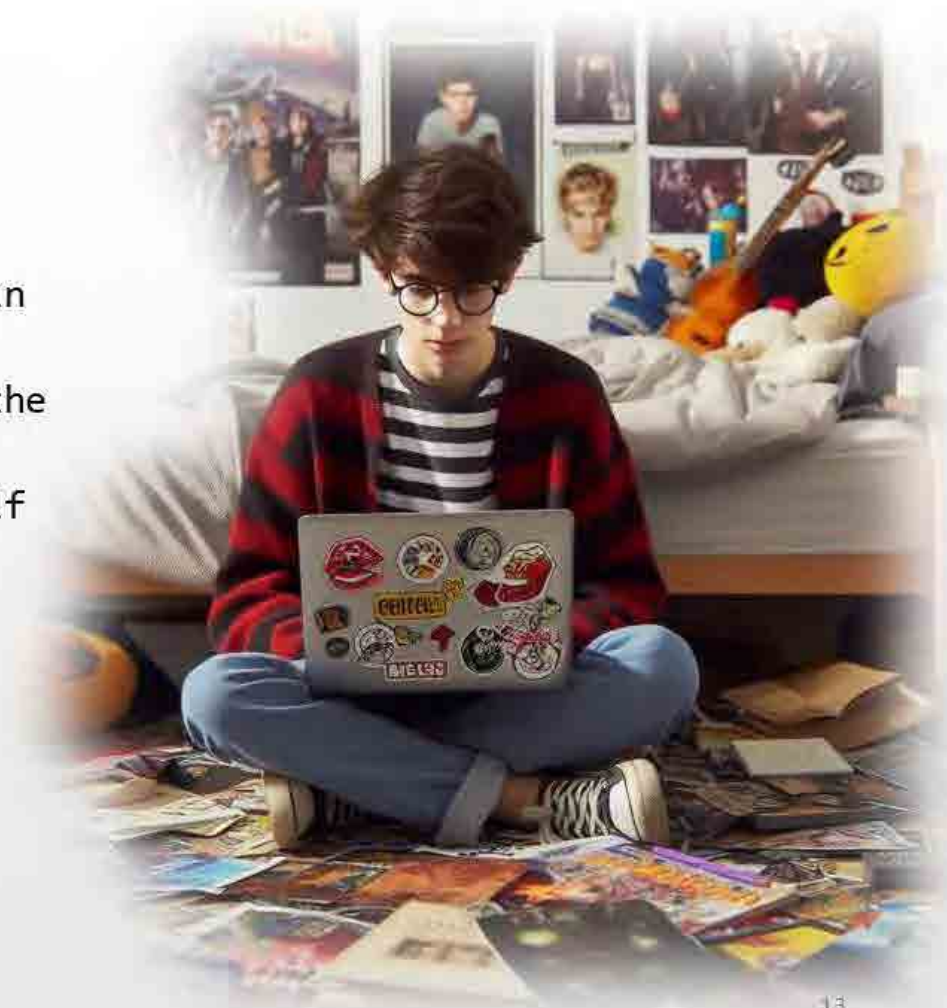
1. Look at your homework list
2. Pack your notebooks and textbooks
3. Pack your pencil case
4. Pack your lunchbox
5. Check that everything is in the bag

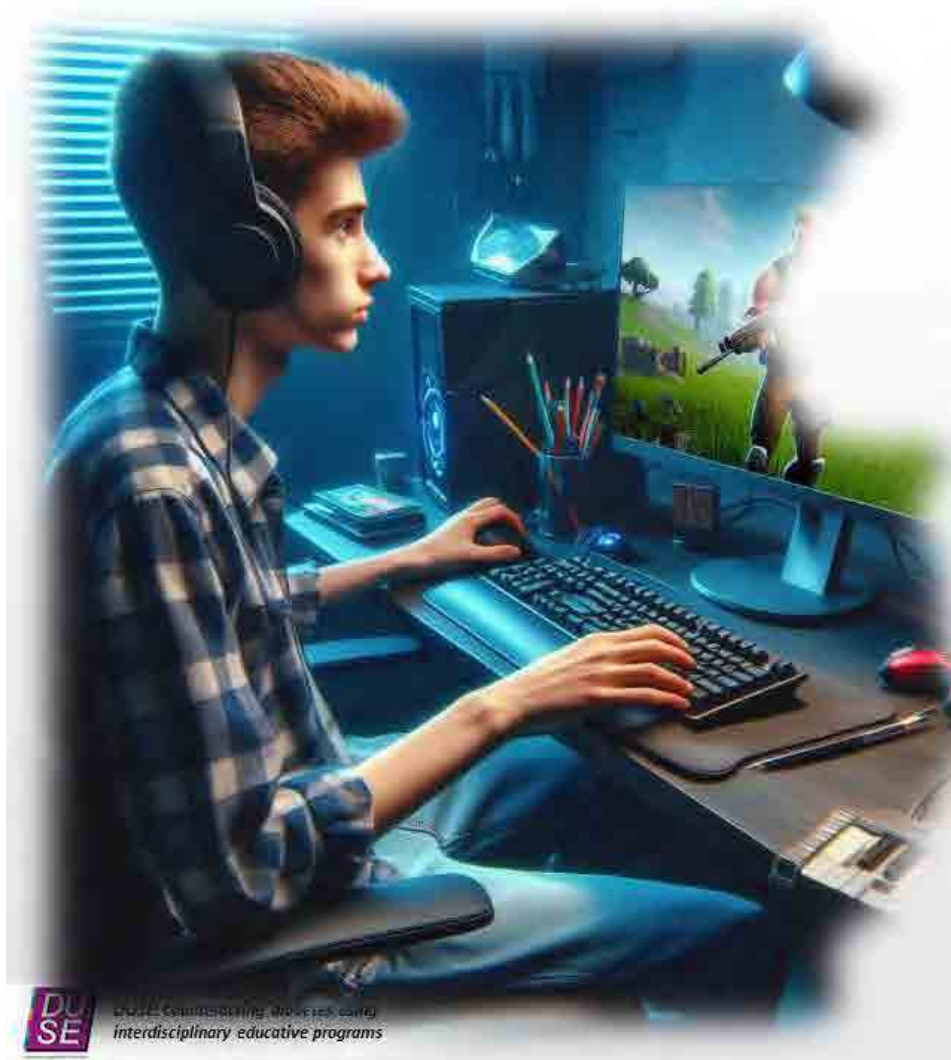


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Cleaning our rooms

1. Pick up clothes and put them in the laundry basket
2. Pick up toys and put them in the toy box
3. Put books back on the bookshelf
4. Sweep or vacuum the floor
5. Make your bed

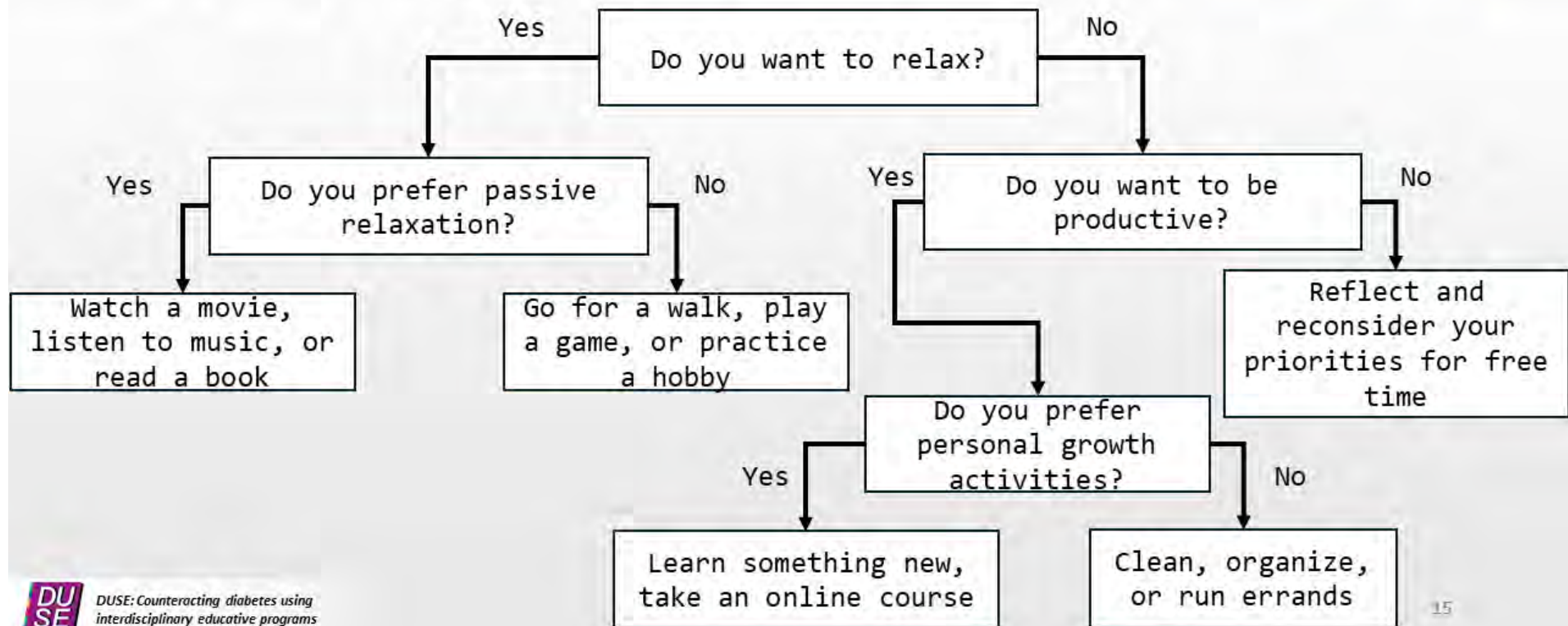




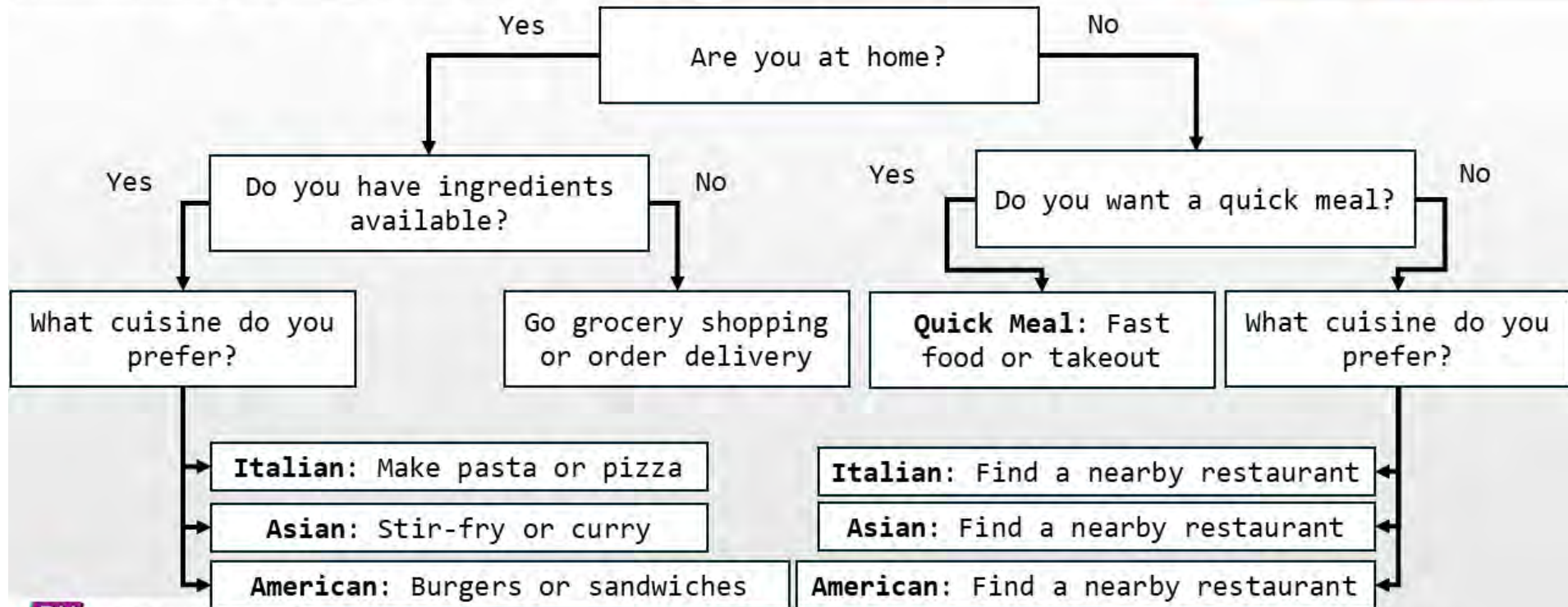
Playing Fortnite (Battle Royale match)

1. Join a Game
2. Deploy from the Battle Bus
3. Gather Resources and Weapons
4. Survive and Avoid the Storm
5. Build Structures
6. Eliminate Opponents
7. Stay Alert
8. Final Circle and Victory

Decisions: How to spend free time?



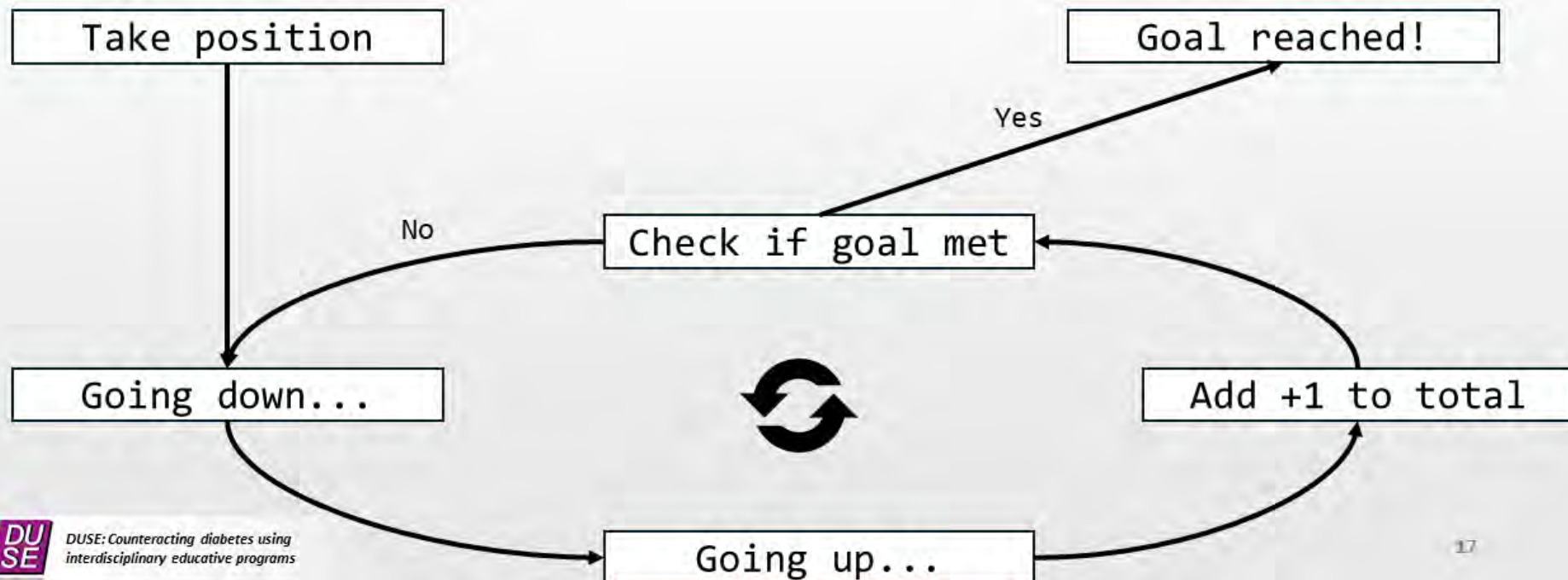
Decisions: What to eat for dinner?



Exercising with repetitions

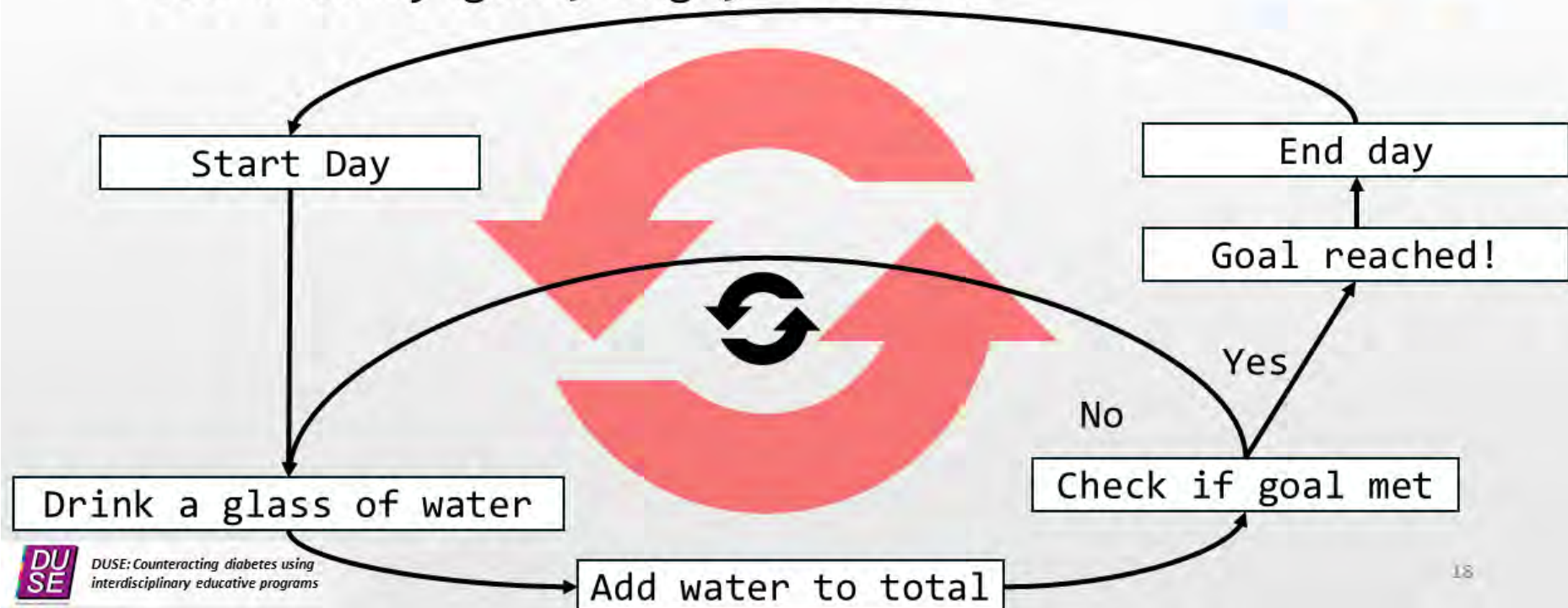


- Set a goal, e.g., 10 push-ups



Loops: Did I drink enough water?

- Set a daily goal, e.g., 4 liters



Activity 1: Let's guide one another to do a job



Image 1



Image 2



Image 3

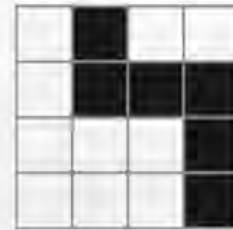


Image 4

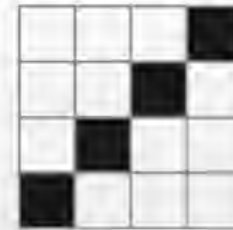


Image 5



Image 6

*Pick one of the patterns, **without saying which**, and guide me to create it
I will also write down the commands*

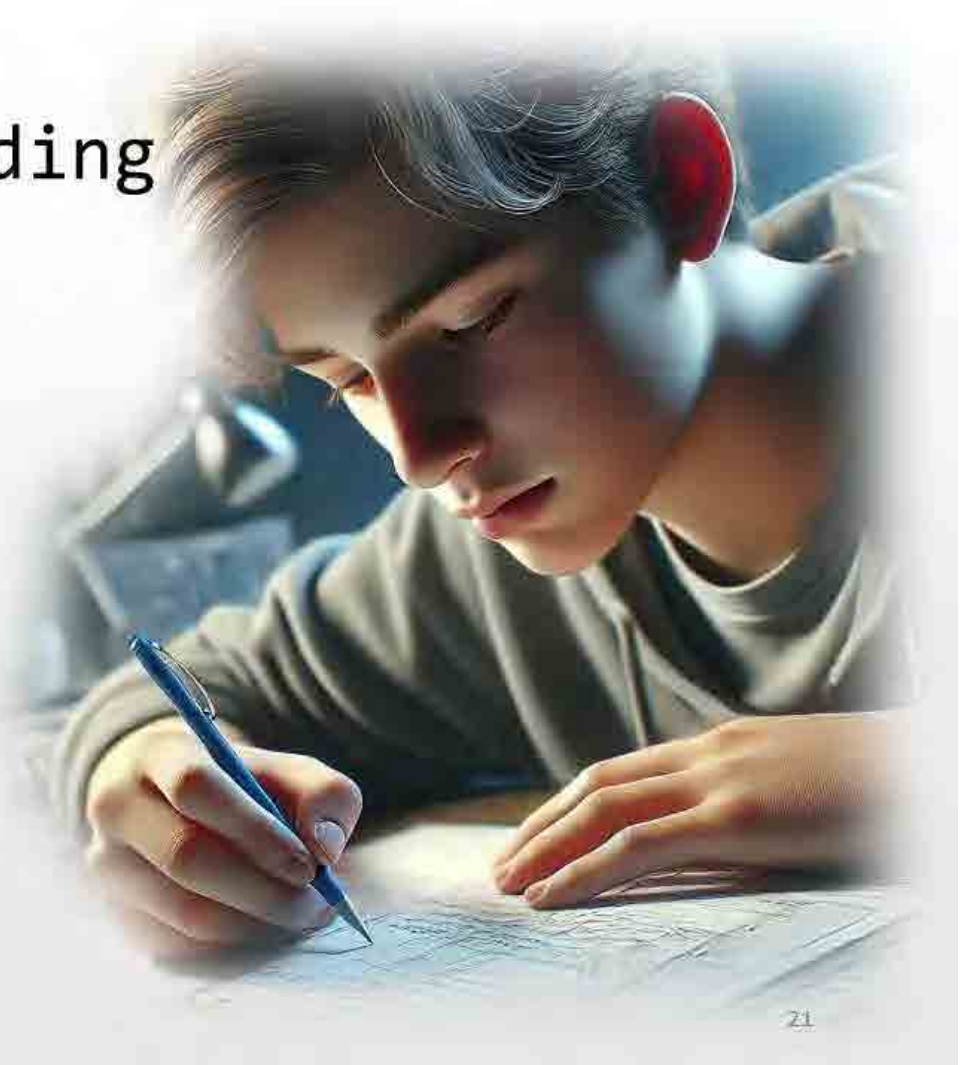
Activity 2: Let's guide a robot to do a job

- Let's use the BeeBot
(<https://beebot.terrapiinlogo.com>):
 1. "card mat"
 2. "Problem-Solving with Bee-Bot"
 3. "Safety signs"
 4. "Go cart rally"



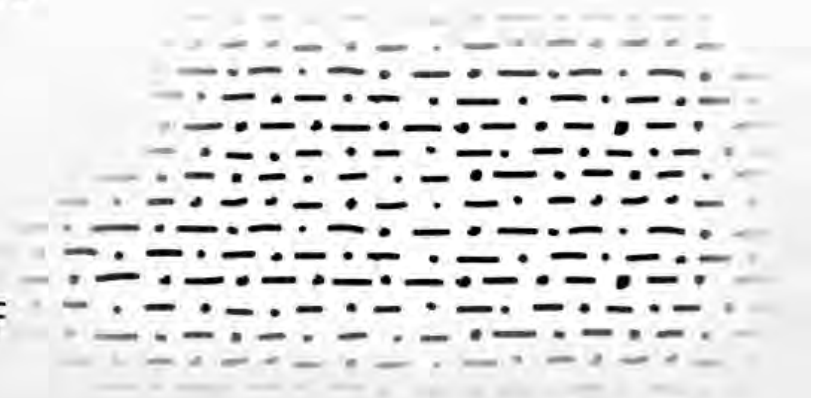
Understanding encoding

- Writing down commands is a type of encoding—it's turning ideas or instructions into text that others (or computers) can understand
- Encoding means translating information into a format that can be understood and used by a system—or even a human!
- Can you name some examples of encoding systems?



What is Morse Code?

- Morse code is a way to send messages using only
 - dots (•)
 - dashes (-)
 - spaces ()to represent letters, numbers, and punctuation
- Each letter in the alphabet is represented by a unique sequence of dots and dashes
 - Examples:
 - A = • -
 - B = - • • •
 - S = • • •
 - O = - - -



How does Morse code work?



- Instead of using the whole alphabet or numbers, Morse code reduces everything to a simple two-part system: short sounds (dots) and long sounds (dashes).
- This system allows us to encode messages that can be sent over long distances using sound, light, or even electrical signals (like telegraphs).

Convert text to Morse code:

<https://onlinetexttools.com/convert-text-to-morse>



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Relating Morse code to encoding information



- Encoding and Decoding:

- **Encoding:** In Morse code, you take each letter of a word and turn it into a series of dots and dashes. For example, the word "SOS" is encoded as:

- S = . . .
- O = - - -
- S = . . .

- **Decoding:** When you receive the message, you turn the dots and dashes back into letters

- Efficiency in Communication:

- Morse code was designed to be **efficient**. Common letters (like E, which is .) are given the shortest codes to make transmission faster. This is similar to how **compression** algorithms in computing try to shorten frequently used data.



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Encoding using Morse code

• Activity:

- Can you encode your name?
- Can you decode the following message?

.... . -.-.. -.-.. ---



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International Morse Code

1. The length of a dot is one unit.
2. A dash is three units.
3. The space between parts of the same letter is one unit.
4. The space between letters is three units.
5. The space between words is seven units.

A	• —
B	• • • —
C	• — • —
D	• — • •
E	•
F	• • — •
G	• — — •
H	• • • •
I	• •
J	• — — —
K	• • — —
L	• — • •
M	— —
N	— •
O	— — —
P	• — — •
Q	• — — —
R	• — • •
S	• • •
T	—

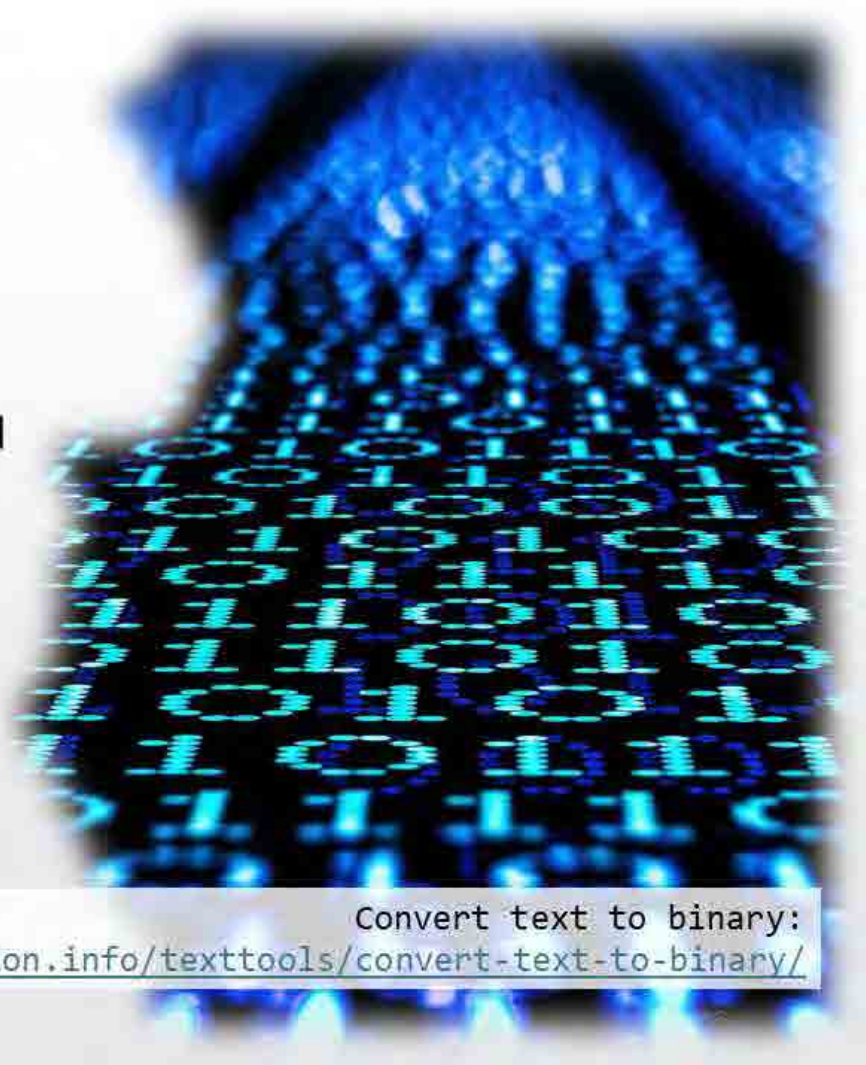
U	• • —
V	• • • —
W	• — —
X	• — • •
Y	• — — —
Z	• — — •

1	• — — — —
2	• • — — —
3	• • • — —
4	• • • • —
5	• • • • •
6	• — • • •
7	• — — • •
8	• — — — •
9	• — — — •
0	— — — — —

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What is “digital”?

- “Digital” refers to
 - computers, electronics, or technology to store, send, and process information
- In the “digital world”
 - everything is made up of numbers
 - usually just 1s and 0s
 - these numbers represent words, pictures, sounds



Convert text to binary:

<https://www.unit-conversion.info/texttools/convert-text-to-binary/>



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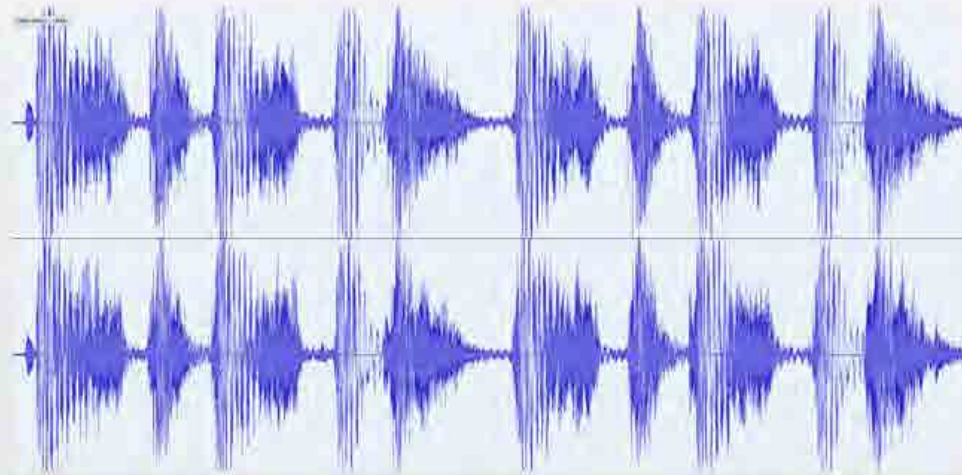


Digital vs. Non-Digital (Analog)

- **Non-Digital (Analog):**
Represents data using continuous signals:
 - ✍ writing on paper
 - 🎵 grooves on a vinyl record
- **Digital:** Represents data using discrete values (like 0s and 1s) 📊

Analog vs Digital

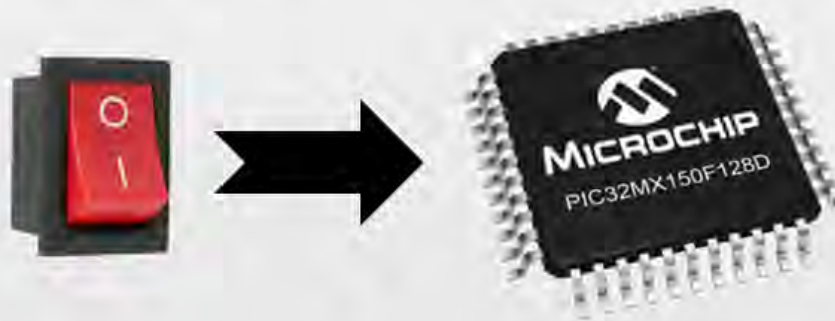
```
01011011 10010010 10101100 00100100 01110100 11101100 00000111 10010010 01001000
10100001 11011000 01000010 01110010 10100100 00010110 10010101 01111000 11101000
11101111 11010110 11100000 10100111 00111100 10100000 11101100 00100010 11111100
01100011 01100011 00010110 00100111 01101000 00111111 00001111 00000010 11011001
10110001 10101010 01101001 00111011 00010000 10110111 11110101 01100000 00000111
00001111 01110001 01011100 01000010 10000101 01010100 01011100 01101111 ...
```



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Why Do We Use Digital Technology?

- Because it is easy to create!
 - Only switches
- Because it is easy to encode information in digital form
- Because it is easy to store and transmit digital information



Applications of digital technology

- **Communication:**

- sending messages through apps
- making video calls
- sending emails



Applications of digital technology

- **Learning:**

- watching videos
- playing educational games
- reading books online

Applications of digital technology

- **Creation:**

- drawings
- music
- videos
- programs (like what we will do!)



Applications of digital technology

- **Problem-Solving:**

- predicting the weather
- finding cures for diseases
- handling complex information



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“Computer”

- Origins



What is a computer?

- A computer is an electronic device that processes, stores, and outputs data based on instructions.
- Key Components:
 - **Hardware:** Physical parts
 - **Software:** Programs that control hardware
- Types:
 - Personal Computers
 - Supercomputers
 - Mobile Devices



How does a computer work?



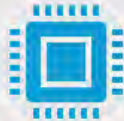
Input:
Receives data
(keyboard, mouse)



Storage:
Saves data
(hard drives)



Processing:
Executes
instructions
(CPU)



Output:
Delivers results
(screen, printer)



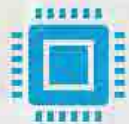
Parts of a computer (Hardware)



Screen (Monitor)



Keyboard and Mouse



CPU (Central Processing Unit)



Memory (RAM)



Storage (Hard Drive or SSD)

What is Binary Arithmetic?

- Have you ever wondered how a computer thinks? Computers don't use numbers like we do every day (1, 2, 3...). Instead, they use a special number system called binary. In binary, there are only two numbers:

0 and 1



Why Do We Use Binary in Computers?



- Computers are like super fast light switches! Each switch can be either on or off. That's just like 0s (off) and 1s (on) in binary. Computers use billions of these tiny switches to do everything from showing pictures to playing games.



8-bits = 2^8 = 256 unique characters

How is Binary Like Our 10-Number System?

- In the decimal system (which we use daily), we have 10 digits:
 - 0, 1, 2, 3, 4, 5, 6, 7, 8, 9.
 - Once we reach 9, we start again but add a new digit in front, like 10, 11, and so on.
- In binary, it's similar, but instead of using 10 digits, we only use 2 digits:
 - 0 and 1.
 - Once we reach 1, we have to add a new digit, just like how we move from 9 to 10 in decimal.
 - How would you represent the number 2 in the binary system?

How Binary Works (Place Value)

Decimal	10^3 = 1000	10^2 = 100	10^1 = 10	10^0 = 1
Binary	$2^3 = 8$	$2^2 = 4$	$2^1 = 2$	$2^0 = 1$

- Just like in decimal where we have place values (ones, tens, hundreds), binary has place values too, but they're based on powers of 2.
- **Decimal:**
 - The rightmost place is the 1s place ($10^0 = 1$).
 - The next place to the left is the 10s place ($10^1 = 10$).
 - Then the 100s place ($10^2 = 100$), and so on.
- **Binary:**
 - The rightmost place is the 1s place ($2^0 = 1$).
 - The next place to the left is the 2s place ($2^1 = 2$).
 - Then the 4s place ($2^2 = 4$), the 8s place ($2^3 = 8$), and so on.

Decimal	$\times 10^3$	$\times 10^2$	$\times 10^1$	$\times 10^0$
13	0	0	1	3

$$13 = 10 + 3 = 0 \cdot 10^3 + 0 \cdot 10^2 + 1 \cdot 10^1 + 3 \cdot 10^0$$

Binary	$\times 2^3$	$\times 2^2$	$\times 2^1$	$\times 2^0$
1101	1	1	0	1

$$1101 = 1 \cdot 2^3 + 1 \cdot 2^2 + 0 \cdot 2^1 + 1 \cdot 2^0 = 8 + 4 + 1 = 13$$



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Counting in Binary vs. Decimal

- Notice how binary just uses 0s and 1s, but works in the same way as decimal using place values!

Decimal	Binary
0	0000
1	0001
2	0010
3	0011
4	0100
5	0101
6	0110
7	0111
8	1000



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Binary Addition (Just Like Decimal!)

- Binary addition is just like decimal addition, but it's simpler because you're only adding 0s and 1s.
- Decimal Addition (Base 10):
 - $4 + 6 = 10$ (you carry the 1)
- Binary Addition (Base 2):
 - $1 + 1 = 10$ in binary (which is 2 in decimal), so you carry the 1, just like in decimal!

Binary	$\times 2^3$	$\times 2^2$	$\times 2^1$	$\times 2^0$
10	0	0	1	0

$$10 = 1 \cdot 2^1 = 2$$

Why we use the
decimal (base-10)
system?

Due to biological factors –
we have 10 fingers!



Why we use the decimal (base-10) system?



- Humans have 10 fingers (or digits), which made counting in tens the most natural system for early civilizations.
 - counting objects—like animals, crops, or tools
 - Once they reached 10, they started again, which led to the development of the decimal system
 - Counting in groups of 10 became second nature
- This way of thinking carried forward into the development of mathematics, trade, and society

Why we use the decimal (base-10) system?



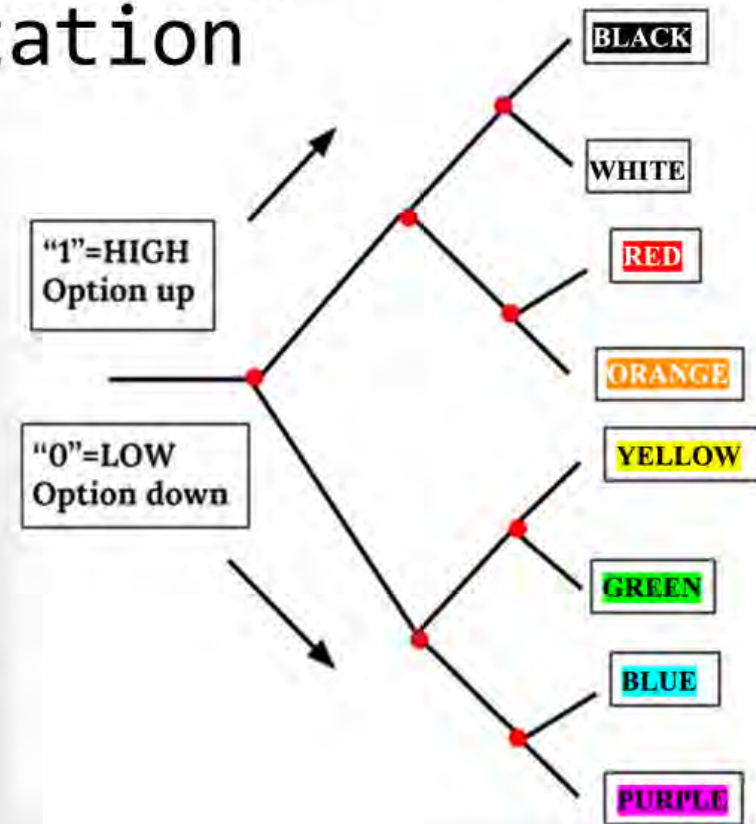
- Ancient civilizations, such as the Egyptians, Greeks, and Romans, used base 10 systems
- The Hindu-Arabic numeral system, which is the basis of the decimal system we use today, spread through the world via trade, conquest, and scholarly exchange
- The Roman numeral system was also based on groups of 10, with numbers like
 - X (10)
 - C (100)
 - M (1000)

Other numerical systems?

- Octal (Base 8):
 - Some cultures, such as the Yuki people of California, used octal systems based on counting spaces between fingers instead of the fingers
- Hexadecimal (Base 16):
 - It uses 16 symbols: 0-9 and A-F (where A = 10, B = 11, etc.)
 - It is used in computing because it can represent binary values in a more compact way (e.g., one hexadecimal digit can represent four binary digits)
- Other Ancient Systems:
 - The Babylonians used a sexagesimal system (base 60), which is still seen today in how we measure time (60 seconds, 60 minutes) and angles (360 degrees in a circle)

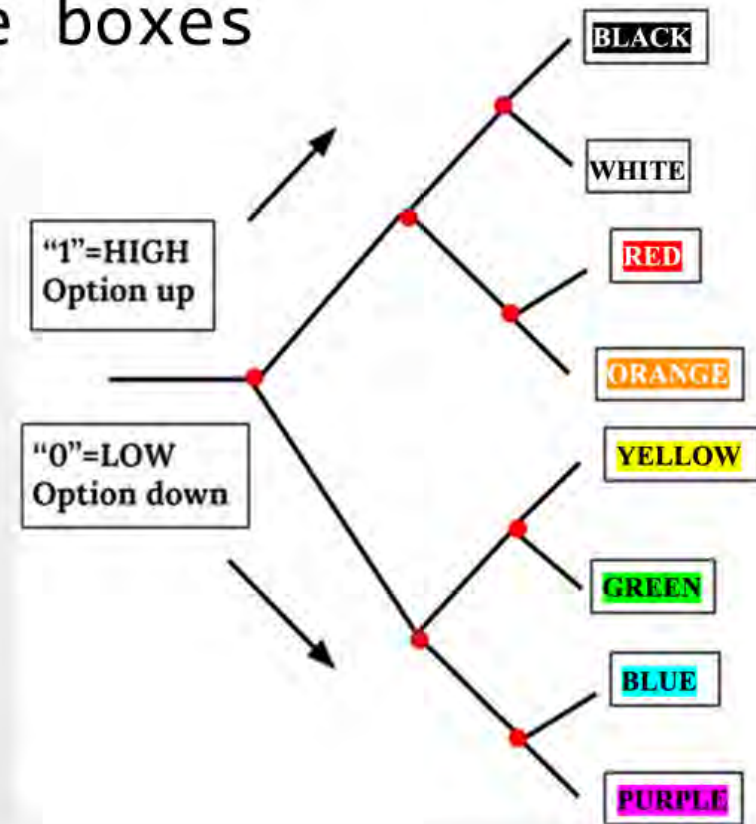
An example of representing 8 colors in binary notation

- Say we have Black, Pink, Red, Orange, Yellow, Green, Blue, Purple
- How many **binary** digits do we need to represent those 8 colors?
 - In the **decimal** system we need just **1 digit**, 0-7
 - In the **binary** system we need 0, 1, 10, 11, 100, 101, 110, 111, thus **3 digits**
- So, Green is “010”, Orange is “100”, etc. all colors defined as unique binary representations.

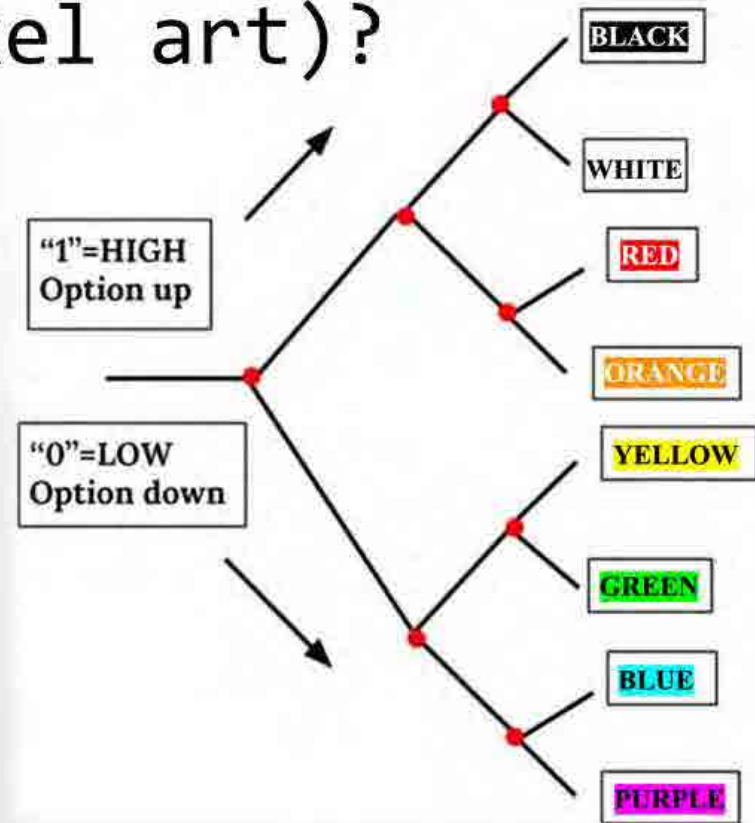


Examples and Play: Let's try to color those boxes

100111001 110101011 100010001	(Color This In!) <table><tr><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td></tr></table>									
100001100 001100001 100001100	(Color This In!) <table><tr><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td></tr></table>									



Homework: How do we create the following image (pixel art)?



An astronaut in a full spacesuit stands on a dark, rocky surface, looking out over a vast, bright orange and yellow sky filled with clouds. The scene is backlit by a strong light source, creating a silhouette effect on the astronaut and a warm, glowing atmosphere. The text "Q&A and Exploration" is overlaid in white, sans-serif font in the center of the image.

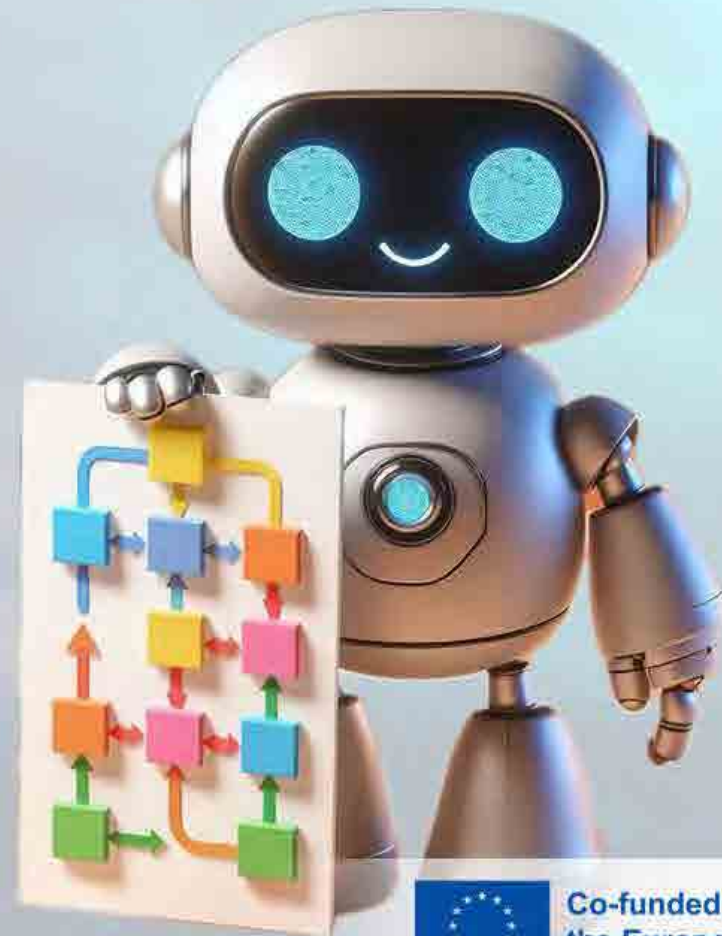
Q&A and Exploration

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From Basics to Apps: An Introduction to Programming and AppInventor



Co-funded by
the European Union

Introduction

- What is technology?
 - Everyday technologies:



Smartphones



Apps



Video games

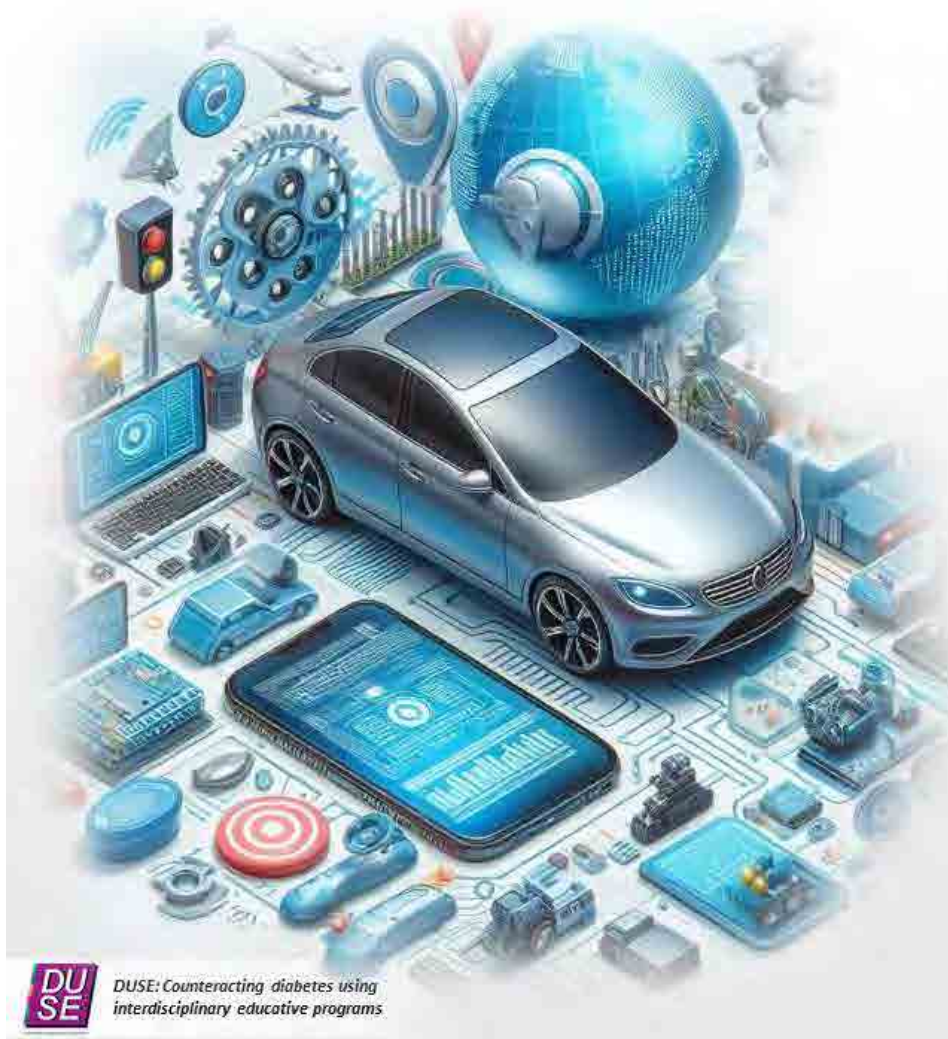


Social
media

etc.

- How are these technologies driven by programming and algorithms?





Introduction

- Why Learn Programming?
 - Real-world applications of programming (self-driving cars, social media, game development)
 - How programming can help solve problems and be creative (apps, games, and tools)
 - Companies worldwide ask for programmers!



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Goals



Understand the basics of programming



Get hands-on with MIT App Inventor to create simple mobile app

Algorithmic Thinking

- What is an Algorithm?
 - An algorithm is the clear and precise description of a series of separate instructions
 - steps, in order to solve a problem
 - Everyday examples (e.g., making a sandwich, brushing teeth)



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Algorithmic Thinking

- How algorithms can be written to avoid ambiguity?



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Introduction to Programming

- What is Programming?
 - Giving a computer or device instructions to perform tasks
- Programming languages allow us to communicate with computers



Programming: The calculator that does it all

- Programming starts small, like using a calculator
- You can perform basic math:
 - **Addition:** $2 + 3 = 5$
 - **Subtraction:** $7 - 4 = 3$
 - **Multiplication:** $5 * 6 = 30$
 - **Division:** $8 / 2 = 4$
- Computers let us write these calculations in code (examples):
 - `print(2 + 3)` → Outputs: 5
 - `result = 10 / 2` → Stores 5 in result

Open COLAB for testing:

<https://colab.research.google.com/>



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Variables: Your digital sticky notes

- Think of variables as containers that store information
 - Example: A box labeled “apples” holding the number 5
- In programming, a variable is like this:
 - `apples = 5`
- Why use variables?
 - **Reuse:** Keep data for later.
 - **Change:** Update values anytime.
 - **Readability:** Make code easier to understand.
- Example:

```
age = 15
print("I am", age, "years old.")
# Outputs: I am 15 years old.
```



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Doing Math with Variables

- Variables aren't just storage – you can use them in calculations
- Example:

```
a = 10  
b = 20  
total = a + b # total is 30  
print(total)
```

- Combine math with logic:

```
score = 90  
bonus = 10  
final_score = score + bonus  
print(final_score) # Outputs: 100
```

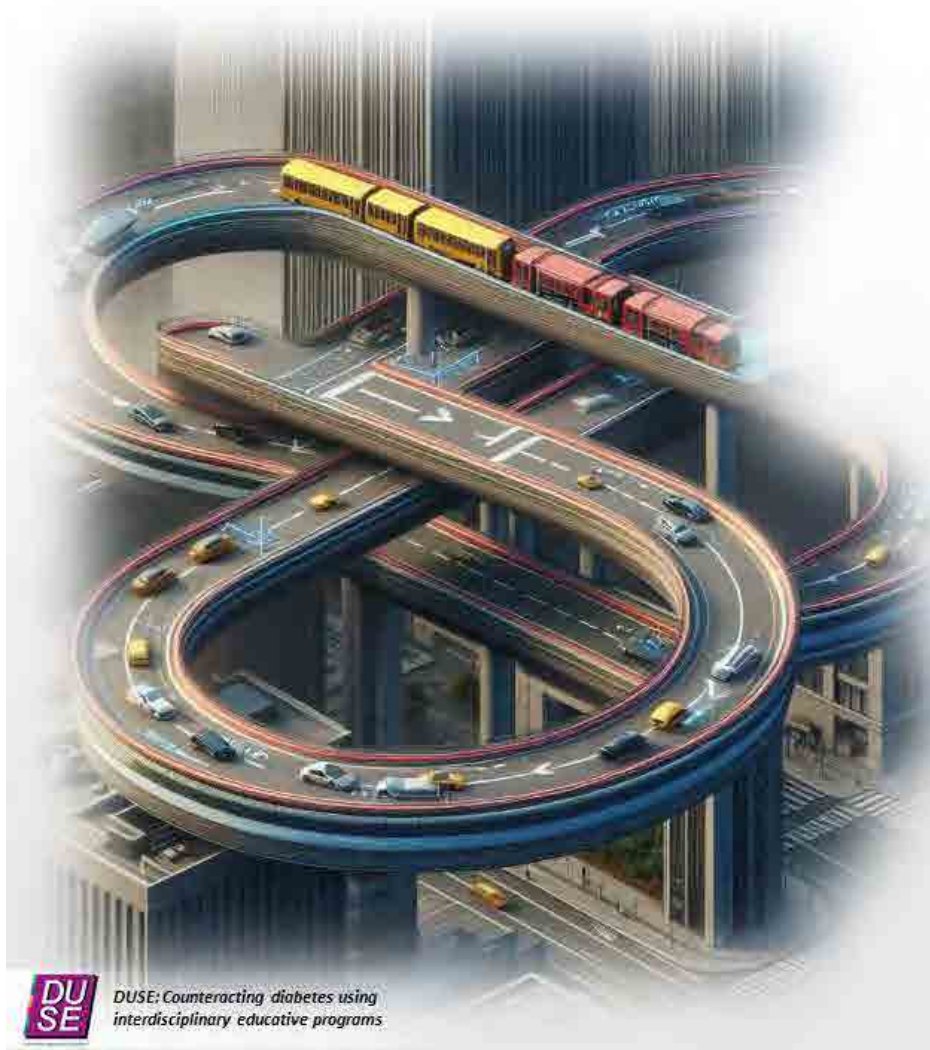
Comparing Stuff: Is It Bigger, Smaller, or Equal?

- Computers love to compare things
 - Is X greater than Y?
 - Are two values the same?
- Common comparisons:
 - > (greater than)
 - < (less than)
 - == (equal to)
 - != (not equal)
- Example:

```
age = 16  
print(age > 18) # Outputs: False  
print(age == 16) # Outputs: True
```



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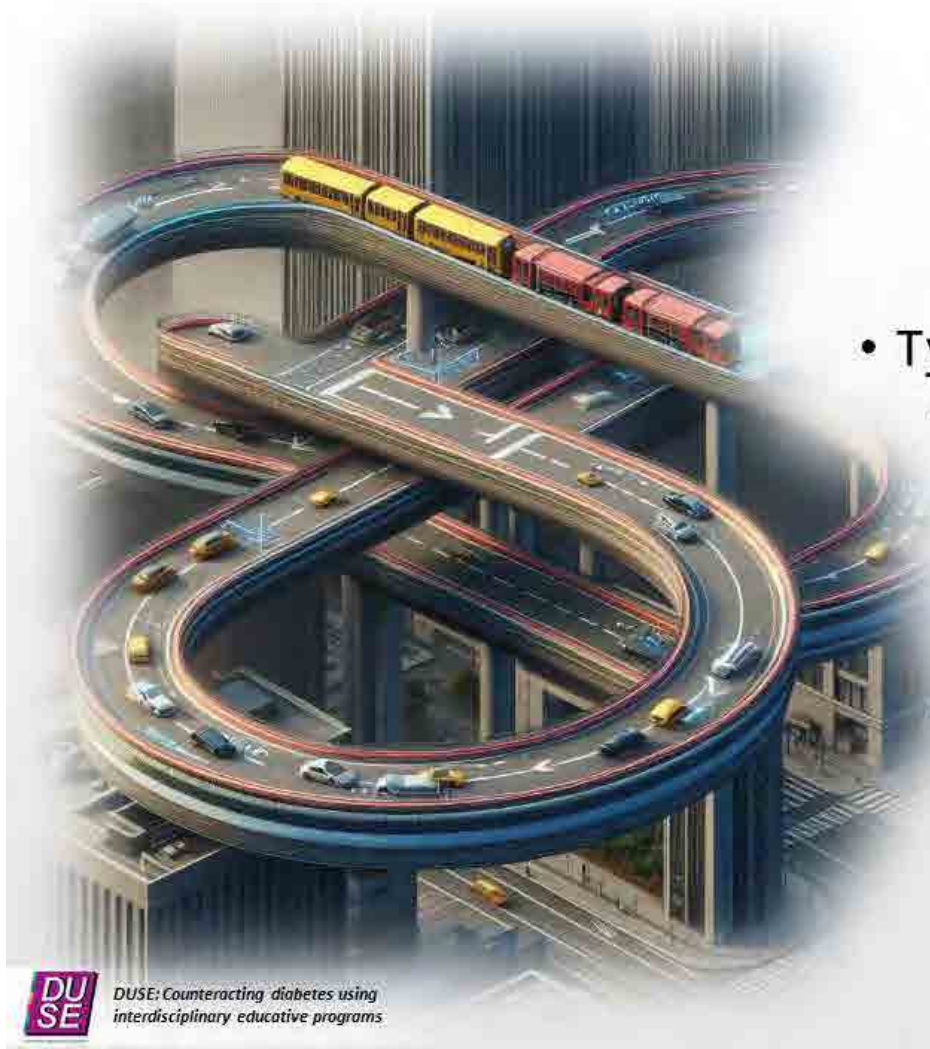


Loops: Do It Over and Over Again

- What is a loop?
 - It's a way to repeat tasks without typing them multiple times
 - Example: Count from 1 to 10 automatically!



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Loops: Do It Over and Over Again

- Types of loops:
 - For loop: Repeats a specific number of times

```
for i in range(5):  
    print(i) # Outputs: 0, 1, 2, 3, 4
```

- While loop: Repeats while a condition is true.

```
count = 0  
while count < 5:  
    print(count)  
    count += 1
```



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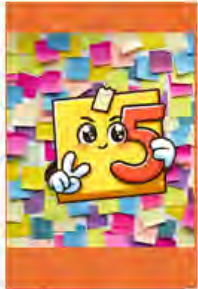
Functions: Your Code's Superpower

- A function is like a mini-program inside your program
 - It does one specific job
- Why use functions?
 - Organize code
 - Reuse code: Write once, use anytime
- Example:

```
def greet(name):  
    print("Hello, " + name + "!")  
  
greet("Alex") # Outputs: Hello, Alex!  
greet("Taylor") # Outputs: Hello, Taylor!
```



Summary of basics in Programming



Variables

- Like containers that hold information (e.g., score in a game, player's name)



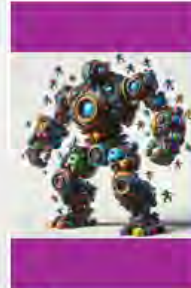
Conditions (If/Else)

- Decision-making in programming (e.g., If it's raining, bring an umbrella)



Loops

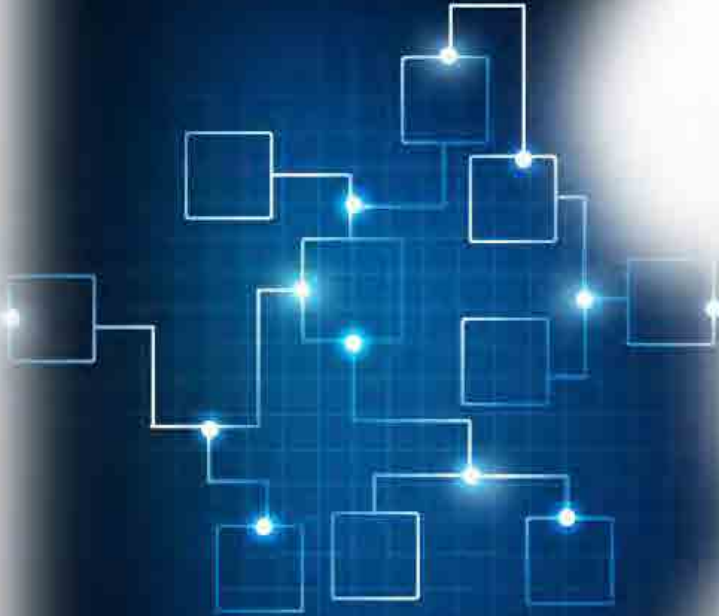
- Repeating a set of instructions (e.g., a game loop or counting steps in a fitness app)



Functions/Procedures:

- Functions are like mini-programs within a program to perform specific tasks

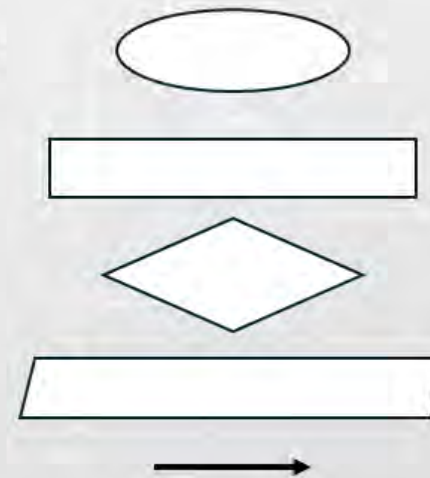
Flowcharts: A Map for Your Code



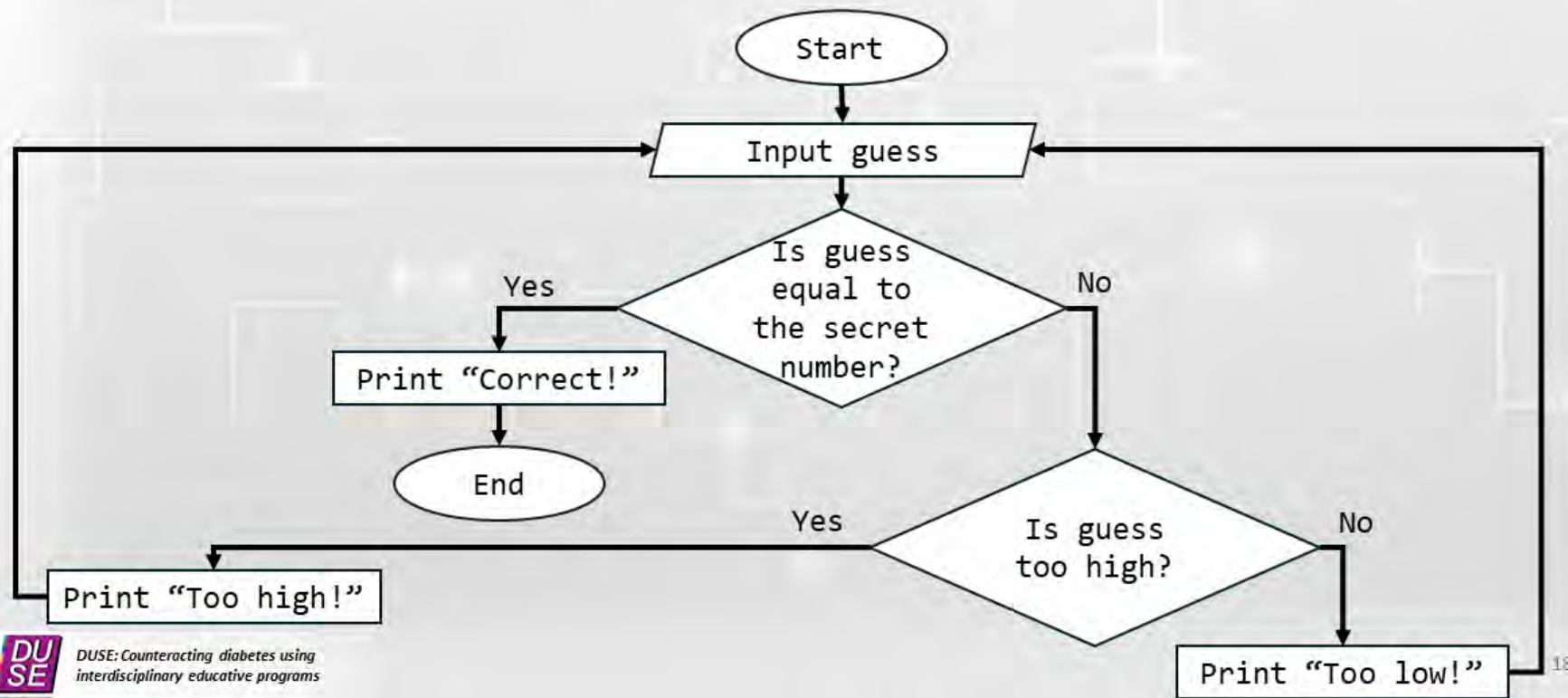
- Before writing code, plan it out! Flowcharts help visualize logic
- What is a flowchart?
 - A diagram that shows the steps your program takes

Flowchart basic shapes

- **Oval** (Terminator): Start or End of the algorithm.
- **Rectangle** (Process)
- **Diamond** (Decision)
- **Parallelogram** (Input/Output)
- **Arrow** (Flowline)

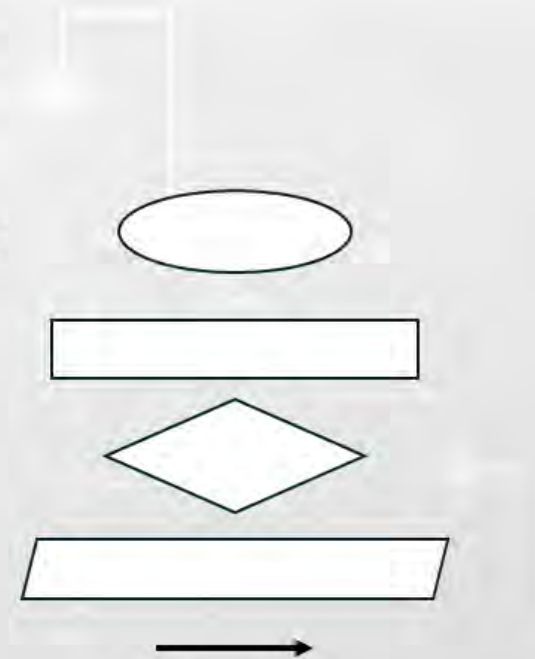


Flowchart for a guessing game



Flowchart basic Task

- **Oval** (Terminator): Start or End of the algorithm.
- **Rectangle** (Process)
- **Diamond** (Decision)
- **Parallelogram** (Input/Output)
- **Arrow** (Flowline)



Task: Decide if someone can vote



Introduction to MIT App Inventor

- What is MIT App Inventor?
- A visual programming environment for building mobile apps using drag-and-drop blocks (like a puzzle)



The MIT App Inventor logo is located at the top of the slide. It consists of a grid of small, colorful squares (pink, green, blue, orange, grey) arranged in a pattern that suggests a digital interface or a network.

Introduction to MIT App Inventor

- Getting Started with MIT App Inventor:
 - **Step 1:** Open the platform (<https://appinventor.mit.edu/>)
 - **Step 2:** Create a new project
 - **Step 3:** Interface (Design view vs. Blocks view)
 - **Design View:** Where you design the user interface of your app (buttons, text boxes, images)
 - **Blocks View:** Where you control the behavior of your app (drag-and-drop blocks to build code)

The MIT App Inventor logo is located at the top of the slide. It consists of a grid of small, colorful squares (pink, green, blue, orange, grey) arranged in a pattern that suggests a digital interface or a network. The squares are of various sizes and are connected by thin lines, creating a sense of movement and connectivity.

Introduction to MIT App Inventor

- Hands-on Activity: Build a Simple App
- Step-by-Step Guide:
 - **Design View:** Add a button and a label
 - **Blocks View:** Use a “When Button Click” block and a “set label text” block to display random answers like “Yes,” “No,” “Maybe.”
 - **Run the App:** test the app on mobile devices or emulator



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Hello World

Create new App Inventor project

Project name:

Toolkit:

Theme:

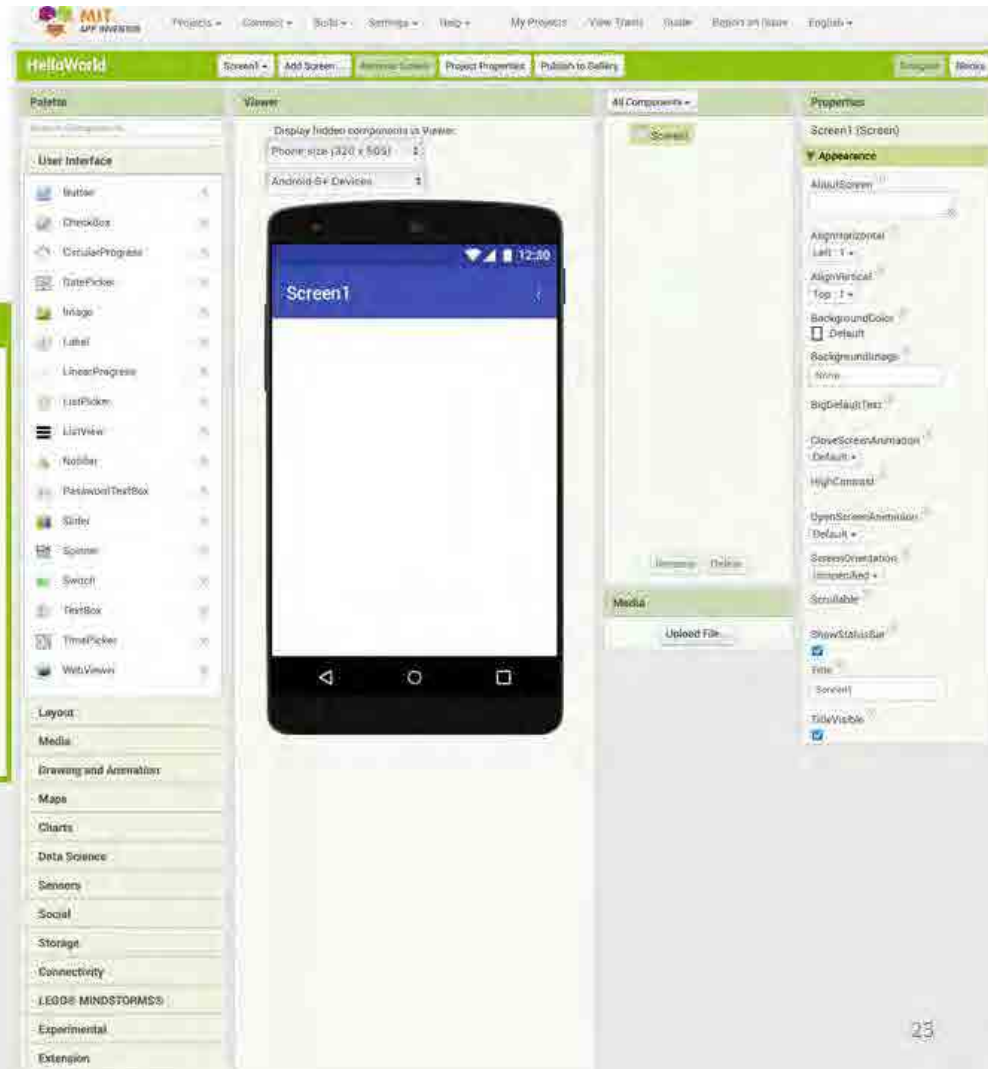
Download:

☐ [robot image.png](#)

☐ [robot sound.mp3](#)



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Designer

The screenshot shows the MIT App Inventor Designer interface. At the top, there is a navigation bar with links: Projects, Connect, Build, Settings, Help, My Projects, View Trash, Guide, Report an Issue, and a Language dropdown set to English. A 'Switch View' button is also present. Below this is a green bar with the project name 'HelloWorld' and buttons for 'Screen1', 'Add Screen...', 'Remove Screen', 'Project Properties', and 'Publish to Gallery'. On the right of this bar are 'Designer' and 'Blocks' tabs. The main workspace is divided into four panels: 'Palette' (left), 'Viewer' (center), 'Components' (top right), and 'Properties' (bottom right). The 'Palette' panel shows a search bar and a list of UI components under 'User Interface': Button, CheckBox, CircularProgress, DatePicker, Image, and Label. The 'Viewer' panel shows a mobile phone mockup with 'Screen1' displayed. Above the mockup are controls for 'Display hidden components in Viewer', 'Phone size (320 x 505)', and 'Android 5+ Devices'. The 'Components' panel shows a tree view with 'Screen1' and a 'Media' section with an 'Upload File...' button. The 'Properties' panel shows settings for 'Screen1 (Screen)', including 'Appearance', 'AboutScreen' (a text input), 'AlignHorizontal' (set to Left), 'AlignVertical' (set to Top), and 'BackgroundColor' (set to Default). Red boxes and labels are overlaid on the image: a red box around the Palette panel labeled 'Palette', a red box around the Viewer panel labeled 'Viewer', a red box around the Components panel labeled 'Components', and a red box around the Properties panel labeled 'Properties'. In the bottom left corner, there is a logo for 'DU SE' and the text 'DUSE: Counteracting diabetes using interdisciplinary educative programs'. In the bottom right corner, the number '24' is displayed.

MIT APP INVENTOR

Projects Connect Build Settings Help My Projects View Trash Guide Report an Issue English Switch View

HelloWorld Screen1 Add Screen... Remove Screen Project Properties Publish to Gallery Designer Blocks

Palette

Search Components...

User Interface

- Button
- CheckBox
- CircularProgress
- DatePicker
- Image
- Label

Viewer

Display hidden components in Viewer

Phone size (320 x 505)

Android 5+ Devices

Screen1

Components

All Components

- Screen1

Media

Upload File...

Properties

Screen1 (Screen)

Appearance

AboutScreen

AlignHorizontal

Left: 1

AlignVertical

Top: 1

BackgroundColor

Default

Palette

Viewer

Media

Properties

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Blocks

The screenshot displays the MIT App Inventor web interface. At the top, the MIT App Inventor logo is on the left, and navigation links (Projects, Connect, Build, Settings, Help, My Projects, View Trash, Guide, Report an Issue, English) are in the center. On the right, a 'Switch View' button is highlighted with a purple box. Below the navigation bar, a green header bar contains the project name 'HelloWorld' and several buttons: 'Screen1', 'Add Screen...', 'Remove Screen...', 'Project Properties', and 'Publish to Gallery'. To the right of these buttons are two tabs: 'Designer' and 'Blocks', with the 'Blocks' tab selected and highlighted by a purple box. The main workspace is divided into two sections. On the left, the 'Blocks' panel is outlined with a red box; it has a title bar with 'Blocks' in red and a list of built-in block categories: Control, Logic, Math, Text, Lists, Dictionaries, Colors, Variables, and Procedures. Below this is a 'Media' section, also outlined with a red box, which contains a 'Media' title bar and a logo for 'DUSE' (Duke University System of Education) with the text 'DUSE: Counteracting diabetes using interdisciplinary educative programs'. On the right, the 'Viewer' section is outlined with a red box; it has a title bar with 'Viewer' in green and a large white area containing a blue backpack icon. At the bottom center, the word 'Viewer' is written in red. In the bottom right corner, the number '25' is displayed.

MIT APP INVENTOR

Projects Connect Build Settings Help My Projects View Trash Guide Report an Issue English Switch View

HelloWorld Screen1 Add Screen... Remove Screen... Project Properties Publish to Gallery Designer Blocks

Blocks

Built-in

- Control
- Logic
- Math
- Text
- Lists
- Dictionaries
- Colors
- Variables
- Procedures

Media

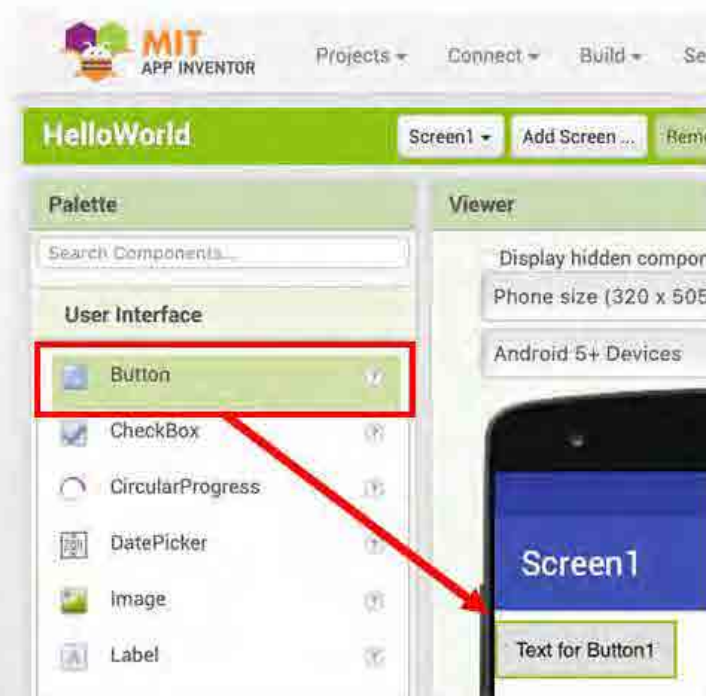
DUSE

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Viewer

25

Drag and drop a Button to Screen1



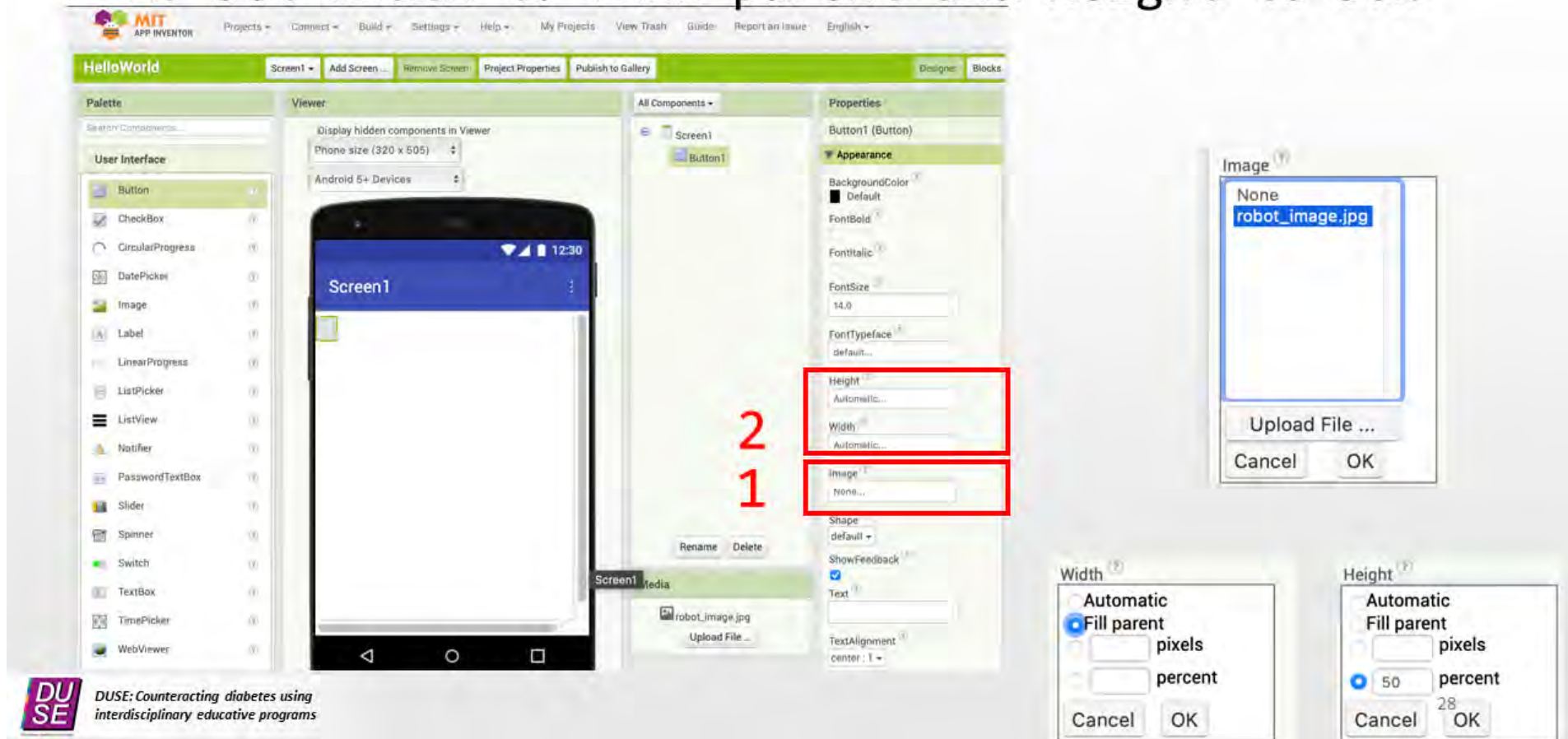
1. Upload the robot image for the button,
2. Remove the button text

The screenshot shows the MIT App Inventor web interface. The top bar includes the MIT App Inventor logo and navigation links. The main workspace is divided into four panels: Palette, Viewer, All Components, and Properties. The Palette shows various UI components, with 'Button' selected. The Viewer shows a mobile phone screen with a button labeled 'Text for Button1'. The All Components panel shows a tree view with 'Screen1' and 'Button1'. The Properties panel shows the 'Appearance' section for 'Button1 (Button)', with fields for BackgroundColor, FontBold, FontItalic, FontSize, FontTypeface, Height, Width, Image, Shape, and ShowFeedback. The 'Image' field is highlighted with a red box and a red number '2'. Below the Properties panel, there are two 'Upload File' dialog boxes. The first dialog box has 'Choose File' and 'no file selected' text, with 'Cancel' and 'OK' buttons. The second dialog box has 'Choose File' and 'robot_image.jpg' text, with 'Cancel' and 'OK' buttons. A red box and a red number '1' highlight the 'Upload File' button in the bottom right corner of the interface.

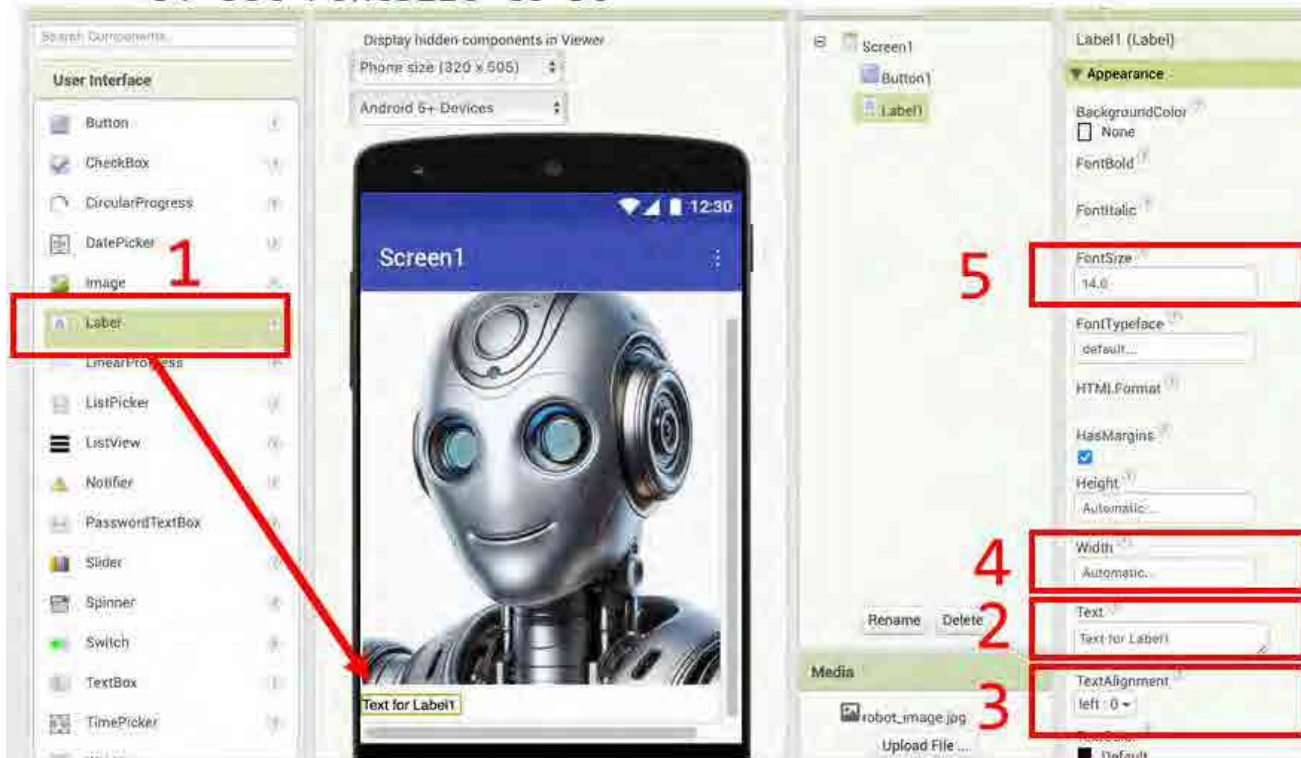
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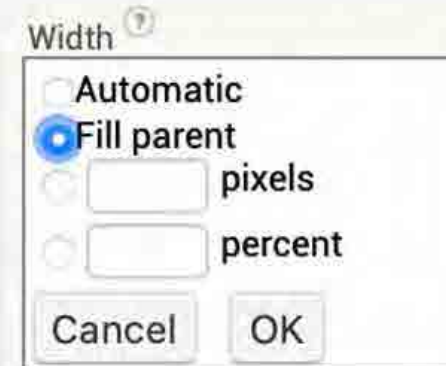
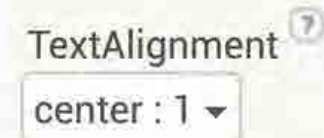
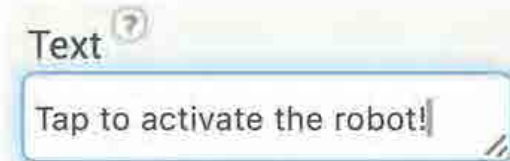
1. Set Image to robot_image.png
2. Set Width to fill parent and Height to 50%



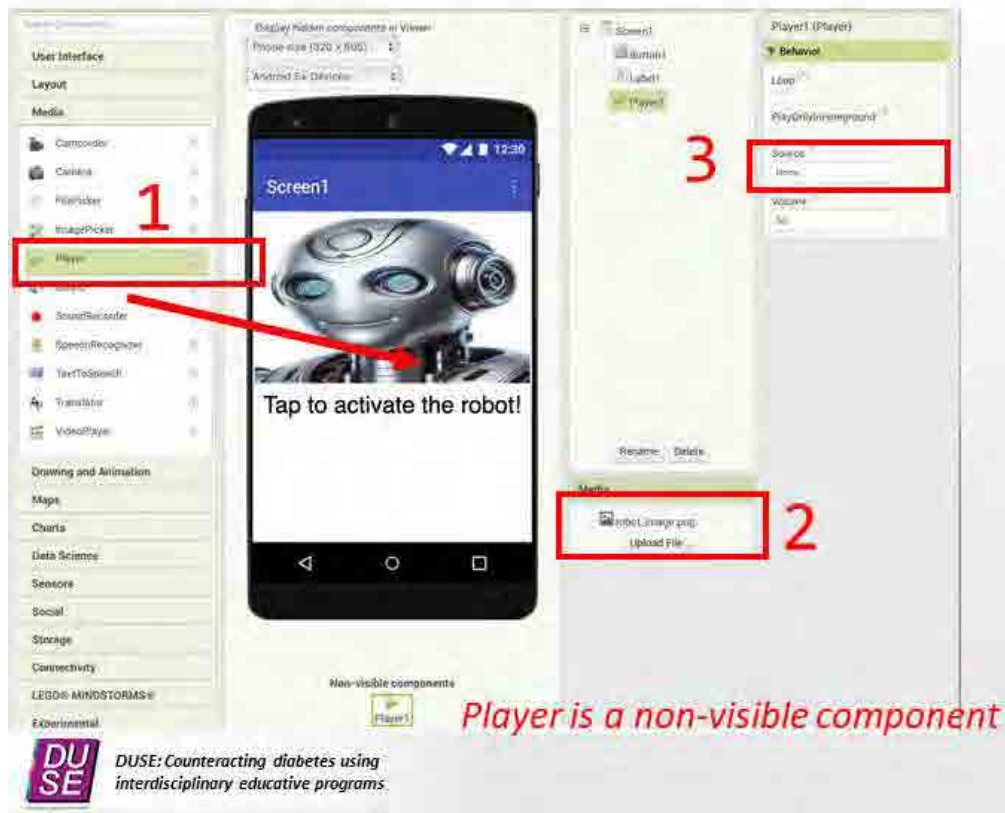
1. Add a Label below the button
2. Set Text to "Tap to activate the robot!"
3. Set TextAlignment to center:1
4. Set Width to fill parent
5. Set FontSize to 30



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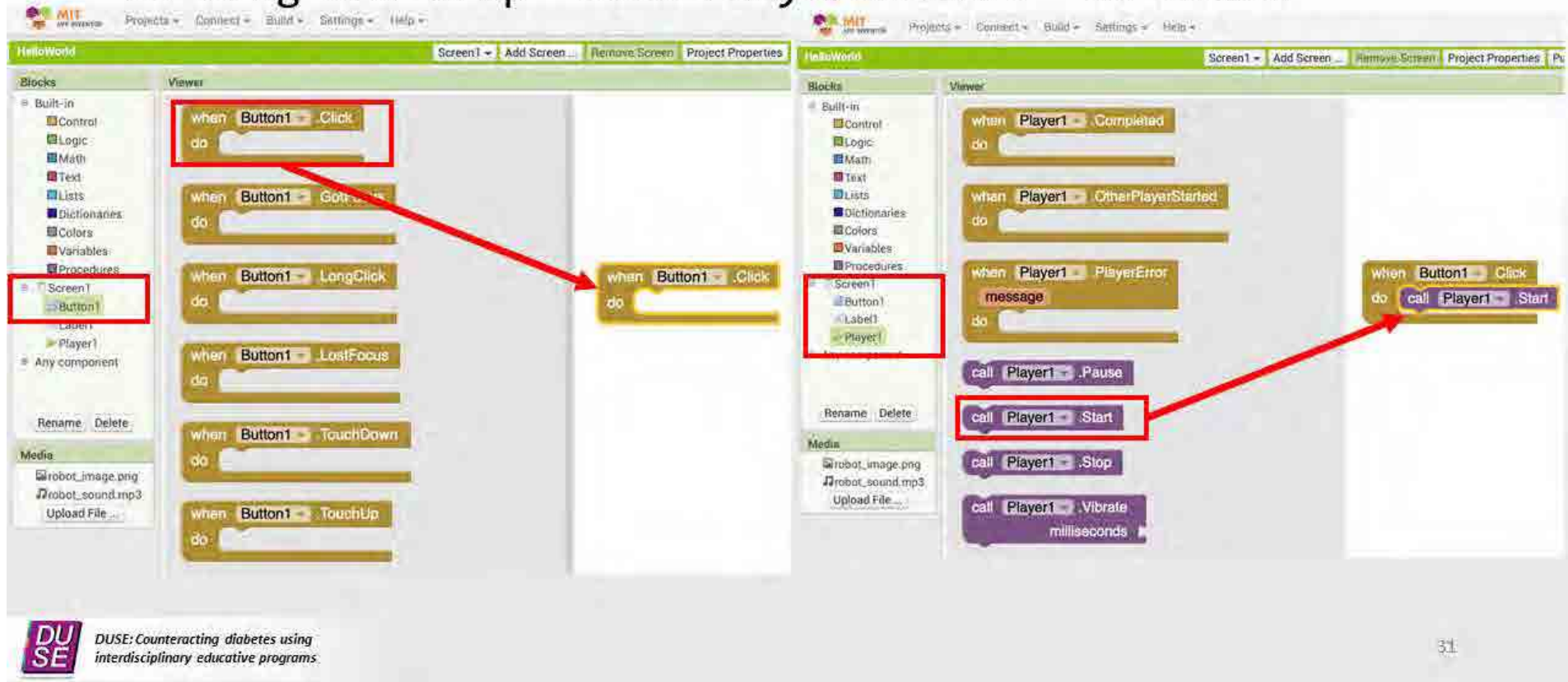


1. Add a Player
2. Upload the robot sound
3. Set Source to robot_sound.mp3

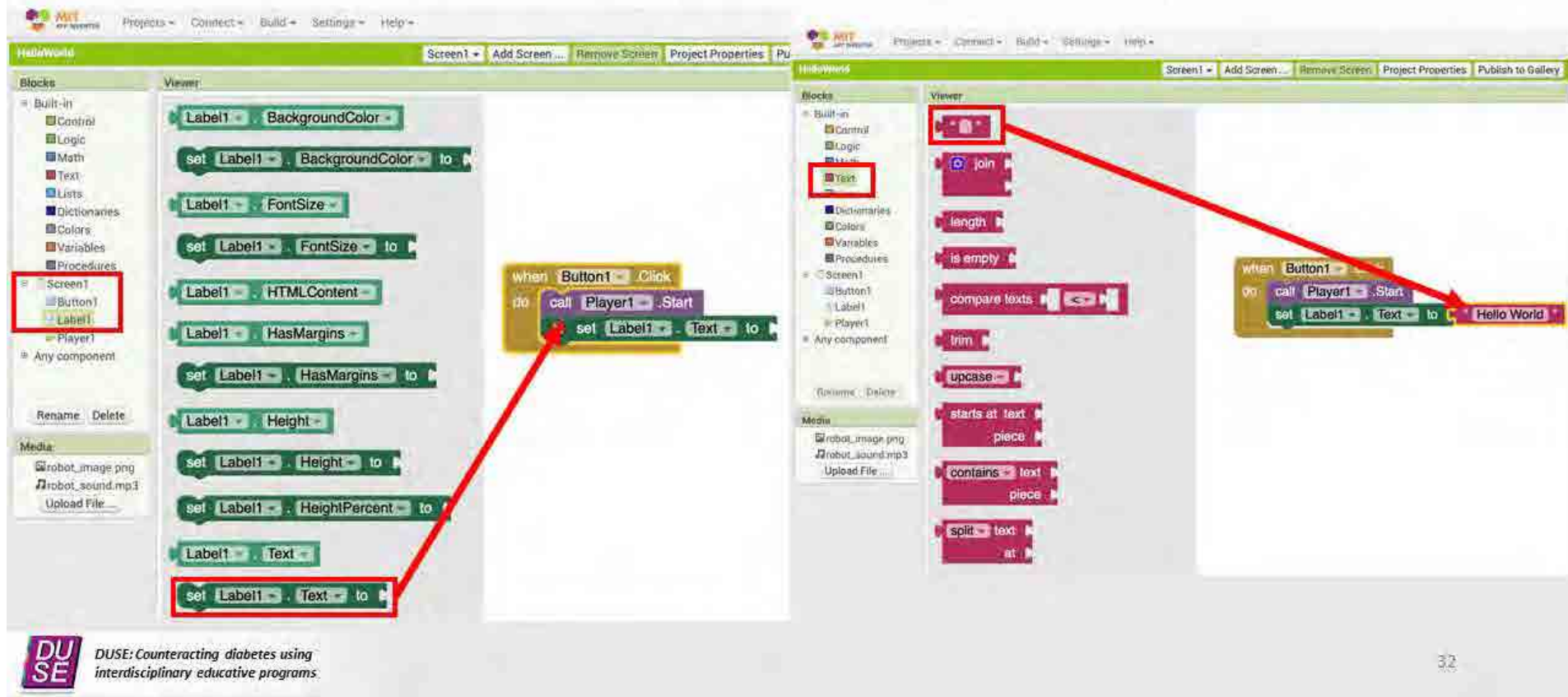


Switch to Blocks

1. Drag and drop “when Button1.Click do...” to Viewer
2. Drag and drop “call Player1.Start” to Viewer



1. Drag and drop “set Label1.Text to...” to Viewer
2. Drag and drop “ ” to Viewer and type “Hello World” in it



1. Drag and drop “when Player1.Completed do...” to Viewer
2. Drag and drop “set Label1.Text to...” to Viewer
3. Drag and drop “ ” to Viewer and type “Tap to activate the robot!” in it

The image displays two screenshots of the MIT App Inventor web interface, illustrating the steps to configure a robot activation app.

Top Screenshot: The interface shows the 'when Player1.Completed do...' block being dragged from the 'when Player1.Completed' event to the 'do' block. The 'set Label1.Text to...' block is also being dragged from the 'set Label1.Text to...' block to the 'do' block. The 'when Button1.Click do...' block is visible in the background.

Bottom Screenshot: The interface shows the 'Tap to activate the robot!' block being dragged from the 'Tap to activate the robot!' block to the 'do' block. The 'when Button1.Click do...' block is visible in the background.

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Blocks summary

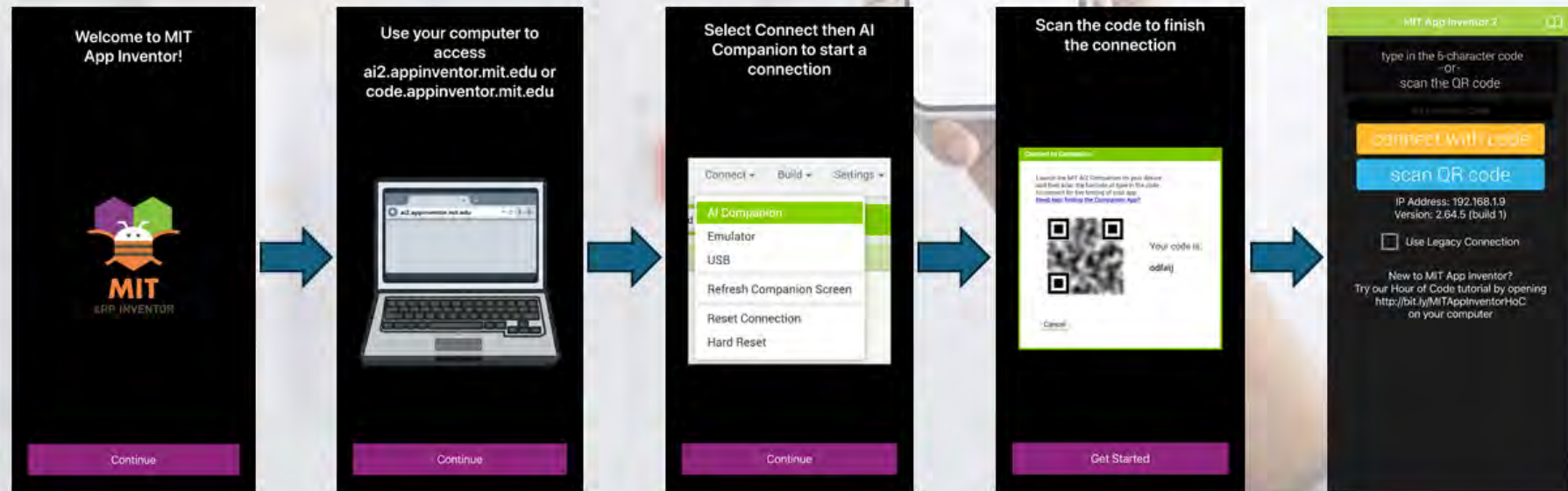
When we *click* the button “Button1”, then we activate the *start* functionality of the module “Player1” to play the sound and then the *text* that is stored inside the label “Label1” is set to “Hello World”



When the “Player1” is *completed*, then the *text* that is stored inside the label “Label1” is set to “Tap to activate the robot!”



Testing the app with AI Companion



Testing the app with Emulator

```
aiStarter
App Inventor version: 39.266.0
Architecture: ARM64
AppInventor tools located here: C:\Program Files\MIT App Inventor
App path: C:\Program Files\MIT App Inventor\from-Android-SDK-platform-tools\adb
Bottle v0.12.14 server starting up (using androidserver.py)...
Listening on http://127.0.0.1:8080/
Hit Ctrl-C to quit.
```

aiStarter



Connect to Emulator



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Intro to scratch programming language



- **Scratch** is a high-level, puzzle-like visual programming language
 - **Event Handlers:** Blocks that trigger actions when events happen (e.g., button press, screen shake).
 - **Events:**
 - Click
 - LongClick
 - GotFocus
 - LostFocus
 - Buttons behave differently with touches and focus changes



Intro to scratch programming language



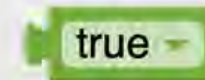
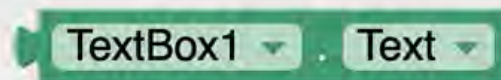
• Commands:

- Specify actions (e.g., play a sound, vibrate).
- Can require input values (also known as parameters or arguments) like vibration duration or text color.



• Expressions:

- Sockets can be filled with expressions which are blocks that denote a value. Expression blocks have leftward-pointing plugs that transmit the value to the socket.



Intro to scratch programming language

- **Properties:**

- Characteristics of components (e.g., label text, background color)
- **Getter Blocks:** Retrieve property values
- **Setter Blocks:** Change property values

- **Control Flow:**

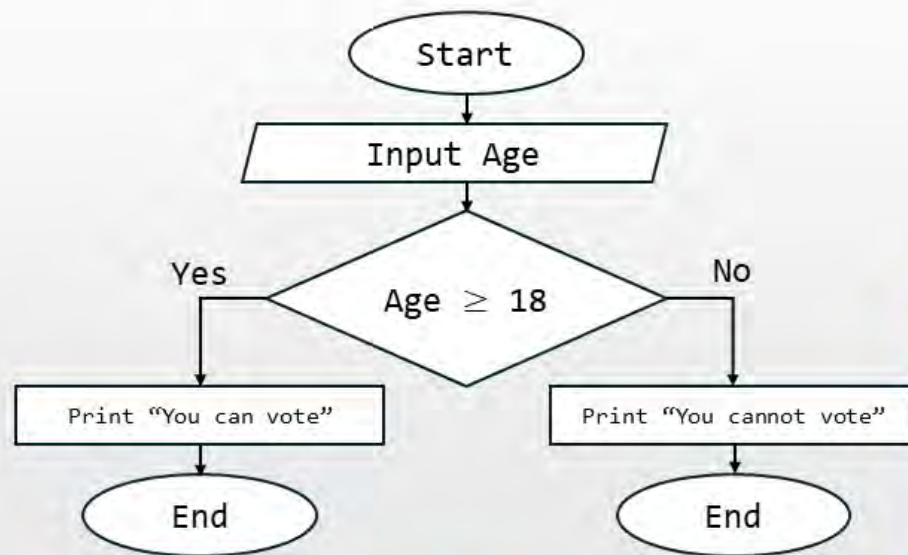
- Actions happen in sequence (top to bottom)
- **Tip:** Arrange commands in the right order for desired app behavior.



Property



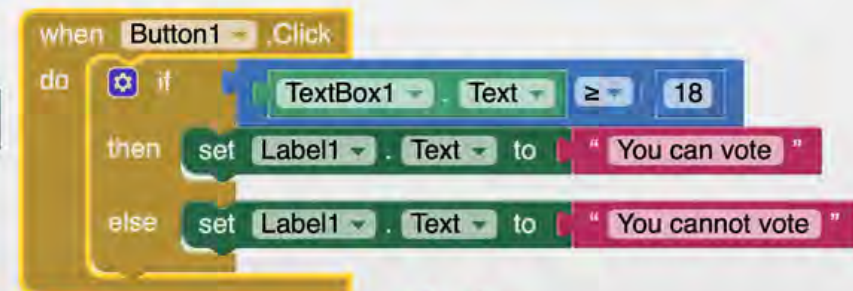
From Flowchart to Scratch



Flowchart



Designer



Blocks

Homework Assignment: Talking Robots App

- Create an interactive app featuring two robots. When each robot is clicked, it should respond with a sound message.
- **Robot Images:**
 - [robot1.jpg](#)
 - [robot2.jpg](#)
- **Sounds:**
 - [robot1voice.mp3](#)
 - [robot2voice.mp3](#)
- **Arrangement:** Place the two robots side by side on the screen.

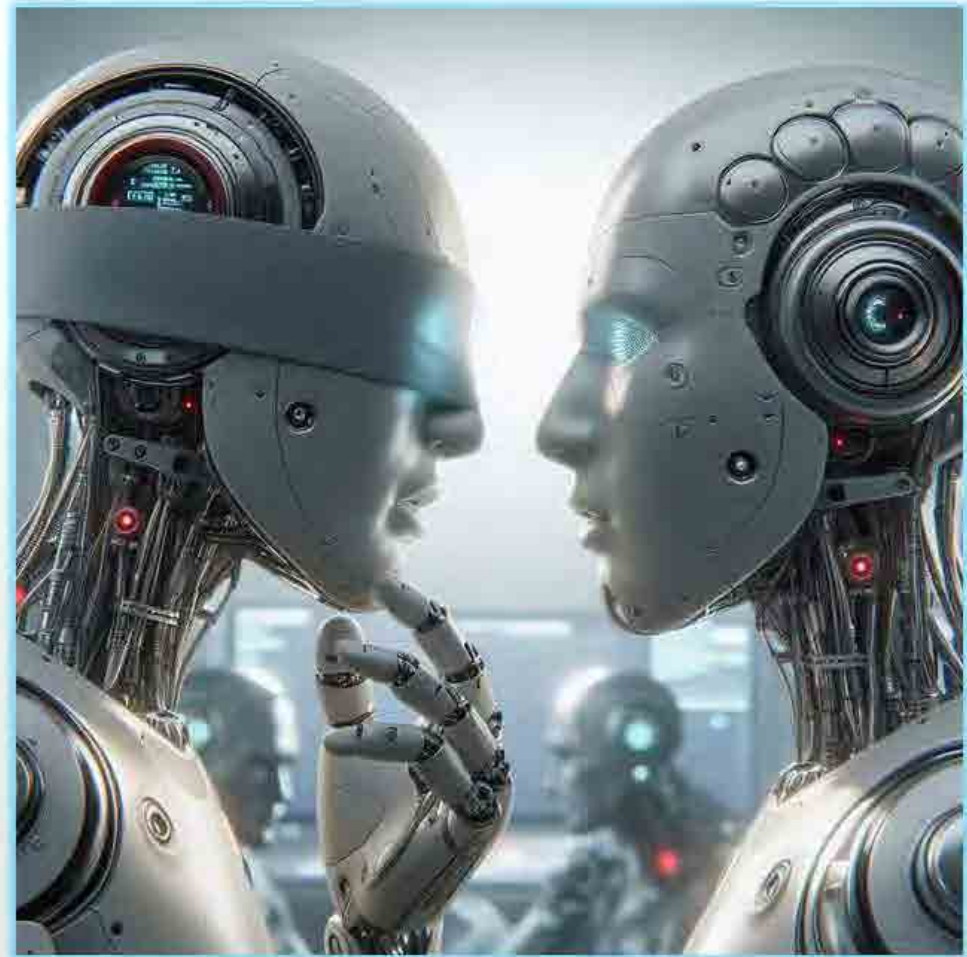
Layout



HorizontalArrangement



DUSE: Counteracting diabetes using
interdisciplinary educative programs



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A photograph of an astronaut in a white spacesuit floating in space against a bright, hazy orange and yellow background, possibly a sunset or sunrise on a planet.

Q&A and Exploration

➤ Check the tutorials:

<https://appinventor.mit.edu/explore/ai2/tutorials>

➤ Play:

<https://appinventor.mit.edu/explore/teach>



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interdisciplinary educative programs*

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11.3 Lesson 3: Hands on with AppInventor

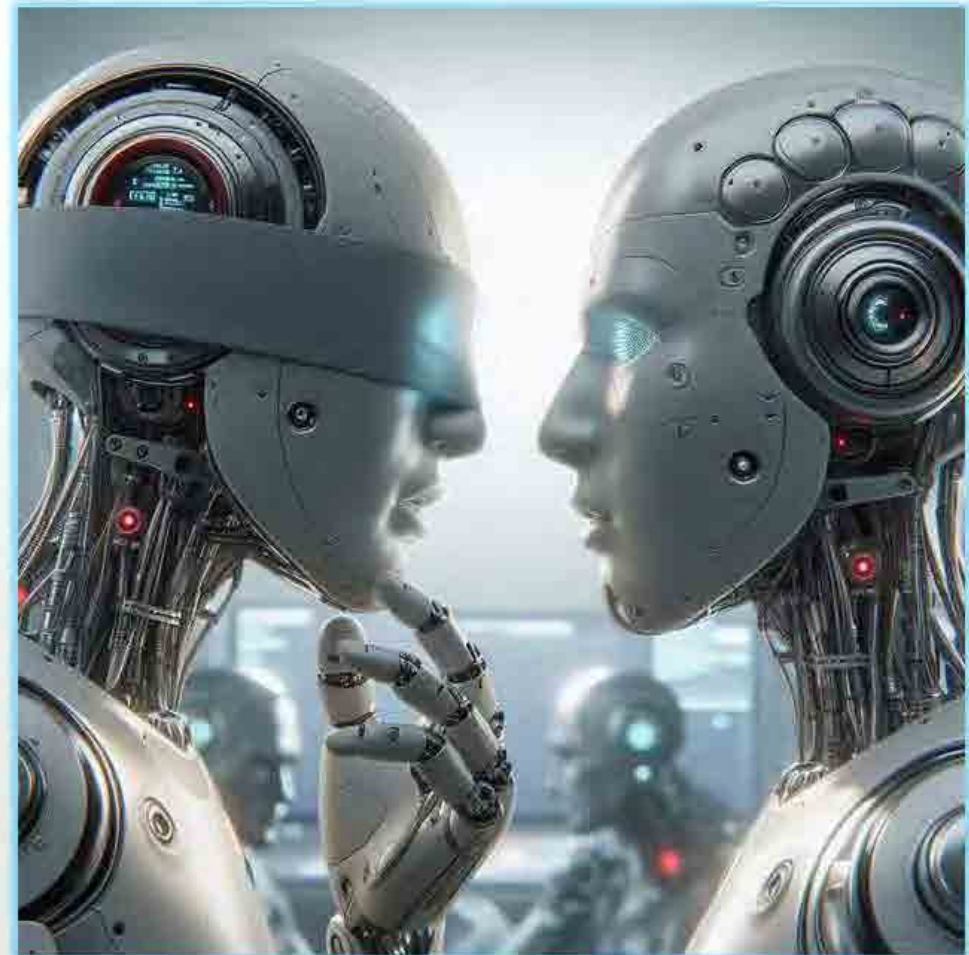
DUSE *DUSE: Counteracting diabetes using interdisciplinary educative programs*

**Hands on with AppInventor:
From Idea to App in No Time**

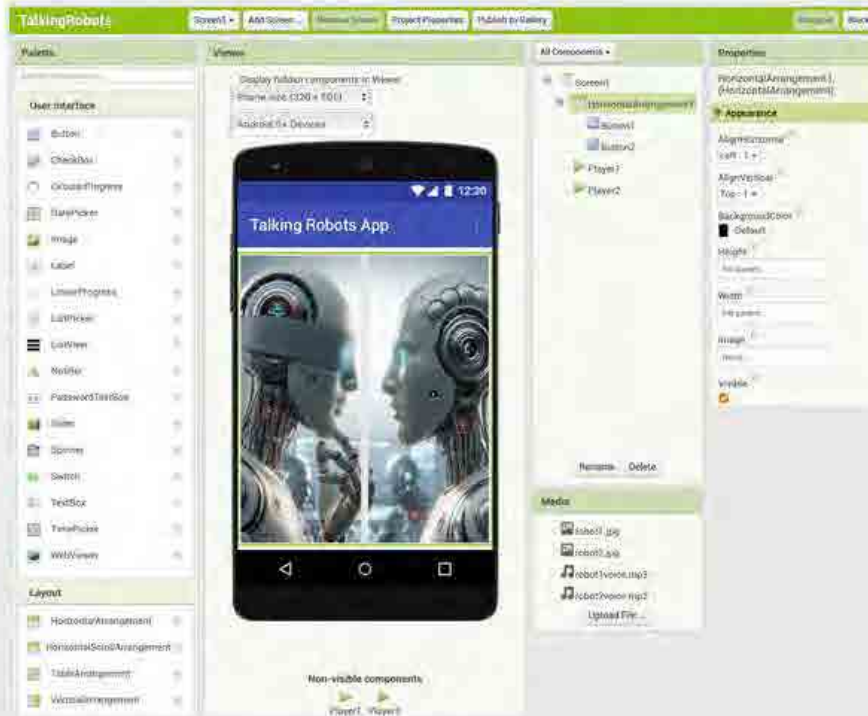
Co-funded by the European Union

Homework Assignment: Talking Robots App

- Create an interactive app featuring two robots. When each robot is clicked, it should respond with a sound message.
- **Robot Images:**
 - [robot1.jpg](#)
 - [robot2.jpg](#)
- **Sounds:**
 - [robot1voice.mp3](#)
 - [robot2voice.mp3](#)
- **Arrangement:** Place the two robots side by side on the screen.
- Any other modifications?



Talking Robots App



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Designer

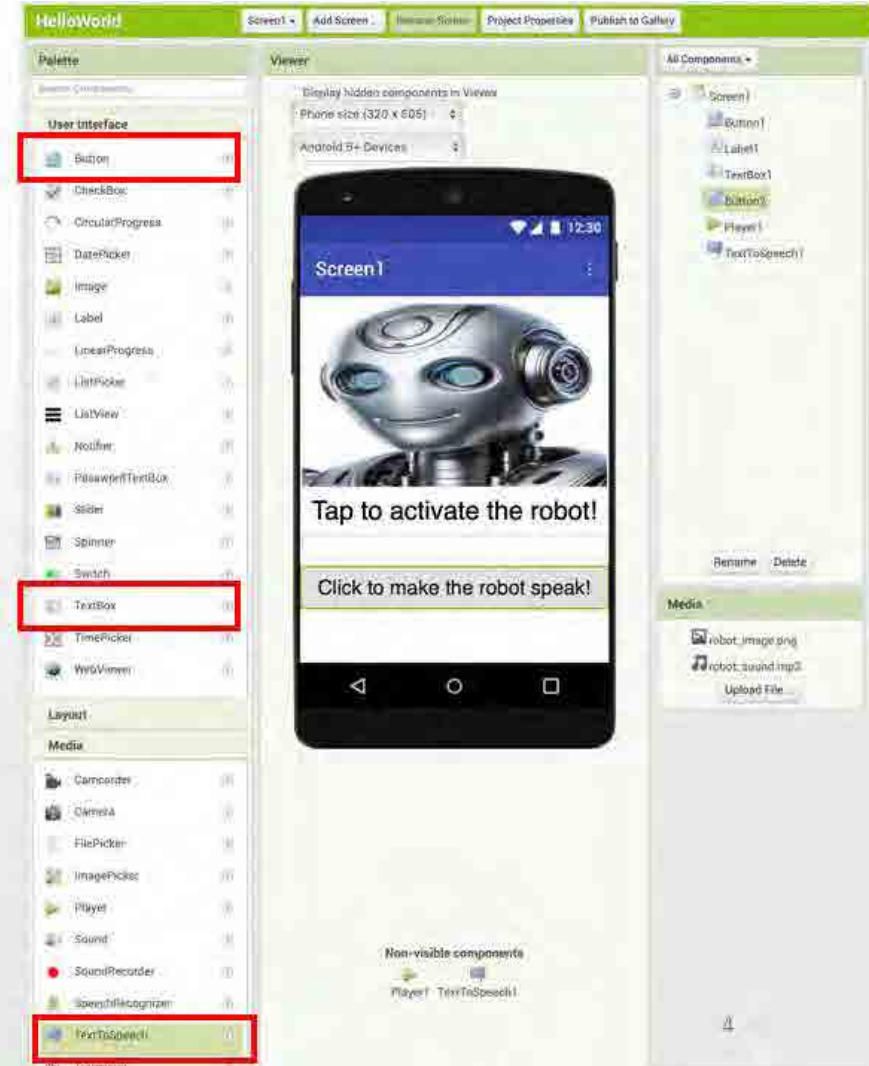
Blocks

DU SE

Make the robot speak?

We need add:

- ☐ TextBox
- ☐ Button
- ☐ TextToSpeech



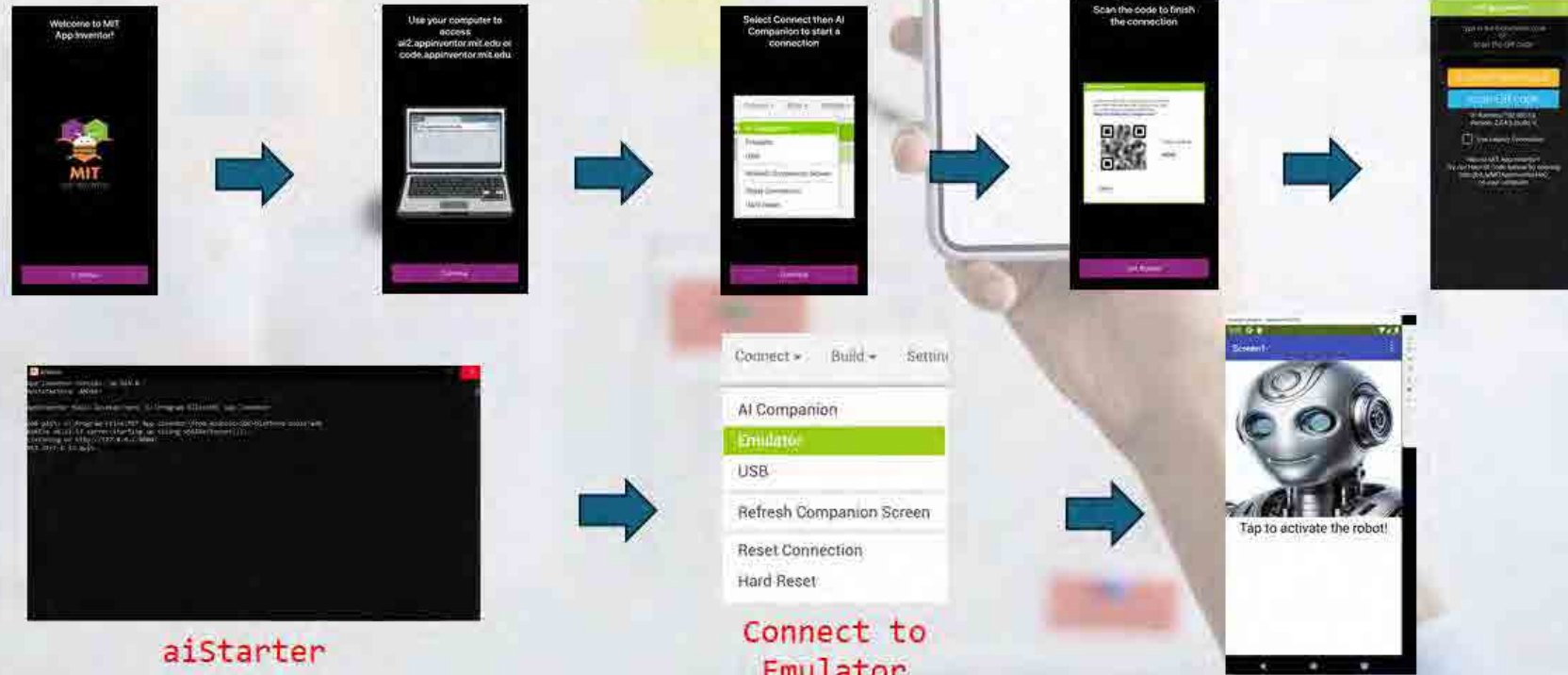
Make the robot speak?

When we *click* the button
“Button2”, then

we activate the *speak*
functionality of the
text2speech mechanism
“TextToSpeech1” to speak
the text that is stored
inside the textbox
“TextBox1”



Testing the app with AI Companion or Emulator



DUSE: Counteracting diabetes using interdisciplinary educative programs

What about using a sensor?

- A sensor is a device that detects changes in the environment
- Smartphones have sensors to improve functionality, like adjusting brightness or tracking movement



Sensors

- **Accelerometer:**

- Measures acceleration forces in three dimensions.
- Detect movement, gestures, and changes in device orientation.

- **GPS:**

- Access location-based information such as latitude, longitude, and altitude.
- Develop location-aware apps for activities such as mapping, navigation, and fitness tracking.

- **Gyroscope:**

- Measures orientation and rotation rate, to create apps that respond to the rotation and movement of the device in three dimensions.
- Useful for games, augmented reality experiences, and gesture-based interactions.



Sensors

- **Orientation sensor:**

- Provides information about the orientation of the device relative to the Earth's coordinate system.
- Create apps that respond to changes in the device's orientation, such as tilt-based controls or virtual reality experiences.

- **Light sensor:**

- Measures ambient light levels.
- Adjust screen brightness, trigger actions based on lighting conditions, or create apps that measure light intensity.

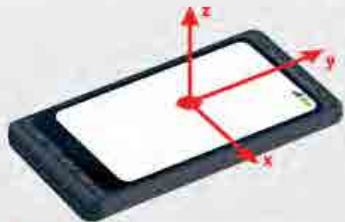
- **Proximity sensor:**

- Detects the presence of nearby objects without physical contact.
- Create apps that respond to changes in proximity, such as automatically locking the screen during phone calls or hands-free interactions.

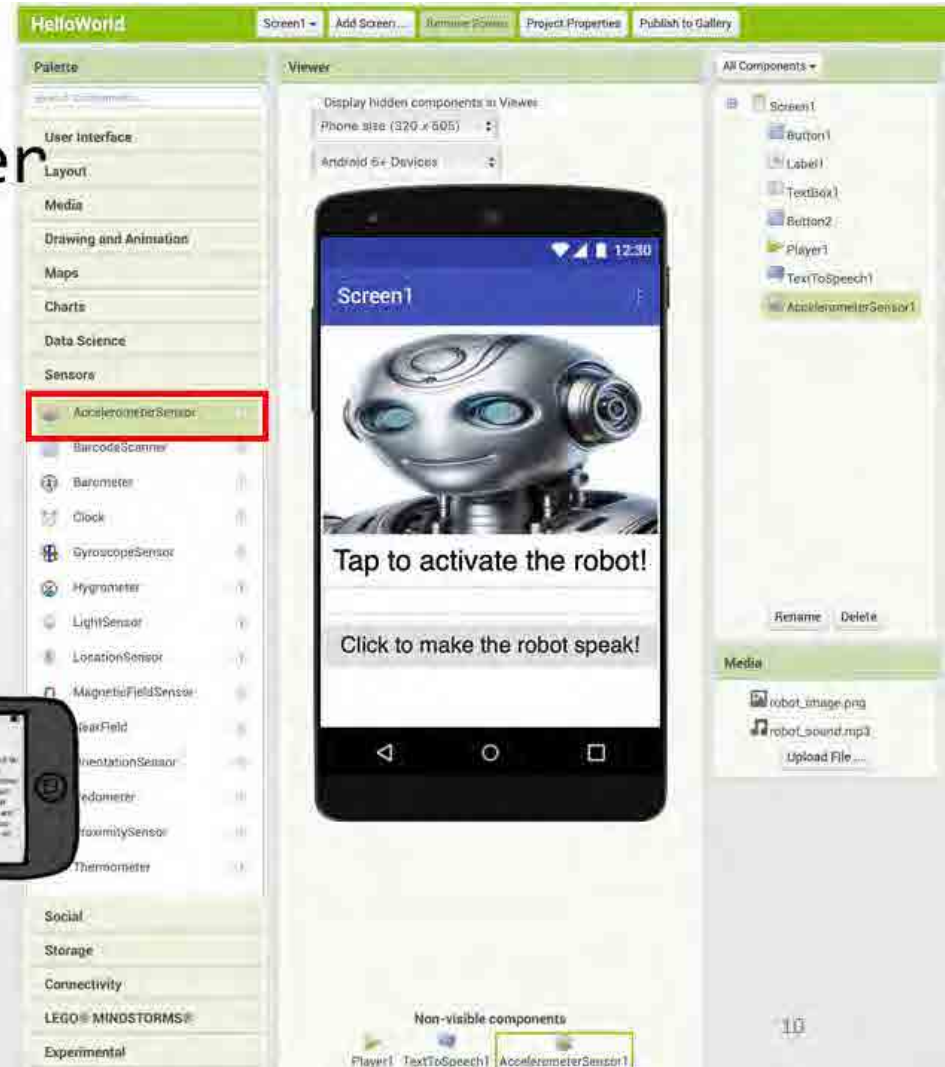


Using an accelerometer

- An accelerometer is a sensor that detects movement and changes in orientation, helping features like screen rotation and step tracking

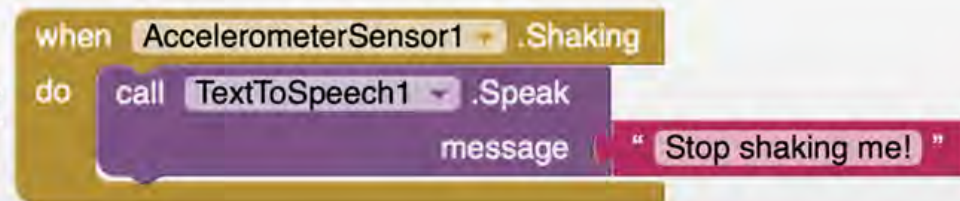


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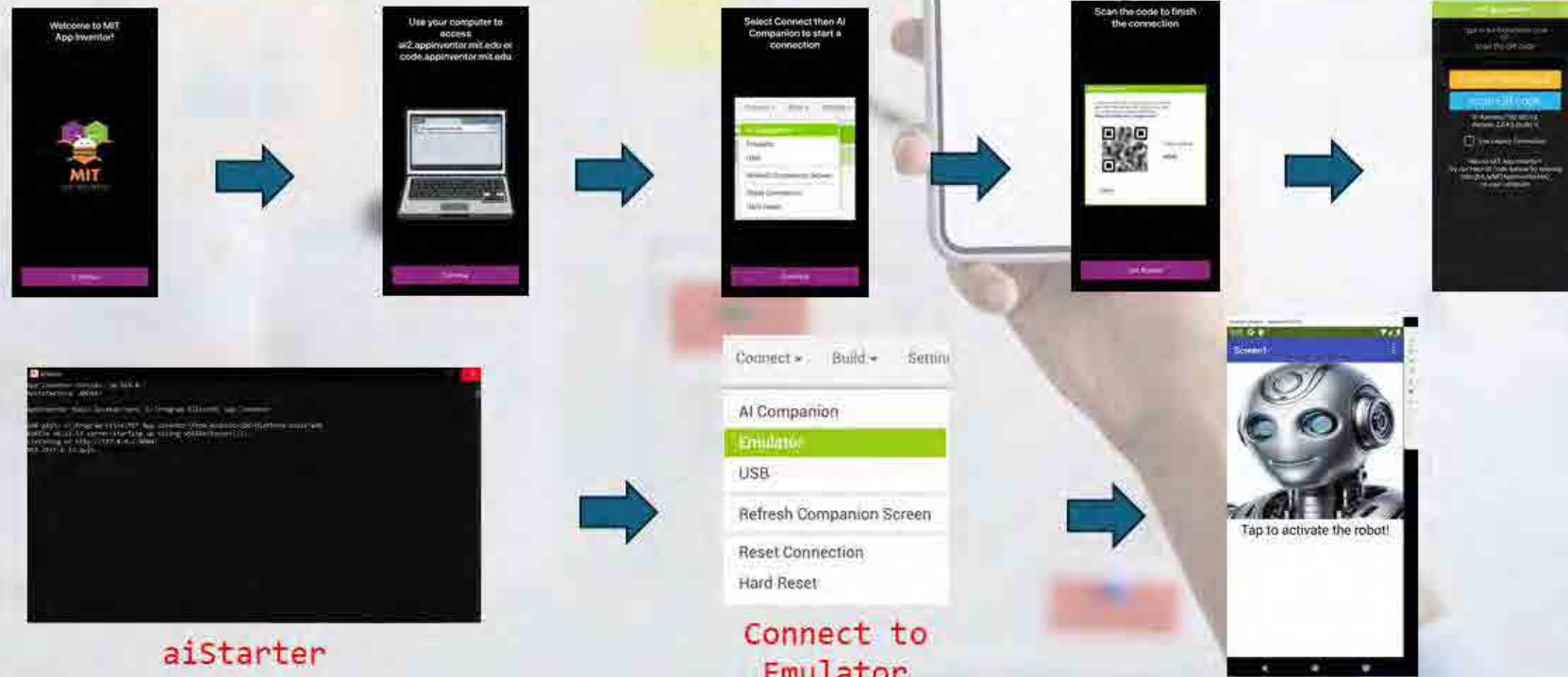


Using an accelerometer

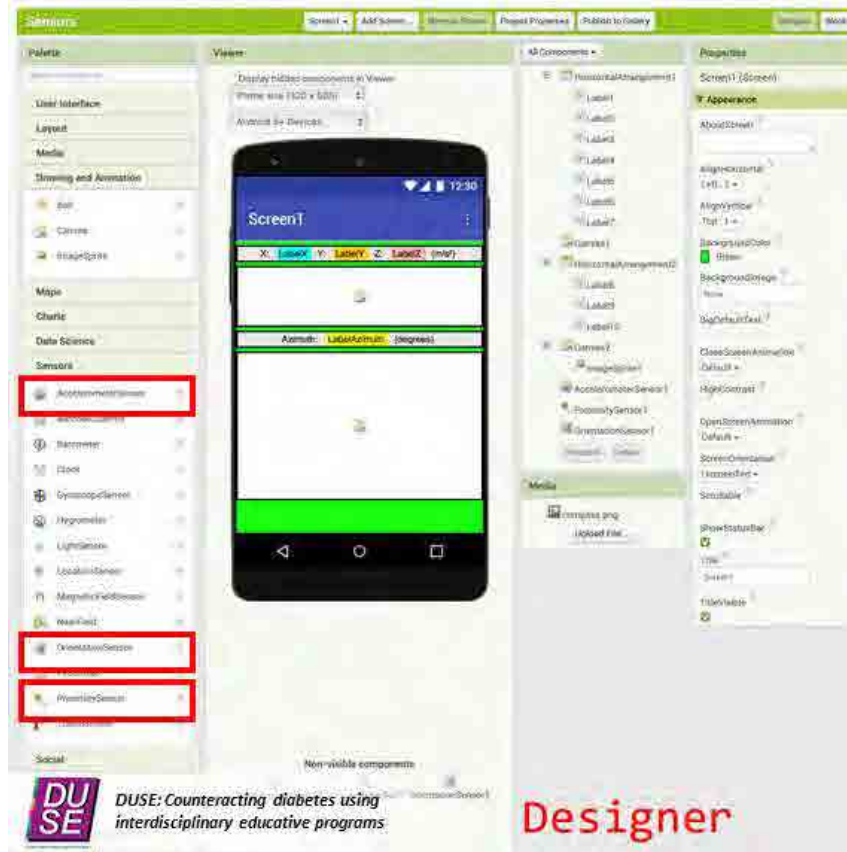
When accelerometer is shaking, then our application will speak the following message: "stop shaking me".



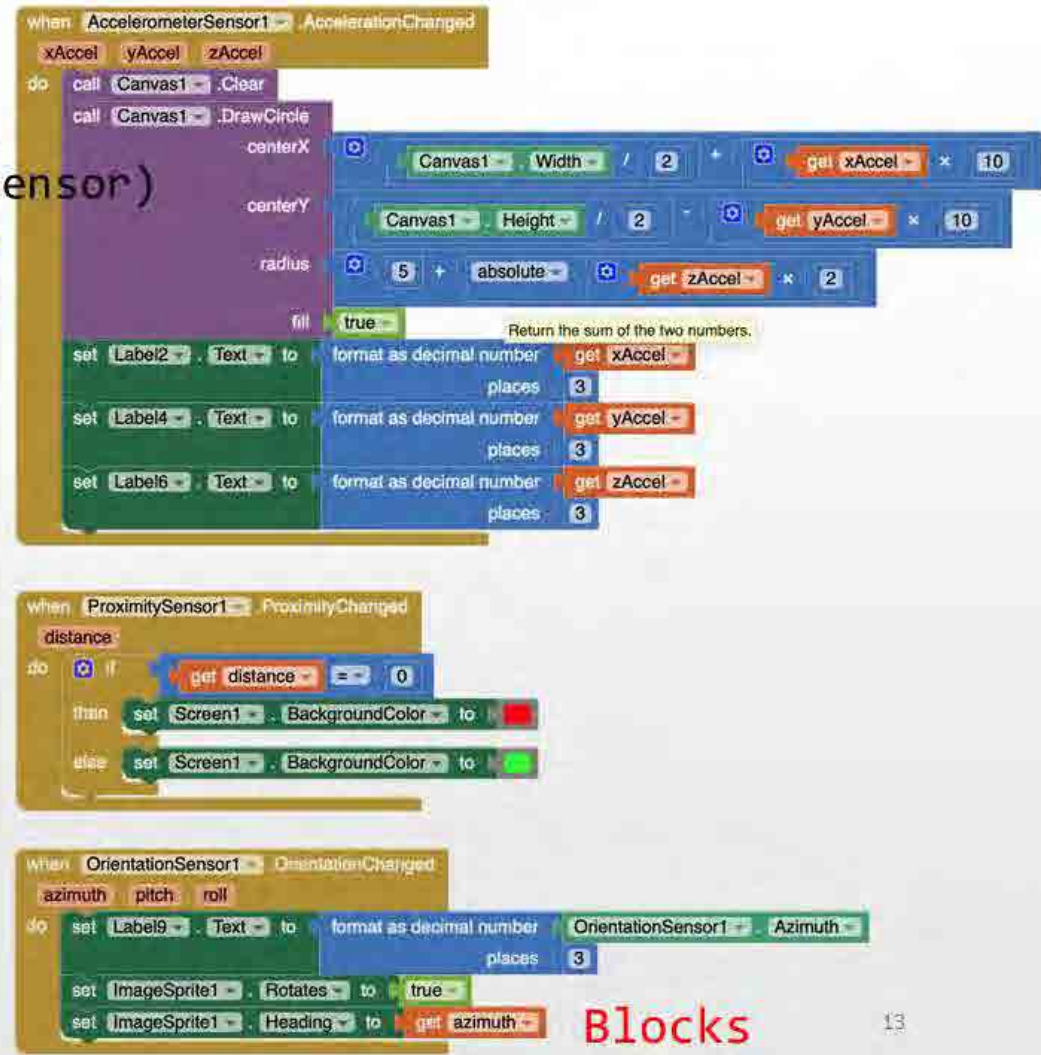
Testing the app with AI Companion or Emulator



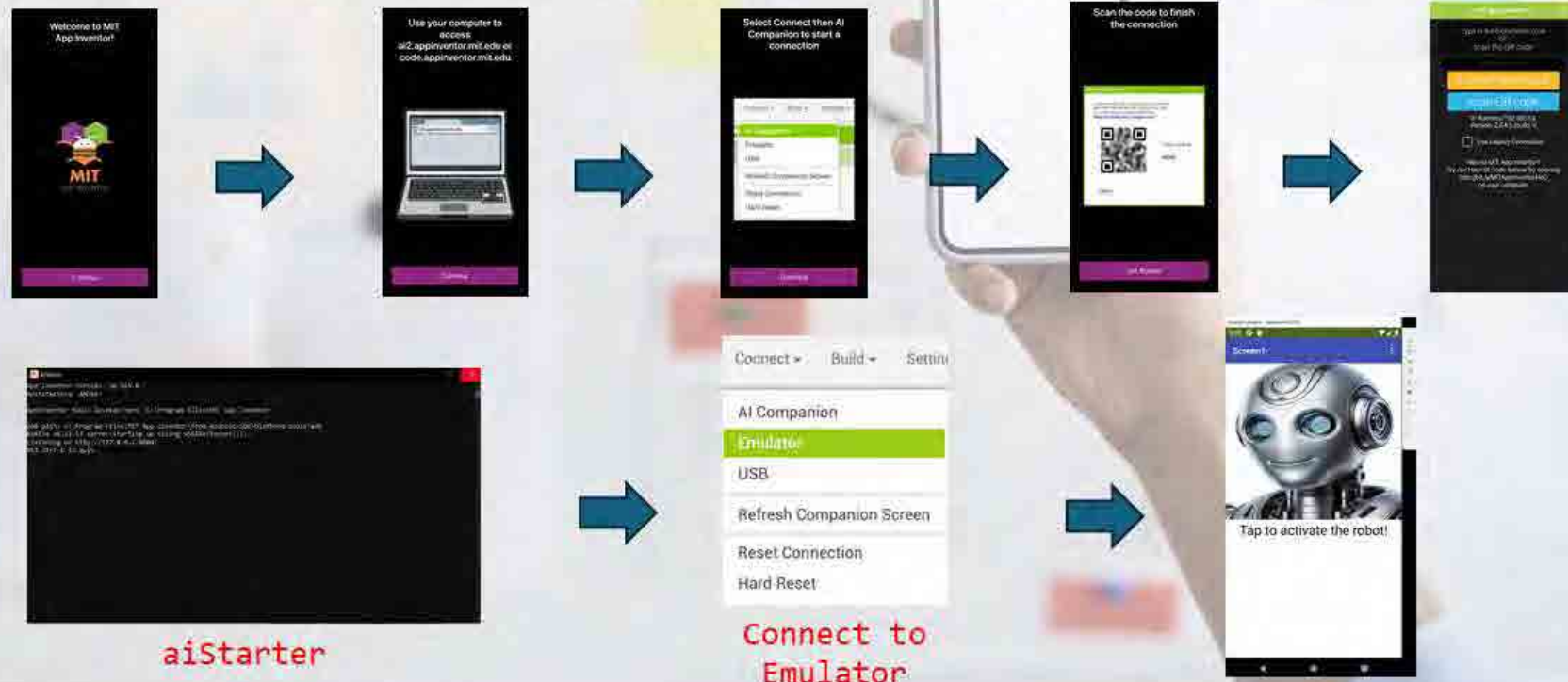
Sensors app (accelerometer, orientation and proximity sensor)



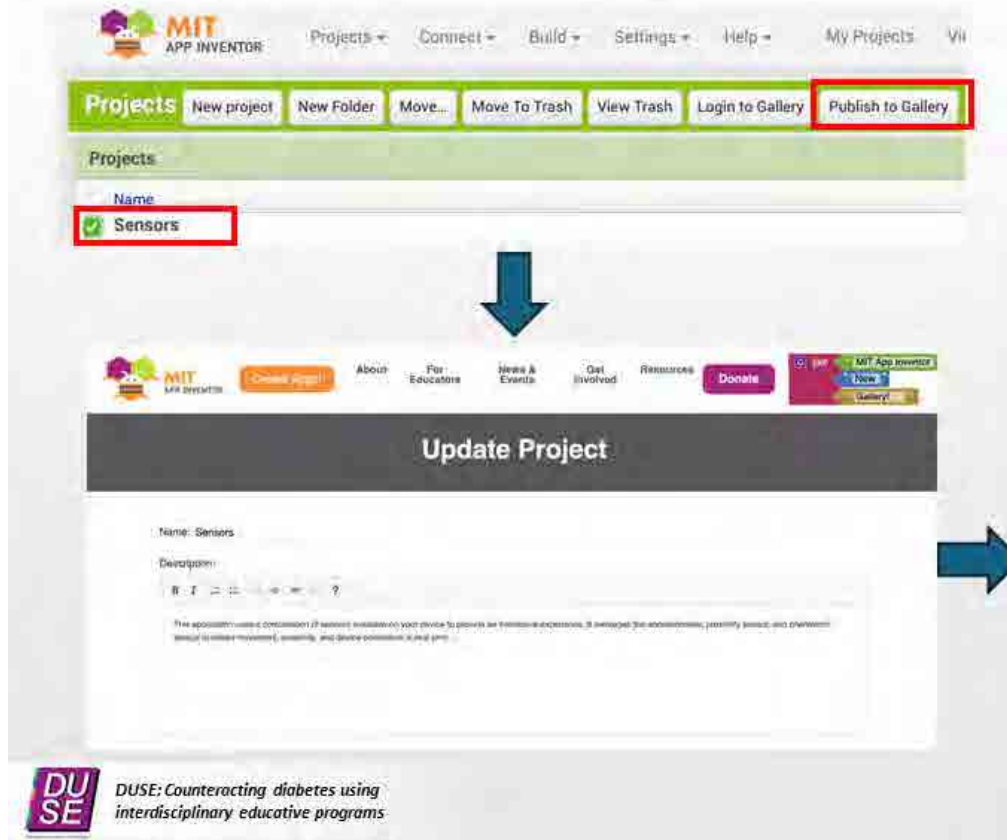
Designer



Testing the app with AI Companion or Emulator



App sharing



MIT APP INVENTOR

Projects Connect Build Settings Help My Projects

Projects New Project New Folder Move... Move To Trash View Trash Login to Gallery **Publish to Gallery**

Projects

Name

Sensors

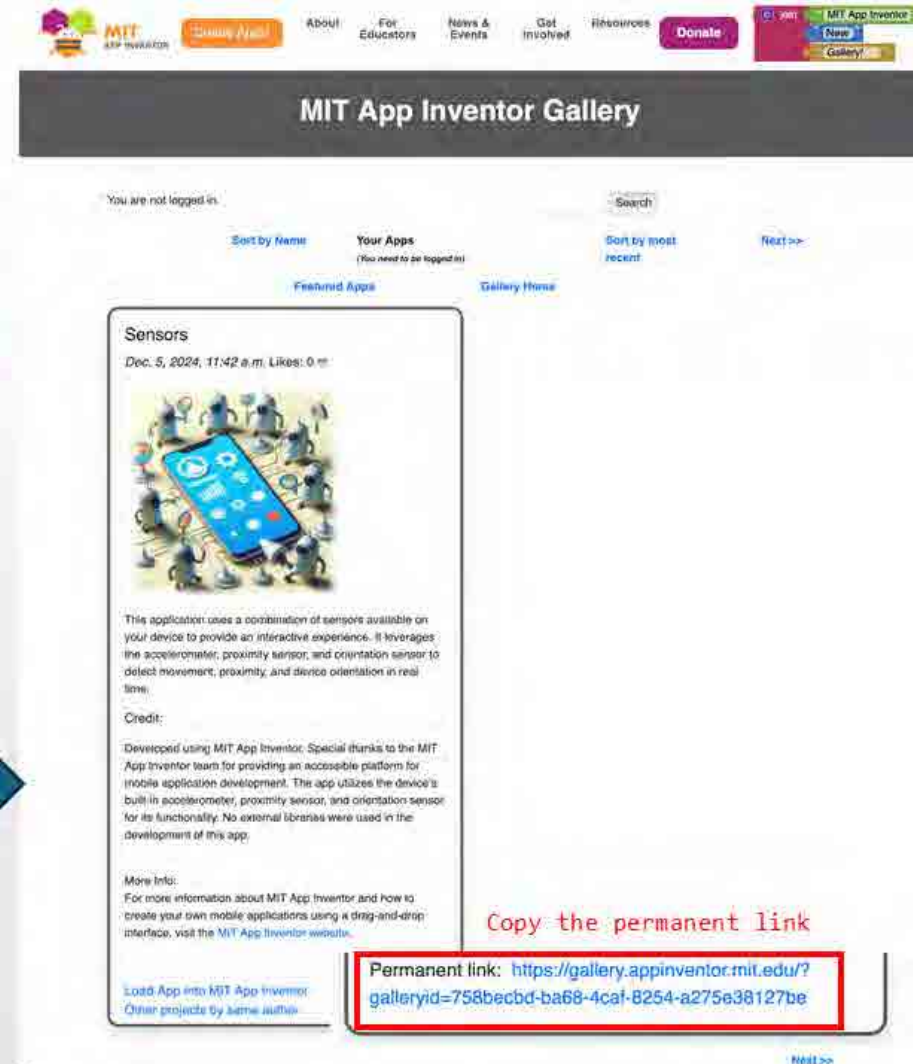
Update Project

Name: Sensors

Description:

The application uses a combination of sensors available on your device to provide an interactive experience. It leverages the accelerometer, proximity sensor, and orientation sensor to detect movement, proximity, and device orientation in real time.

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Sort by Name Your Apps (You need to be logged in)

Sort by most recent Next >>

Featured Apps Gallery Home

Sensors

Dec 5, 2024, 11:42 a.m. Likes: 0



This application uses a combination of sensors available on your device to provide an interactive experience. It leverages the accelerometer, proximity sensor, and orientation sensor to detect movement, proximity, and device orientation in real time.

Credit:

Developed using MIT App Inventor. Special thanks to the MIT App Inventor team for providing an accessible platform for mobile application development. This app utilizes the device's built-in accelerometer, proximity sensor, and orientation sensor for its functionality. No external libraries were used in the development of this app.

More Info:

For more information about MIT App Inventor and how to create your own mobile applications using a drag-and-drop interface, visit the MIT App Inventor website.

Load App into MIT App Inventor Owner projects by same author

Copy the permanent link

Permanent link: <https://gallery.appinventor.mit.edu/?galleryid=758becbd-ba68-4caf-8254-a275e38127be>

Next >>

App sharing

The image displays the App Inventor web interface, divided into two main sections: the Designer on the left and the Blocks editor on the right.

Designer: The central canvas shows a mobile app preview. A red box highlights the "Sharing" button in the bottom navigation bar. Another red box highlights the "Share this app" button at the bottom of the screen. The left sidebar contains various component categories like User Interface, Media, and Sensors. The right sidebar shows the "Properties" panel for the selected "Button1" component.

Blocks: The right side of the interface shows a visual programming block. A "when Button1 Click" block is connected to a "call Sharing1 .ShareMessage" block. The "ShareMessage" block has a "message" field containing the text "Check this app! Click on the following link:" followed by a "join" block and a URL: "https://gallery.appinventor.mit.edu/?galleryid=7...".

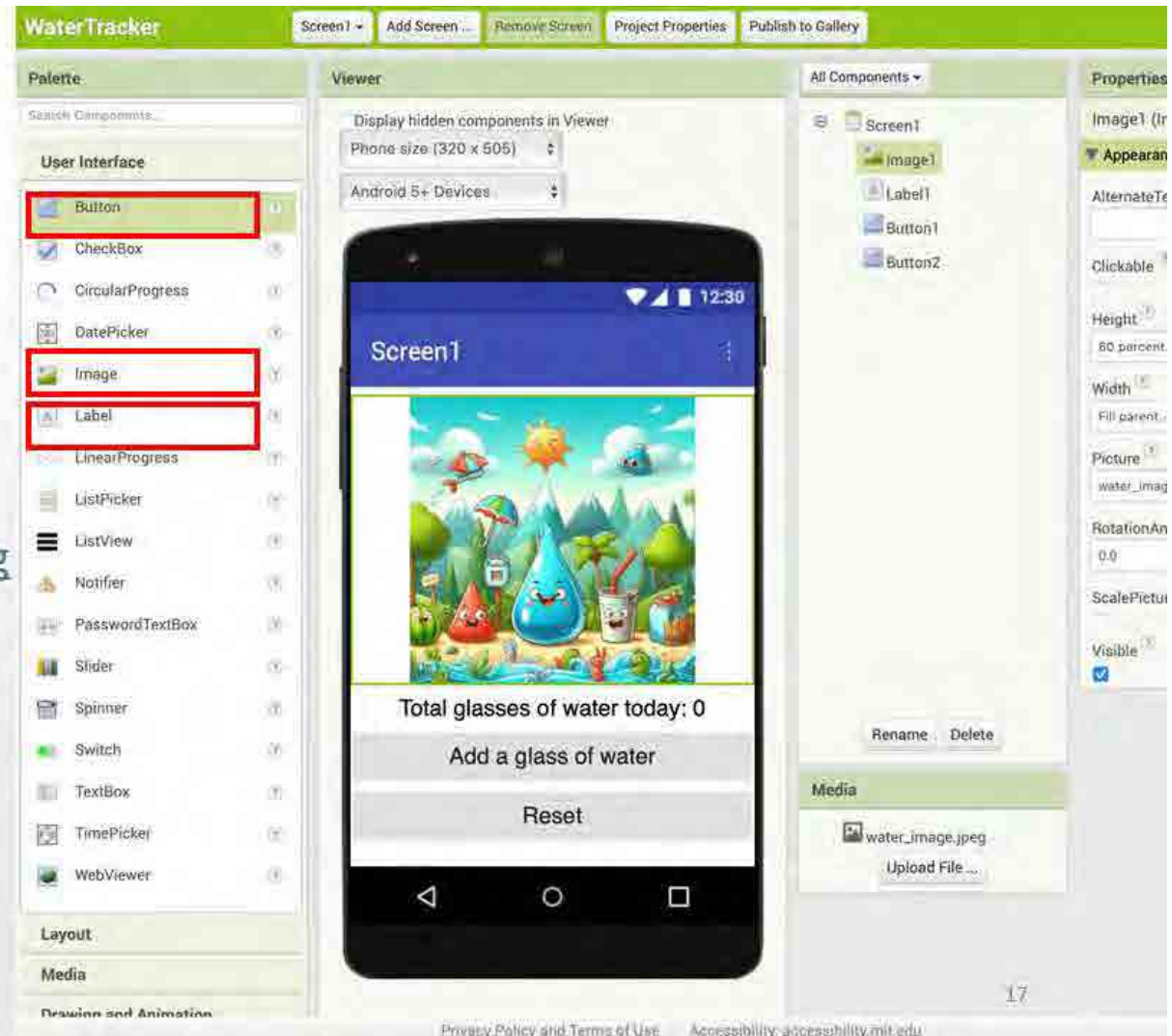
Labels: The word "Designer" is written in red text below the Designer section, and "Blocks" is written in red text below the Blocks section.

Logo: In the bottom left corner, there is a logo for "DUSE" (Duke University System of Education) with the text "DUSE: Counteracting diabetes using interdisciplinary educative programs."

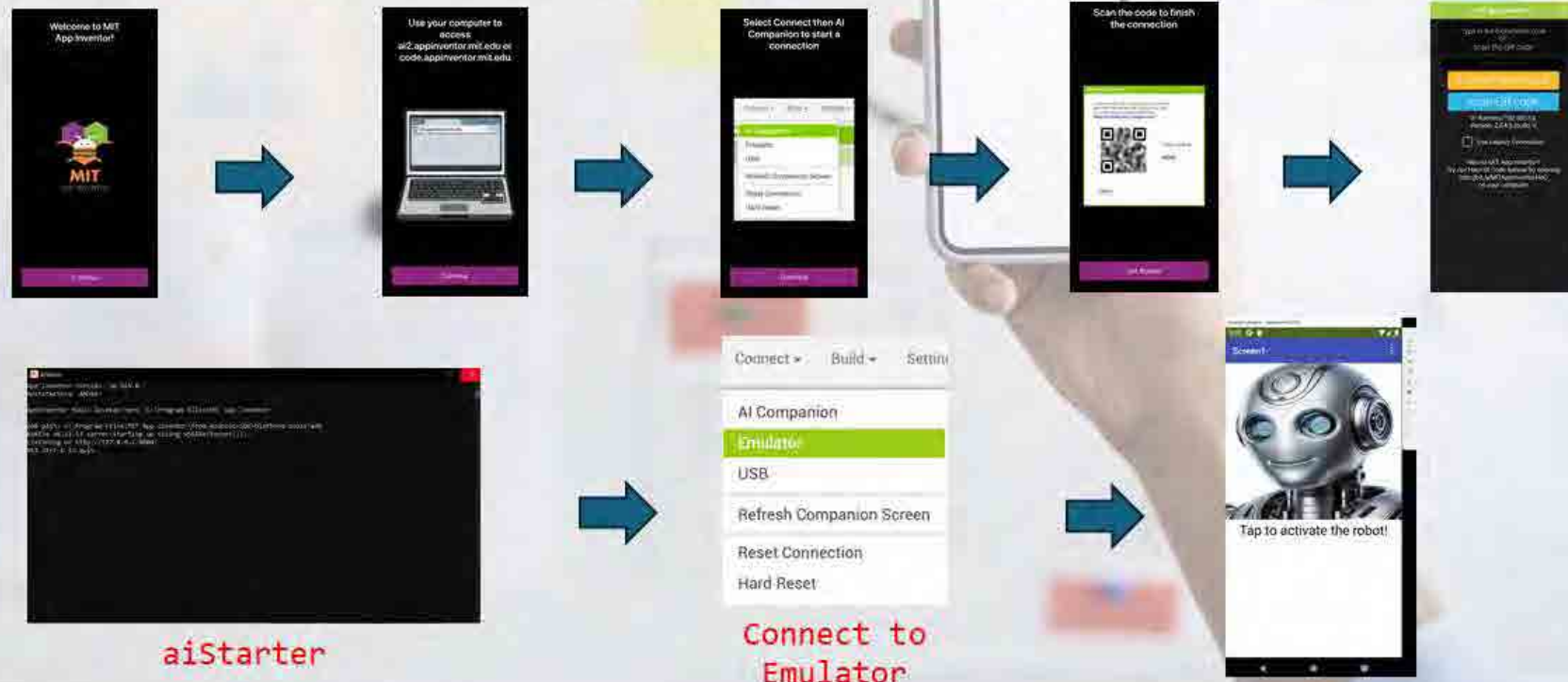
Water Tracker

We need :

- ☐ Image
- ☐ Label
- ☐ 2 Buttons
- ☐ water_image.jpeg

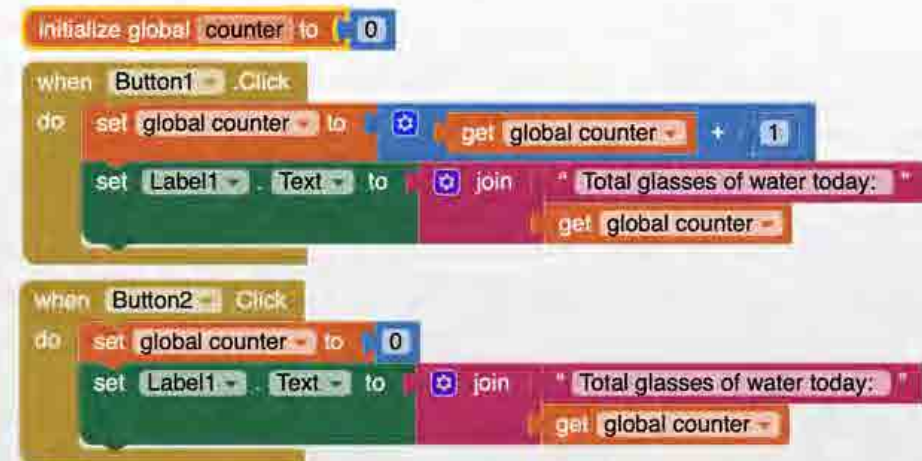


Testing the app with AI Companion or Emulator

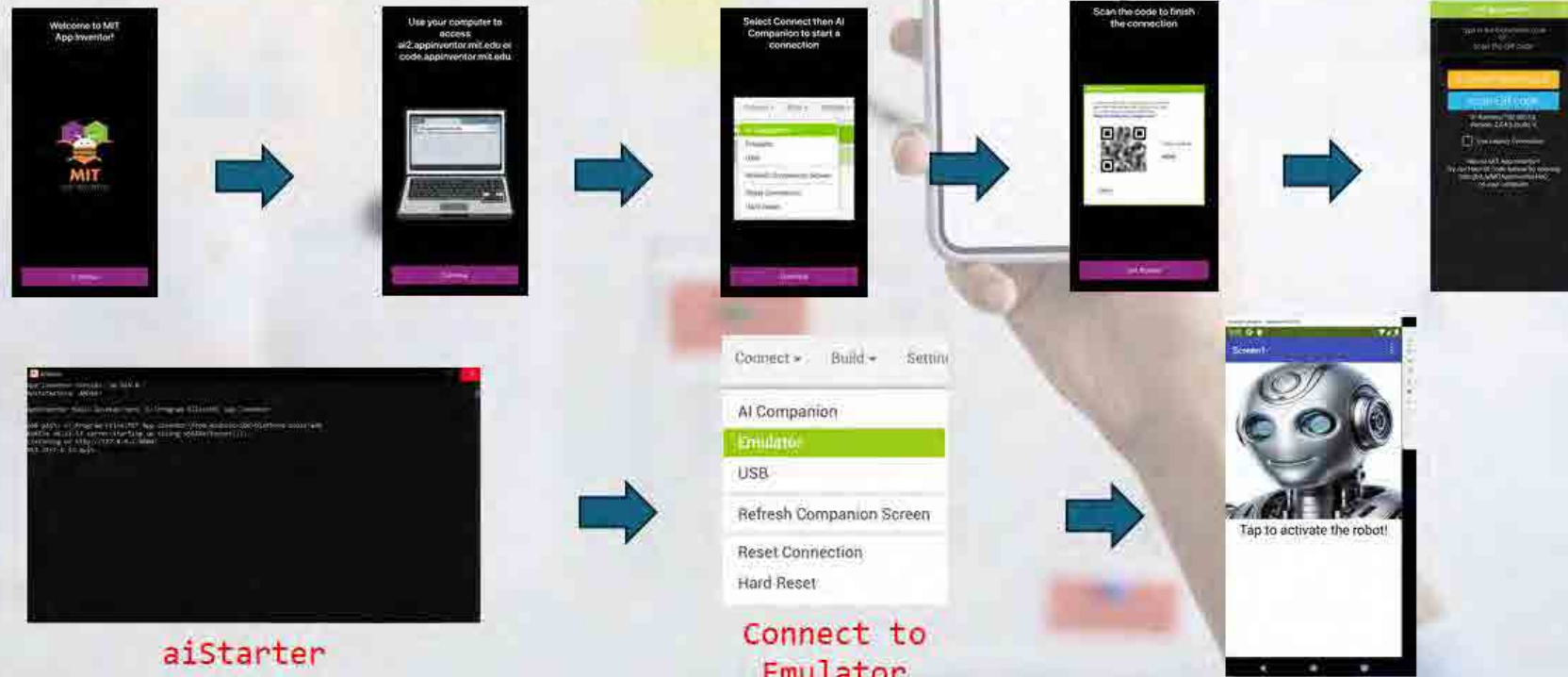


Water Tracker

- We need a **variable** to count the glasses of water, **counting from zero**
- We need to define the **conditions** for the 2 buttons:
 - **Button 1 (Add):**
 - Increase the counter by 1
 - Set the text.
 - **Button 2 (Reset):**
 - Set the counter to **back to zero**.
 - Set the text.



Testing the app with AI Companion or Emulator



BMI

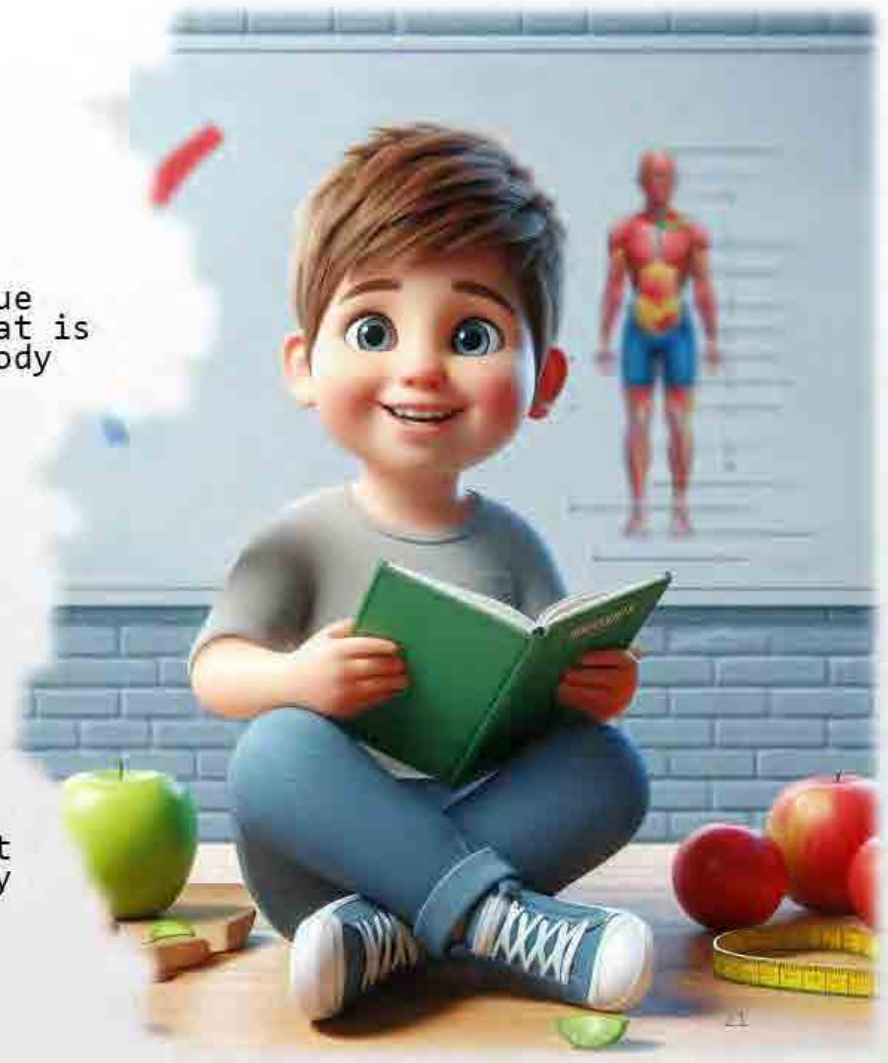
The Body Mass Index (BMI) is a numerical value derived from a person's weight and height that is used to assess whether they have a healthy body weight. The formula is:

$$BMI = \frac{Weight (kg)}{Height (m)^2}$$

States:

- Underweight: BMI < 18.5
- Normal weight: BMI 18.5–24.9
- Overweight: BMI 25–29.9
- Obesity: BMI ≥ 30

BMI provides a general guideline but doesn't account for muscle mass, bone density, or fat distribution, so it may not always accurately reflect health.

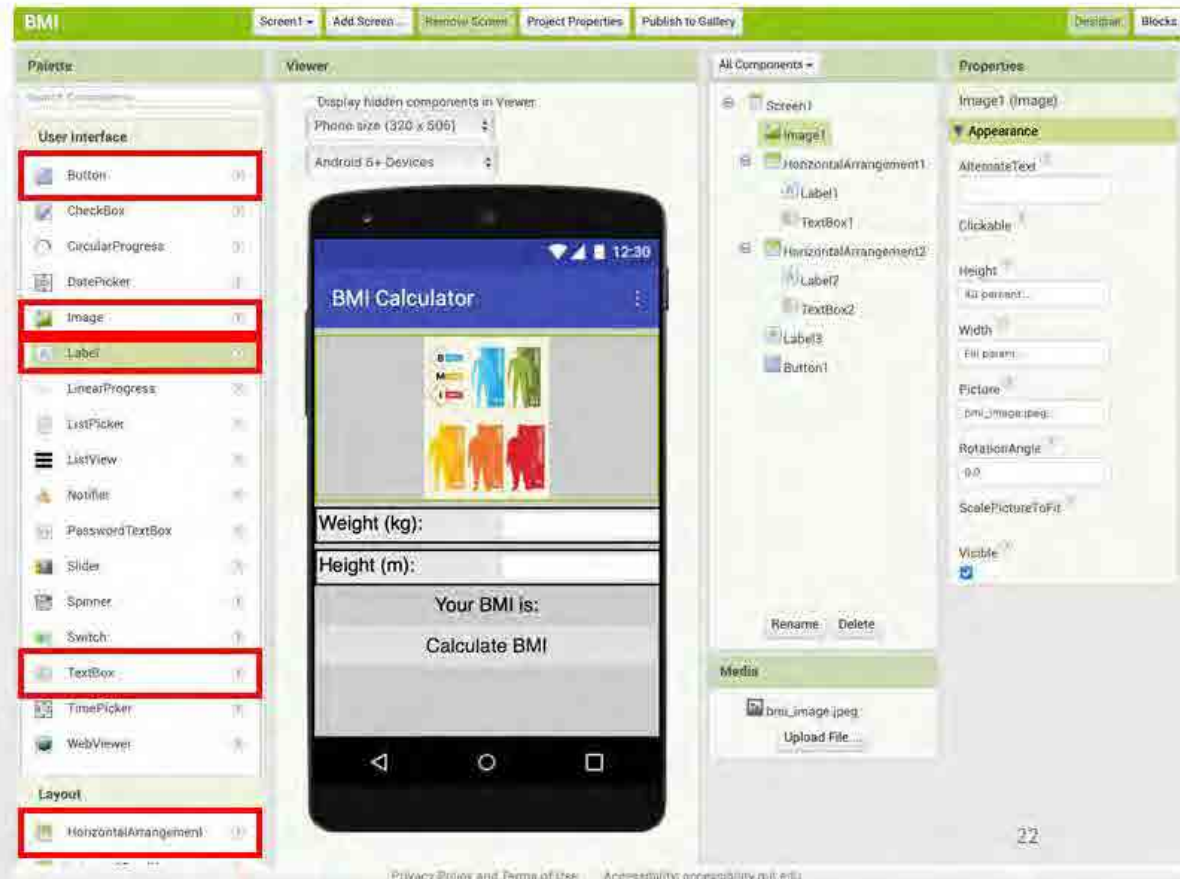


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BMI

We need :

- ☐ Image
- ☐ 2 Horizontal Arrangement formatting elements
- ☐ 3 Labels
- ☐ 2 Textboxes
- ☐ Button
- ☐ [bmi_image.jpeg](#)



BMI

Good variable names make code easy to understand and maintain.

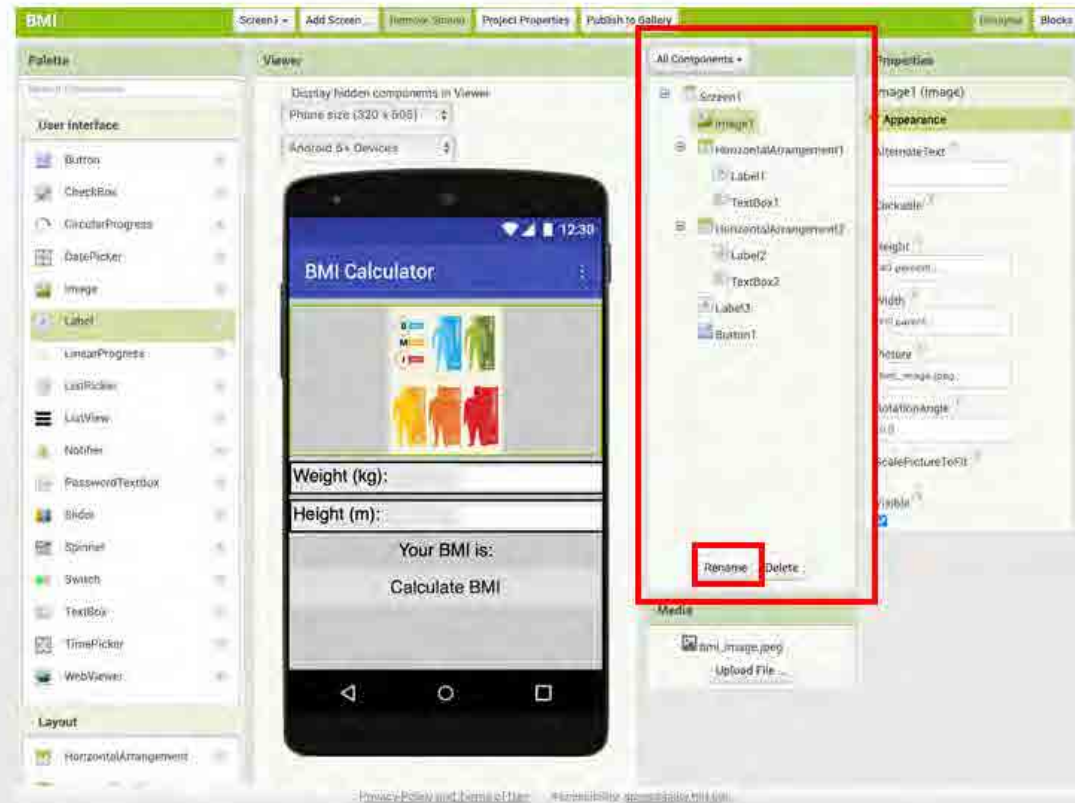
TextBox1 → WeightTextBox

TextBox2 → HeightTextBox

Label3 → BmiLabel



A dialog box titled "Rename Component" with a green header. It contains two input fields: "Old name:" with the text "TextBox1" and "New name:" with the text "WeightTextBox". At the bottom are "Cancel" and "OK" buttons.



BMI

$$bmi = \frac{weight}{height^2} = \frac{weight}{(height \cdot height)}$$

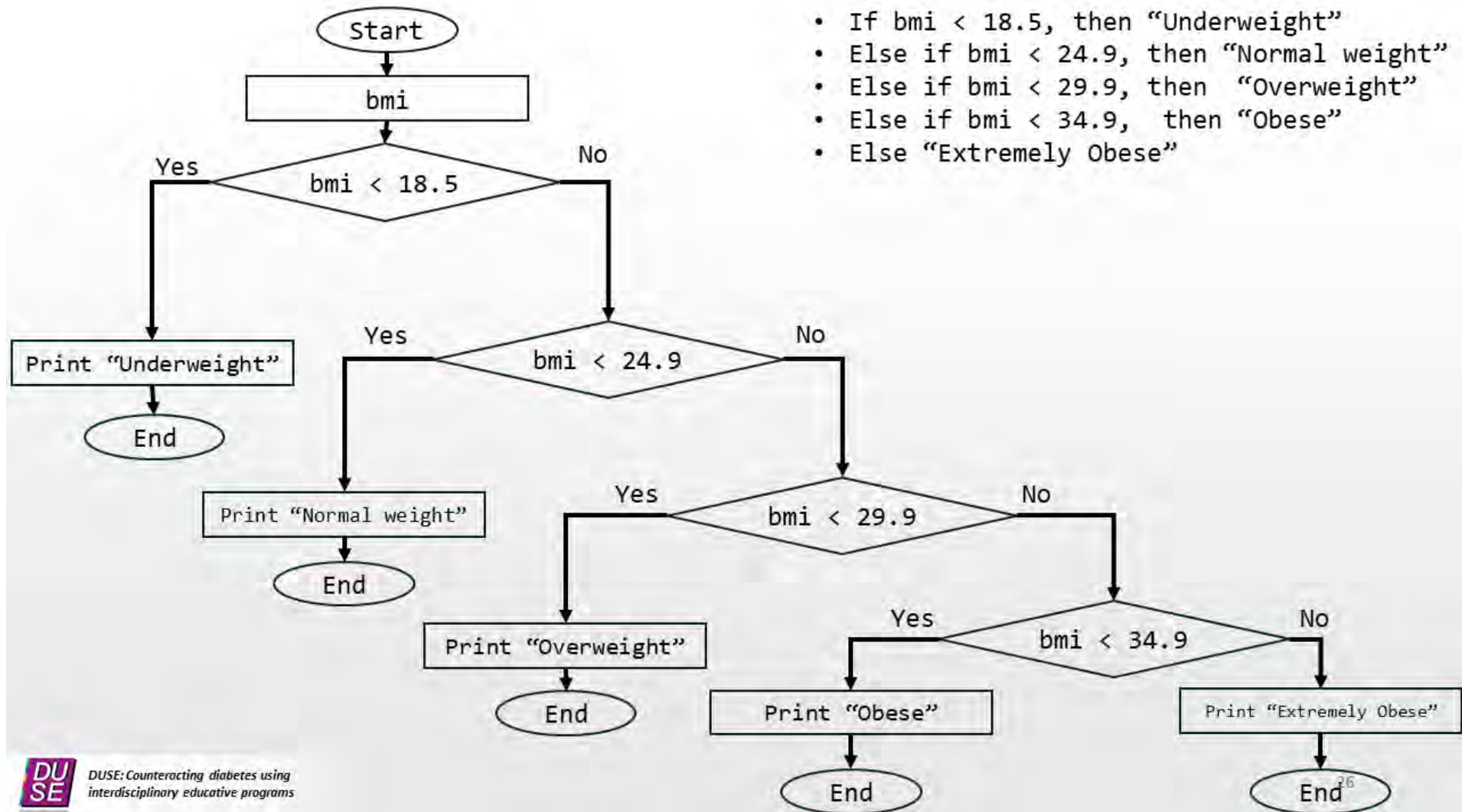
- We use a **variable** to calculate $height^2$ and a **variable** to calculate bmi.
- We need to define the **condition** for the button:
 - **Button 1:**
 - Calculate $height^2$
 - Calculate bmi
 - Set the text.



State

- Designer: We need to add one more Label (StateLabel) to show the state
- Blocks:
 - BMI conditions:
 - If the BMI is less than 18.5, label it as "Underweight"
 - If the BMI is less than 24.9, label it as "Normal weight"
 - If the BMI is less than 29.9, label it as "Overweight"
 - If the BMI is less than 34.9, label it as "Obese"
 - If the BMI is 35 or above, label it as "Extremely Obese"



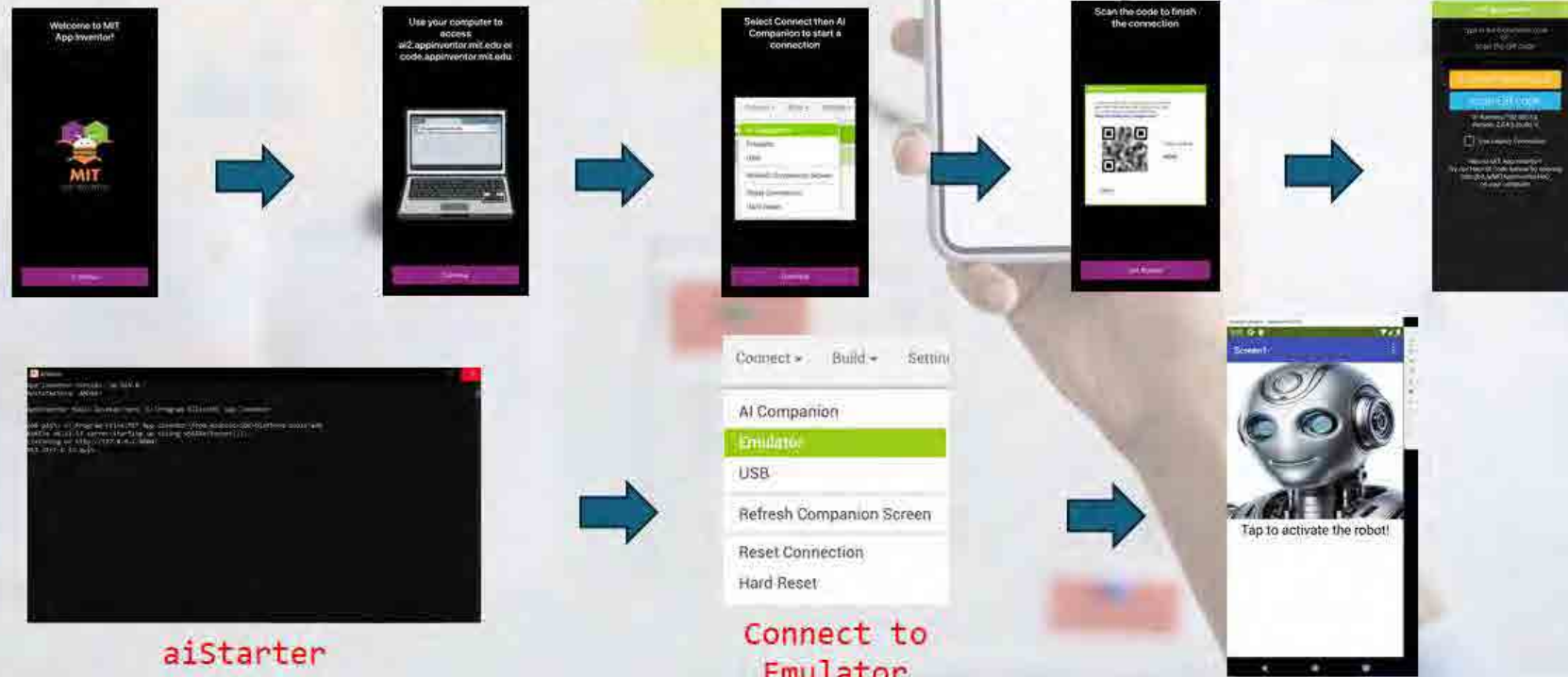


State

- If bmi < 18.5, then print "Underweight"
- Else if bmi < 24.9, then print "Normal weight"
- Else if bmi < 29.9, then print "Overweight"
- Else if bmi < 34.9, then print "Obese"
- Else print "Extremely Obese".

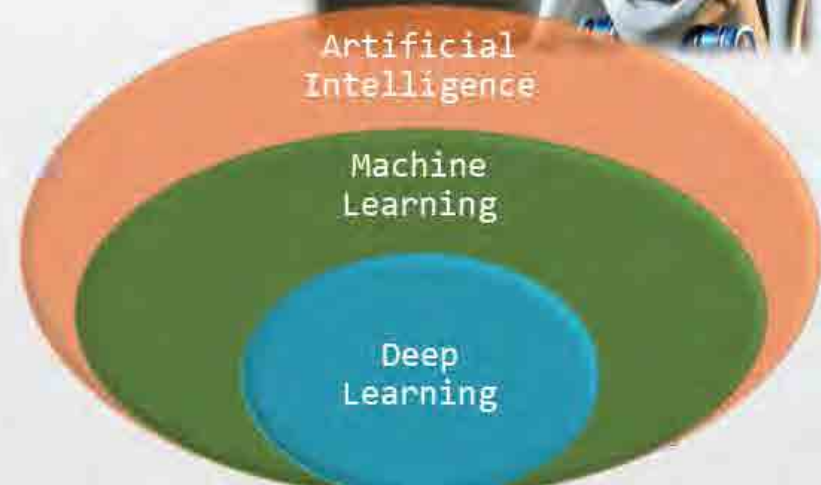
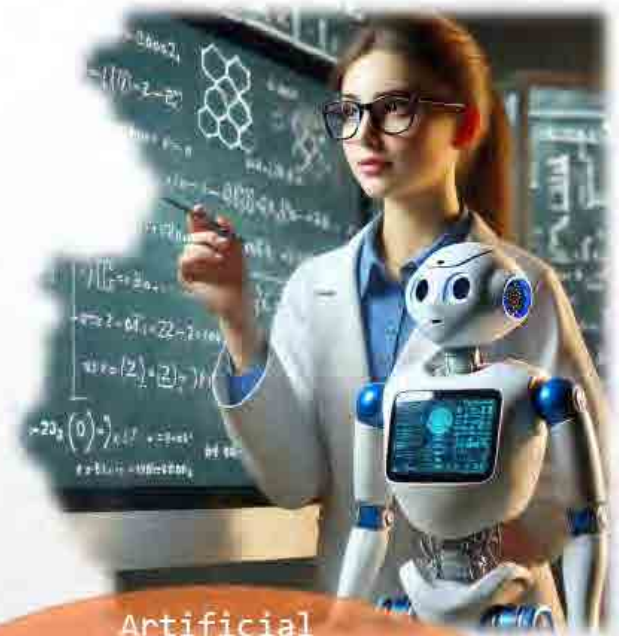


Testing the app with AI Companion or Emulator



Introduction to Machine Learning

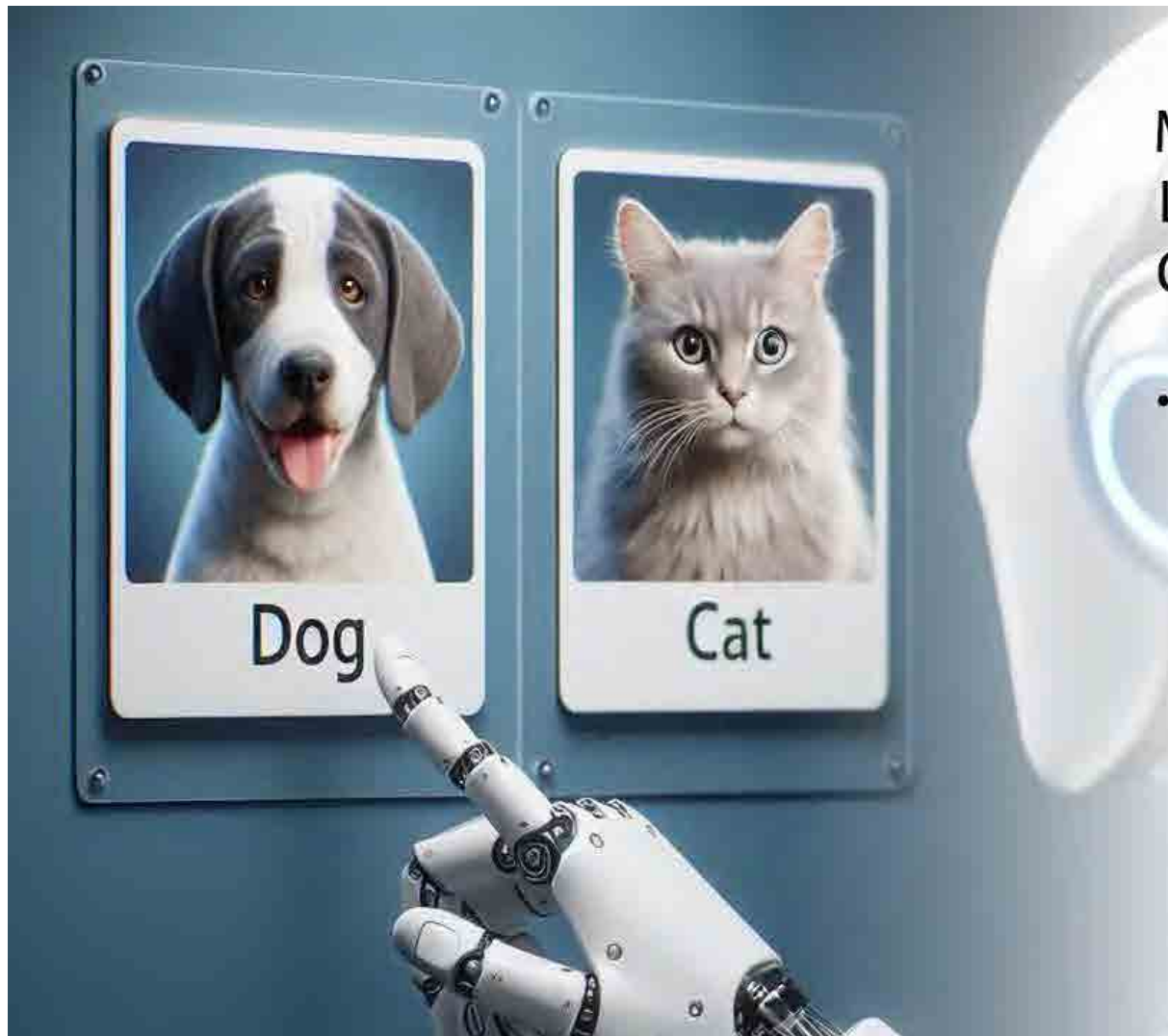
- **Intelligence** is a mechanism of learning, adaptation and survival for biological beings
 - Today its more...intelligence creates progress and culture
- Inspired by the successful paradigm in nature
 - We try to create machines with similar abilities
 - This is the vision for Artificial Intelligence
- **Machine Learning**
 - Is the mechanism for learning in Artificial Intelligence
- **Deep Learning**
 - Is a successful machine learning mechanism
 - Is inspired by the neural networks in our brains



Introduction to Machine Learning

- Everyday applications
 - computer vision → Google Lens
 - self driving → Tesla
 - natural language processing → ChatGPT
 - dialog systems → Siri, Cortana
 - machine translation → Google Translate
 - email filtering → Gmail
 - agriculture → precision agriculture
 - medicine → diagnosis of diseases
 - exploration → Mars rover
 - recommendations → TikTok, Instagram, Spotify, Netflix





Machine Learning: Image Classification

- Image Classification
 - a process in AI where a computer learns to recognize and label objects or patterns in images
 - it analyses data to identify what an image shows
 - such as detecting whether a photo contains a cat, dog, or tree

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Machine Learning: Image Classification

The image shows the MIT App Inventor interface. On the left is the 'Designer' view, which includes a component palette on the far left with categories like Layout, Media, Drawing and Animation, Maps, Charts, Data Science, Sensors, Social, Storage, Connectivity, LEGO® MINDSTORMS®, Experiential, and Extension. The 'Look' extension is highlighted in the 'Extension' category. In the center is a preview of a mobile app screen titled 'Screen1' with a 'Waiting...' label and a globe icon. On the right is the 'Blocks' view, which contains several event-driven code blocks: 'when Look1 .ClassifierReady' triggers 'set ClassifyButton .Enabled to true' and 'set StatusLabel .Text to Ready'; 'when ClassifyButton .Click' triggers 'call Look1 .ClassifyVideoData'; 'when Look1 .GotClassification' triggers 'set StatusLabel .Text to select list item list get result index 1'; and 'when ToggleButton .Click' triggers 'call Look1 .ToggleCameraFacingMode'.

Download "LookExtension.aix" from:
<https://mit-cml.github.io/extensions/>

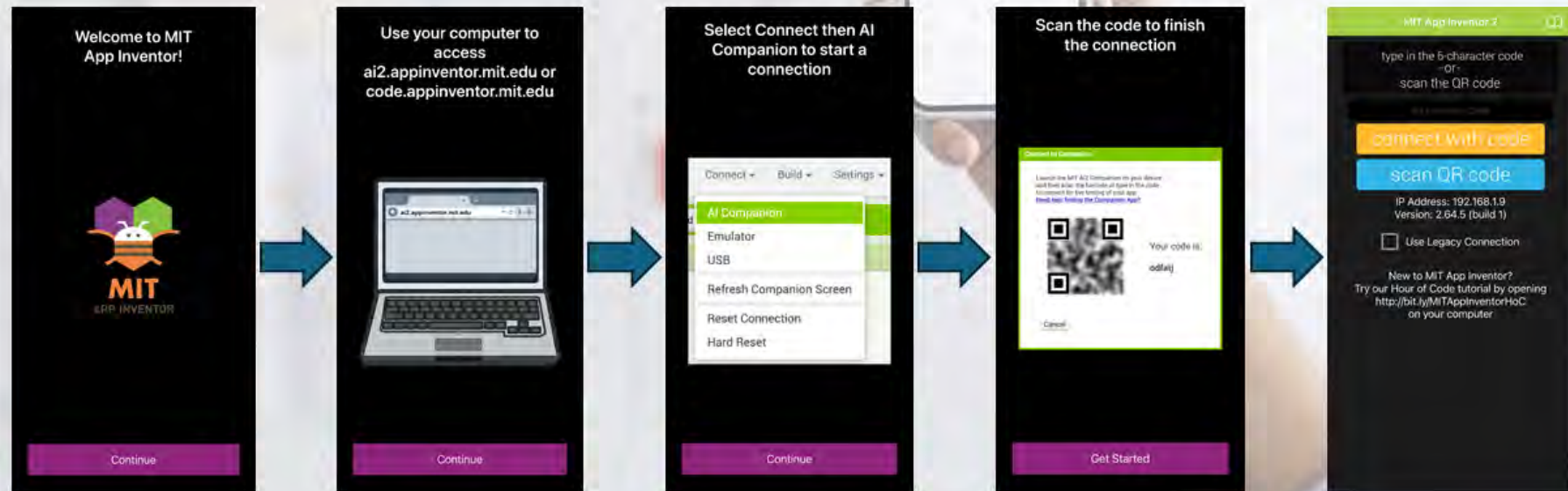
Designer

Blocks

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Testing the app with AI Companion (Android)



Conclusion and Next Steps



- Algorithmic thinking relates to everyday problem-solving
- The basics of programming drive the apps and games
- MIT App Inventor is as an easy-to-use tool to create mobile apps
- Further Learning:
 - Learn more about MIT App Inventor, Scratch, or beginner coding languages like Python
 - Think of problems you would like to solve... How could you create apps to address them?



12. Educational material developed by IRCSS AUBO for dietary intervention in high-risk kids

12.1 Dietary intervention 1400 calories

Food and meals during the day

Breakfast		Or	
Semi-skimmed milk	150 g	Skim milk	190 g
		Yogurt from skimmed milk	170 g
		Whole milk	110 g
		Full-fat yogurt	100 g
		Fruit yogurt	70 g
		Sugar-free fruit yoghurt	170 g
Barley coffee	50 g	Tea or chamomile	50 g
Sugar	5 g	Crackers or breadsticks	25 g
Biscuits	25 g	Crackers, breadsticks	25 g
		Cornflakes	25 g
		Dry biscuits	25 g

Snack at 10 am		Or	
Orange juice	200 g	Fruit juice	120 g
		Fruit	150 g
		Banana	100 g

Lunch		Or	
Semolina pasta	50 g	Rice	50 g
		Egg pasta	40 g
		Dumplings	110 g
		Polenta	150 g
		Common bread	60 g
		Potatoes	190 g
Parmesan	5 g		
Lean meat	50 g	Lean fish	80 g
		Natural tuna	60 g
		Tuna in oil	30 g
		Lean cooked ham	30 g
		Lean raw ham	30 g
		Speck, bresaola	30 g
		Mortadella, salami	20 g
		Frankfurters	25 g
		egg	60 g
vegetable	150 g	Weight is only indicative	
Extra virgin olive oil	15 g	Sunflower oil, corn oil	15 g
		Butter	20 g
Common bread	50 g	Crackers, breadsticks	30 g
		Semolina pasta, rice	40 g
		Egg pasta	35 g
		Dumplings	100 g
		Polenta	120 g
		Fresh beans	100 g
		Fresh peas	260 g
		Potatoes	160 g
Fruit	150 g	Orange juice	200 g
		Banana	100 g

Snack at 4 pm		Or	
Crackers or breadsticks	25 g	Dry biscuits	25 g
		Unstuffed snack	25 g

Dinner		Or	
Lean meat	80 g	Lean fish	140 g
		Lean cooked ham	50 g
		Lean raw ham	50 g
		Speck, bresaola	50 g
		Mozzarella	50 g
		Cow's milk ricotta	80 g
		Parmesan	30 g
vegetable	150 g	Weight is only indicative	
Extra virgin olive oil	10 g		
Common bread	60 g	Crackers, breadsticks	40 g
		Semolina pasta, rice	50 g
		Polenta	150 g
		Fresh beans	120 g
		Dried beans	60 g
		Fresh peas	300 g
		Potatoes	190 g
Fruit	100 g		

Nutritional components

Parts List

Calories	Cal	1410
Proteins	g	60
Lipids	g	43
Glycides	g	206
Starch	g	129
Oligosaccharides	g	67
Total fiber	g	19
Cholesterol	g	103
Saturated fatty acids	g	11
Polyunsaturated fatty acids	g	5
Monounsaturated fatty acids	g	7
Calcium	Mg	595
Sodium	Mg	658
Potassium	Mg	2623
Phosphorus	Mg	798
Iron	Mg	12
Zinc	Mg	3

Component Reports

Proteins	%	17
Lipids	%	28
Glycides	%	55
Oligosaccharides/glycides tot	%	32

Diet processing uses the Winfood computer program

GENERAL NOTES

The distribution of meals throughout the day can be modified, but the division into at least three meals and possibly two snacks is maintained. The weights of the foods indicated in the diet refer to raw food, net of waste.

The consumption of vegetables is free, only potatoes and legumes must be included, if desired, in controlled quantities and as an alternative to bread or pasta.

CONDIMENTS

Prefer:

extra virgin olive oil or corn seed oil, sunflower, peanut and soy raw butter and vegetable margarine in small quantities salt in moderation, vinegar, lemon, mustard, tomato sauce, garlic, pepper and spices aromatic herbs such as basil, oregano, parsley, rosemary, sage defatted meat broth, vegetable broth, vegetable puree without potatoes and without legumes.

COOKING METHODS

Grilled, grilled, steamed, in water, in a bain-marie, baked without fat, then using mainly raw oil.

BEVERAGES

Water, chamomile, barley infusion, tea, herbal teas, unsweetened.

PIZZA

A "margherita" pizza like that of a pizzeria weighs about 250 g cooked and provides 650 calories.

A reduced portion of 170 g can be an alternative to the dinner provided in the diet.

Avoid: candies, sweets in general, fruit in syrup, dried, syrups, sweet drinks, beer (even non-alcoholic) and sugar if it is not provided. Small quantities of sweets are allowed in the enclosed substitutions. Sugary fruit such as grapes, figs, persimmons, chestnuts and oily and dried fruit can be consumed occasionally and in reduced quantities compared to fresh fruit.

Assess: carefully the proposals of the equivalents attached to the diet.

HOW TO VARY YOUR DIET

It is good to replace meat at least twice a week with fish.

Other alternatives can be: cheese twice a week, egg no 1 once a week (not fried).

The recommended qualities of meat, fish, cheese, vegetables and fruit are listed below.

RAW MEATS:

Beef, beef, veal, chicken, hen, guinea fowl, turkey, rabbit, horse, foal, pork loin

LEAN FISH:

Sole, turbot, ray, dogfish, monkfish, snapper, grouper, swordfish, sea bream, trout, John Dory, cod, hake, octopus

CHEESE:

Mozzarella or:

scamorza, fior di latte, robiola, caciotta, stracchino, bel paese.

Cow's milk ricotta or:

cottage cheese, light cheeses.

Parmesan cheese or:

fresh emmenthal or pecorino cheese

VEGETABLES:

Swiss chard, spinach, chicory, green beans, artichokes, carrots, fennel, zucchini, lettuce, radicchio, tomatoes, eggplant, peppers

FRUIT:

Apple, pear, peach, apricot, cherries, plums, fresh pineapple, kiwi, orange, grapefruit, tangerines, strawberries, melon, watermelon

Do I want to change breakfast? OK!

Semi-skimmed milk 1 glass with 1 teaspoon of sugar + rusks g. 25

They can be replaced with:

1 - Unsweetened juice 1 brick cc. 200 + 1 sandwich 30 g with 1 slice of lean ham and 1 slice 10 g
2 - Lemon tea with 1 teaspoon of sugar + dry biscuits g. 40
3 - Sugar-free barley coffee + 1 unfilled brioche g. 50
4 - 1 sugar-free natural or fruit low-fat yogurt + cornflakes 30 g

10 a.m.:

It's snack time! and if I wanted to change Ok!

Unsweetened juice 1 brick cc. 200

They can be replaced with:

1 - Sugar-free semi-skimmed milk 1 glass
2 - 1 sandwich 20 g with 1 slice of low-fat ham
3 - 1 unsweetened natural or fruit low-fat yogurt + cornflakes 15 g
4 - 1 small chocolate g. 20
5 - Semi-skimmed milk without sugar-free glass + dry biscuits g. 15

4 p.m.:

It's snack time! and if I wanted to change Ok!

1 packet of crackers

They can be replaced with:

1 – popcorn g 30
2 - 1 unstuffed snack g 25
3 - 1 small pizza 40 g
4 - 1 fruit or unsweetened juice 200 cc or a small banana
5 – 1 small ice cream g 50

Home Use Measures

Weights are calculated per level spoon

1 tablespoon contains	Butter – margarine	20 g
	Flours	12 g
	Corn flakes	5 g
	Seed or olive oil	10 g
	Tiny pasta	20 g
	Rice	25 g
	Breadcrumbs (fresh)	5 g
	Breadcrumbs (dry)	8 g
	Grated cheese	6 g
	Sugar	5 g
	Unsweetened cocoa powder	12 g
1 tablespoon contains	Butter – margarine	8 g
	Flours	4 g
	Corn flakes	2 g
	Seed or olive oil	5 g
	Breadcrumbs (dry)	3 g
	Grated cheese	2 g
	Sugar	5 g
	Unsweetened cocoa powder	4 g
Unit doses	1 rusk	10 g
	1 cracker	5 g
	1 medium breadstick	5 g
	1 egg	60 g
	1 yogurt jar	125 g

Home measurements for liquids	1 CUP	
	- coffee	40 mL
	- tea	125 mL
	- Coffee and milk	250 mL
	1 GLASS OF:	
	- liqueur	40 mL
	- wine	125 mL
	- water	200 mL

Sport and calorie consumption

Business Type	Consumption in kcal/hour
Walk	225
Climbing stairs	365
Jogging or running on the flat	225
Power Relief with Weights	225
Bicycle or exercise bike	275
Swimming	300
Aerobic dance, bodyweight gymnastics. Medium-intensity sports (ballroom dancing, other fast dances, golf...)	225
Intense ball or racket sports (football, five-a-side football, tennis...)	250
Judo and other martial arts	425
Boxing	300
Riding	300
Fencing	225
ski	425
rowing	250

The value refers approximately to activity carried out with average intensity by a subject weighing 50 kg (Italian National Association of Diabetic Athletes)

12.2 Dietary intervention 1600 calories

Food and meals during the day

Breakfast		Or	
Semi-skimmed milk	150 g	Skim milk	190 g
		Yogurt from skimmed milk	170 g
		Whole milk	110 g
		Full-fat yogurt	100 g
		Fruit yogurt	70 g
		Sugar-free fruit yoghurt	170 g
Barley coffee	50 g	Tea or chamomile	50 g
Biscuits	25 g	Crackers, breadsticks	25 g
		Cornflakes	25 g
		Dry biscuits	25 g

Snack at 10 am		Or	
Orange juice	200 g	Fruit juice	120 g
		Fruit	150 g
		Banana	100 g

Lunch		Or	
Semolina pasta	50 g	Rice Egg pasta Dumplings Polenta Common bread Potatoes	50 g 40 g 110 g 150 g 60 g 190 g
Parmesan	5 g		
Lean meat	50 g	Lean fish Natural tuna Tuna in oil Lean cooked ham Lean raw ham Speck, bresaola Mortadella, salami Frankfurters egg	80 g 60 g 30 g 30 g 30 g 30 g 20 g 25 g 60 g
vegetable	200 g	Weight is only indicative	
Extra virgin olive oil	15 g	Sunflower oil, corn oil Butter	15 g 20 g
Common bread	30 g	Crackers, breadsticks Semolina pasta, rice Egg pasta Dumplings Polenta Fresh beans Fresh peas Potatoes	30 g 40 g 35 g 100 g 120 g 100 g 260 g 160 g
Fruit	150 g	Orange juice Banana	200 g 100 g

Snack at 4 pm		Or	
Orange juice	200 g	Fruit Sugar-free low-fat yogurt	150 g 170 g
Crackers or breadsticks	25 g	Dry biscuits Unstuffed snack	25 g 25 g

Dinner		Or	
Lean meat	80 g	Lean fish Lean cooked ham Lean raw ham Speck, bresaola Mozzarella Cow's milk ricotta Parmesan	140 g 50 g 50 g 50 g 50 g 80 g 30 g
vegetable	200 g	Weight is only indicative	
Extra virgin olive oil	10 g		
Common bread	60 g	Crackers, breadsticks Semolina pasta, rice Polenta Fresh beans Dried beans Fresh peas Potatoes	40 g 50 g 150 g 120 g 60 g 300 g 190 g
Fruit	150 g		

Nutritional components

Parts List

Calories	Cal	1603
Proteins	g	76
Lipids	g	47
Glycides	g	232
Starch	g	149
Oligosaccharides	g	69
Total fiber	g	23
Cholesterol	g	136
Saturated fatty acids	g	13
Polyunsaturated fatty acids	g	6
Monounsaturated fatty acids	g	8
Calcium	Mg	692
Sodium	Mg	1272
Potassium	Mg	3240
Phosphorus	Mg	961
Iron	Mg	15
Zinc	Mg	5

Component Reports

Proteins	%	19
Lipids	%	26
Glycides	%	55
Oligosaccharides/glycides tot	%	30

Diet processing uses the Winfood computer program

GENERAL NOTES

The distribution of meals throughout the day can be modified, but the division into at least three meals and possibly two snacks is maintained. The weights of the foods indicated in the diet refer to raw food, net of waste.

The consumption of vegetables is free, only potatoes and legumes must be included, if desired, in controlled quantities and as an alternative to bread or pasta.

CONDIMENTS

Prefer:

extra virgin olive oil or corn seed oil, sunflower, peanut and soy raw butter and vegetable margarine in small quantities salt in moderation, vinegar, lemon, mustard, tomato sauce, garlic, pepper and spices aromatic herbs such as basil, oregano, parsley, rosemary, sage defatted meat broth, vegetable broth, vegetable puree without potatoes and without legumes.

COOKING METHODS

Grilled, grilled, steamed, in water, in a bain-marie, baked without fat, then using mainly raw oil.

BEVERAGES

Water, chamomile, barley infusion, tea, herbal teas, unsweetened.

PIZZA

A "margherita" pizza like that of a pizzeria weighs about 250 g cooked and provides 650 calories.

A reduced portion of 180 g can be an alternative to the dinner provided in the diet.

Avoid: candies, sweets in general, fruit in syrup, dried, syrups, sweet drinks, beer (even non-alcoholic) and sugar if it is not provided. Small quantities of sweets are allowed in the enclosed substitutions. Sugary fruit such as grapes, figs,

persimmons, chestnuts and oily and dried fruit can be consumed occasionally and in reduced quantities compared to fresh fruit.

Assess: carefully the proposals of the equivalents attached to the diet.

HOW TO VARY YOUR DIET

It is good to replace meat at least twice a week with fish.

Other alternatives can be: cheese twice a week, egg no 1 once a week (not fried).

The recommended qualities of meat, fish, cheese, vegetables and fruit are listed below.

RAW MEATS:

Beef, beef, veal, chicken, hen, guinea fowl, turkey, rabbit, horse, foal, pork loin

LEAN FISH:

Sole, turbot, ray, dogfish, monkfish, snapper, grouper, swordfish, sea bream, trout, John Dory, cod, hake, octopus

CHEESE:

Mozzarella or:

scamorza, fior di latte, robiola, caciotta, stracchino, bel paese.

Cow's milk ricotta or:

cottage cheese, light cheeses.

Parmesan cheese or:

fresh emmenthal or pecorino cheese

VEGETABLES:

Swiss chard, spinach, chicory, green beans, artichokes, carrots, fennel, zucchini, lettuce, radicchio, tomatoes, eggplant, peppers

FRUIT:

Apple, pear, peach, apricot, cherries, plums, fresh pineapple, kiwi, orange, grapefruit, tangerines, strawberries, melon, watermelon

Do I want to change breakfast? OK!

Semi-skimmed milk 1 glass with 1 teaspoon of sugar + rusks g. 25

They can be replaced with:

1 - Unsweetened juice 1 brick cc. 200 + 1 sandwich 30 g with 1 slice of lean ham and 1 slice 10 g
2 - Lemon tea with 1 teaspoon of sugar + dry biscuits g. 40
3 - Sugar-free barley coffee + 1 unfilled brioche g. 50
4 - 1 sugar-free natural or fruit low-fat yogurt + cornflakes 30 g

10 a.m.:

It's snack time! and if I wanted to change Ok!

1 sandwich 50 g low-fat ham 20 g

They can be replaced with:

1 - 1 pizza 60 g
2 - 1 snack or 1 small unfilled brioche 40 g
3 - 1 unsweetened natural or fruit low-fat yogurt + cornflakes 20 g
4 - 1 small chocolate 30 g
5 - 1 fruit or unsweetened juice 200 cc + 1 packet of crackers

4 p.m.:

It's snack time! and if I wanted to change Ok!

unsweetened juice 200 cc + 1 packet of crackers

They can be replaced with:

1 – a small toast: 30 g sliced bread + 15 g lean ham + 1 slice 10 g
2 - 1 unfilled snack g 35
3 - 1 sugar-free natural or fruit low-fat yoghurt + cornflakes 20 g
4 – Lemon tea with 1 tablespoon of sugar + dry biscuits 30 g
5 – 1 small ice cream g 70

Home Use Measures

Weights are calculated per level spoon

1 tablespoon contains	Butter – margarine	20 g
	Flours	12 g
	Corn flakes	5 g
	Seed or olive oil	10 g
	Tiny pasta	20 g
	Rice	25 g
	Breadcrumbs (fresh)	5 g
	Breadcrumbs (dry)	8 g
	Grated cheese	6 g
	Sugar	5 g
	Unsweetened cocoa powder	12 g
1 tablespoon contains	Butter – margarine	8 g
	Flours	4 g
	Corn flakes	2 g
	Seed or olive oil	5 g
	Breadcrumbs (dry)	3 g
	Grated cheese	2 g
	Sugar	5 g
	Unsweetened cocoa powder	4 g
Unit doses	1 rusk	10 g
	1 cracker	5 g
	1 medium breadstick	5 g
	1 egg	60 g
	1 yogurt jar	125 g
Home measurements for liquids	1 CUP - coffee - tea - Coffee and milk 1 GLASS OF: - liqueur - wine - water	40 mL 125 mL 250 mL 40 mL 125 mL 200 mL

Sport and calorie consumption

Business Type	Consumption in kcal/hour
Walk	225
Climbing stairs	365
Jogging or running on the flat	225
Power Relief with Weights	225
Bicycle or exercise bike	275
Swimming	300
Aerobic dance, bodyweight gymnastics. Medium-intensity sports (ballroom dancing, other fast dances, golf...)	225
Intense ball or racket sports (football, five-a-side football, tennis...)	250
Judo and other martial arts	425

Boxing	300
Riding	300
Fencing	225
ski	425
rowing	250

The value refers approximately to activity carried out with average intensity by a subject weighing 50 kg (Italian National Association of Diabetic Athletes)

12.3 Dietary intervention 1800 calories

Food and meals during the day

Breakfast		Or	
Semi-skimmed milk	150 g	Skim milk	260 g
		Yogurt from skimmed milk	220 g
		Whole milk	140 g
		Full-fat yogurt	140 g
		Fruit yogurt	100 g
		Sugar-free fruit yoghurt	220 g
Barley coffee	50 g	Tea or chamomile	50 g
Biscuits	40 g	Crackers, breadsticks	40 g
		Cornflakes	40 g
		Dry biscuits	40 g

Snack at 10 am		Or	
Common bread	50 g	Crackers, breadsticks	30 g
Lean raw ham	30 g	Lean cooked ham	30 g

Lunch		Or	
Semolina pasta	70 g	Rice	70 g
		Egg pasta	60 g
		Dumplings	160 g
		Polenta	200 g
		Common bread	80 g
		Potatoes	260 g
Parmesan	5 g		
Lean meat	80 g	Lean fish	140 g
		Natural tuna	100 g
		Tuna in oil	40 g
		Lean cooked ham	50 g
		Lean raw ham	50 g
		Speck, bresaola	50 g
		Mortadella, salami	35 g
		Frankfurters	40 g
		egg	60 g
vegetable	200 g	Weight is only indicative	
Extra virgin olive oil	15 g	Sunflower oil, corn oil	15 g
		Butter	20 g
Common bread	30 g	Crackers, breadsticks	20 g
		Semolina pasta, rice	25 g
		Egg pasta	20 g
		Dumplings	60 g

		Polenta Fresh beans Fresh peas Potatoes	70 g 60 g 160 g 100 g
Fruit	150 g	Orange juice Banana	200 g 100 g

Snack at 4 pm		Or	
Orange juice	200 g	Fruit Sugar-free low-fat yogurt	150 g 170 g
Crackers or breadsticks	25 g	Dry biscuits Unstuffed snack	25 g 25 g

Dinner		Or	
Lean meat	80 g	Lean fish Lean cooked ham Lean raw ham Speck, bresaola Mozzarella Cow's milk ricotta Parmesan	140 g 50 g 50 g 50 g 50 g 80 g 30 g
vegetable	200 g	Weight is only indicative	
Extra virgin olive oil	10 g		
Common bread	60 g	Crackers, breadsticks Semolina pasta, rice Polenta Fresh beans Dried beans Fresh peas Potatoes	40 g 50 g 150 g 120 g 60 g 300 g 190 g
Fruit	150 g		

Nutritional components

Parts List

Calories	Cal	1812
Proteins	g	83
Lipids	g	54
Glycides	g	263
Starch	g	174
Oligosaccharides	g	73
Total fiber	g	25
Cholesterol	g	127
Saturated fatty acids	g	14
Polyunsaturated fatty acids	g	7
Monounsaturated fatty acids	g	8
Calcium	Mg	762
Sodium	Mg	1080
Potassium	Mg	3371
Phosphorus	Mg	1112
Iron	Mg	16
Zinc	Mg	4

Component Reports

Proteins	%	18
Lipids	%	27
Glycides	%	55
Oligosaccharides/glycides tot	%	28

Diet processing uses the Winfood computer program

GENERAL NOTES

The distribution of meals throughout the day can be modified, but the division into at least three meals and possibly two snacks is maintained. The weights of the foods indicated in the diet refer to raw food, net of waste.

The consumption of vegetables is free, only potatoes and legumes must be included, if desired, in controlled quantities and as an alternative to bread or pasta.

CONDIMENTS

Prefer:

extra virgin olive oil or corn seed oil, sunflower, peanut and soy raw butter and vegetable margarine in small quantities salt in moderation, vinegar, lemon, mustard, tomato sauce, garlic, pepper and spices aromatic herbs such as basil, oregano, parsley, rosemary, sage defatted meat broth, vegetable broth, vegetable puree without potatoes and without legumes.

COOKING METHODS

Grilled, grilled, steamed, in water, in a bain-marie, baked without fat, then using mainly raw oil.

BEVERAGES

Water, chamomile, barley infusion, tea, herbal teas, unsweetened.

PIZZA

A "margherita" pizza like that of a pizzeria weighs about 250 g cooked and provides 650 calories.

A reduced portion of 180 g can be an alternative to the dinner provided in the diet.

Avoid: candies, sweets in general, fruit in syrup, dried, syrups, sweet drinks, beer (even non-alcoholic) and sugar if it is not provided. Small quantities of sweets are allowed in the enclosed substitutions. Sugary fruit such as grapes, figs, persimmons, chestnuts and oily and dried fruit can be consumed occasionally and in reduced quantities compared to fresh fruit.

Assess: carefully the proposals of the equivalents attached to the diet.

HOW TO VARY YOUR DIET

It is good to replace meat at least twice a week with fish.

Other alternatives can be: cheese twice a week, egg no 1 once a week (not fried).

The recommended qualities of meat, fish, cheese, vegetables and fruit are listed below.

RAW MEATS:

Beef, beef, veal, chicken, hen, guinea fowl, turkey, rabbit, horse, foal, pork loin

LEAN FISH:

Sole, turbot, ray, dogfish, monkfish, snapper, grouper, swordfish, sea bream, trout, John Dory, cod, hake, octopus

CHEESE:

Mozzarella or:

scamorza, fior di latte, robiola, caciotta, stracchino, bel paese.

Cow's milk ricotta or:

cottage cheese, light cheeses.

Parmesan cheese or:

fresh emmenthal or pecorino cheese

VEGETABLES:

Swiss chard, spinach, chicory, green beans, artichokes, carrots, fennel, zucchini, lettuce, radicchio, tomatoes, eggplant, peppers

FRUIT:

Apple, pear, peach, apricot, cherries, plums, fresh pineapple, kiwi, orange, grapefruit, tangerines, strawberries, melon, watermelon

Do I want to change breakfast? OK!

Semi-skimmed milk 1 glass with 1 teaspoon of sugar + rusks g. 25

They can be replaced with:

1 - Unsweetened juice 1 brick cc. 200 + 1 sandwich 30 g with 1 slice of lean ham and 1 slice 10 g
2 - Lemon tea with 1 teaspoon of sugar + dry biscuits g. 45
3 - Sugar-free barley coffee + 1 unfilled brioche g. 50
4 - 1 sugar-free natural or fruit low-fat yogurt + cornflakes g. 35

10 a.m.:

It's snack time! and if I wanted to change Ok!

1 sandwich 50 g low-fat ham 20 g

They can be replaced with:

1 - 1 pizza 80 g
2 - 1 unfilled brioche 50 g
3 - 1 unsweetened natural or fruit low-fat yogurt + cornflakes 30 g
4 - 1 sandwich 30 g + 1 small chocolate 30 g
5 - 1 fruit or unsweetened juice 200 cc + 1 crackers 35 g

4 p.m.:

It's snack time! and if I wanted to change Ok!

unsweetened juice 200 cc + 1 packet of crackers

They can be replaced with:

1 - a small toast: 30 g sliced bread + 15 g lean ham + 1 slice 10 g
2 - 1 unfilled snack g 35
3 - 1 sugar-free natural or fruit low-fat yoghurt + cornflakes 20 g
4 - Lemon tea with 1 tablespoon of sugar + dry biscuits 30 g
5 - 1 small ice cream g 70

Home Use Measures

Weights are calculated per level spoon

1 tablespoon contains	Butter – margarine	20 g
	Flours	12 g
	Corn flakes	5 g
	Seed or olive oil	10 g
	Tiny pasta	20 g
	Rice	25 g
	Breadcrumbs (fresh)	5 g
	Breadcrumbs (dry)	8 g
	Grated cheese	6 g
	Sugar	5 g
	Unsweetened cocoa powder	12 g
1 tablespoon contains	Butter – margarine	8 g
	Flours	4 g
	Corn flakes	2 g
	Seed or olive oil	5 g

	Breadcrumbs (dry)	3 g
	Grated cheese	2 g
	Sugar	5 g
	Unsweetened cocoa powder	4 g
Unit doses	1 rusk	10 g
	1 cracker	5 g
	1 medium breadstick	5 g
	1 egg	60 g
	1 yogurt jar	125 g
Home measurements for liquids	1 CUP - coffee - tea - Coffee and milk 1 GLASS OF: - liqueur - wine - water	40 mL 125 mL 250 mL 40 mL 125 mL 200 mL

Sport and calorie consumption

Business Type	Consumption in kcal/hour
Walk	225
Climbing stairs	365
Jogging or running on the flat	225
Power Relief with Weights	225
Bicycle or exercise bike	275
Swimming	300
Aerobic dance, bodyweight gymnastics. Medium-intensity sports (ballroom dancing, other fast dances, golf...)	225
Intense ball or racket sports (football, five-a-side football, tennis...)	250
Judo and other martial arts	425
Boxing	300
Riding	300
Fencing	225
ski	425
rowing	250

The value refers approximately to activity carried out with average intensity by a subject weighing 50 kg (Italian National Association of Diabetic Athletes)

13. Facilitator topic guide

To support consistent and age-appropriate delivery, each intervention was accompanied by a facilitator topic guide outlining the intended mode of interaction, key discussion points, and suggested prompts for reflection. These guides ensured that facilitators maintained pedagogical coherence while adapting to class dynamics and cultural context.

Example – Elementary School (Lesson 3: “Am I Choosing Right?”):

Session focus: understanding healthy food choices through the Mediterranean Diet.

Mode of delivery: Interactive question–response and movement-based discussion (“agree/disagree and run”).

Facilitator prompts:

"Why is it important to eat fruit every day?"

"What happens if we drink soft drinks daily?"

"Which foods give you long-lasting energy for play?"

Follow-up reflection:

"How can we apply the food pyramid in our daily life?"

"What did you eat today that fits this pyramid?"

Example – Middle School (Lesson: 'I Discuss & Exercise'):

Session focus: linking physical activity and nutrition through cooperative discussion.

Mode of delivery: paired discussions between activity rounds.

Facilitator prompts:

"What would you do if your friends often choose fast food?"

"How does exercise help the brain work better?"

"What are two good snacks before and after exercise?"

Reflection:

"What fitness component does the combination of good nutrition and exercise develop?"

Each topic guide includes age-tailored questions, interaction formats (e.g., games, small-group debates), and notes for facilitators on pacing and tone. This ensures that content delivery remains engaging, developmentally appropriate, and consistent across contexts.

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