FITeens Toolkit

Promoting health-related behaviours in the educational context

Co-funded by the European Union

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FITeens

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1.Introduction

Children and **adolescents** acquire different habits as they grow up. Some of these habits are closely related to **health**, so acquiring **healthy habits** can greatly help them lead a healthy and peaceful life in the future, while bad habits can be detrimental to them. For that reason, it is necessary that from the different educational institutions, we help these young people in the acquisition of these habits.

The aim of *FITeens (Promoting physical activity and healthy habits in sedentary teenagers)* project is to pilot an entertaining and engaging **educational intervention** targeted at **teenagers** to promote **physical activity** and **healthy habits**

This first result of the project consists of a comprehensive set of **ideas**, **resources**, **practices** and some **examples** for **Physical Education teachers** that will cover the different key behaviors that increase the risk of chronic diseases (physical activity, sufficient sleep, moderate screen time, alcohol and tobacco consumption, and healthy food intake) that can be incorporated into their teaching practice.

This **toolkit** consists of 3 different modules:

1. **High schools as effective settings to promote healthy lifestyles**. This module covers the importance of schools in the acquisition of healthy habits by adolescents.

2. **Motivation as a key to physical activity promotion**. This module focuses on the importance of motivation in the acquisition of healthy habits.

3. **Health-related behaviors in young people**. This module will focus on the key health-related behaviors mentioned above (physical activity, sufficient sleep, moderate screen time, alcohol and tobacco use, and healthy food intake), describing each of them in depth.

All of these modules are dedicated to the different **health-related behaviors** mentioned above. Each of them will have a theoretical explanation, explanatory videos, infographics and learning situations that will support Physical Education teachers in acquiring a broad knowledge of how to get their students motivated to engage in physical activity and acquire healthy habits, making them aware of their importance.

2. High schools as effective settings to promote healthy lifestyles

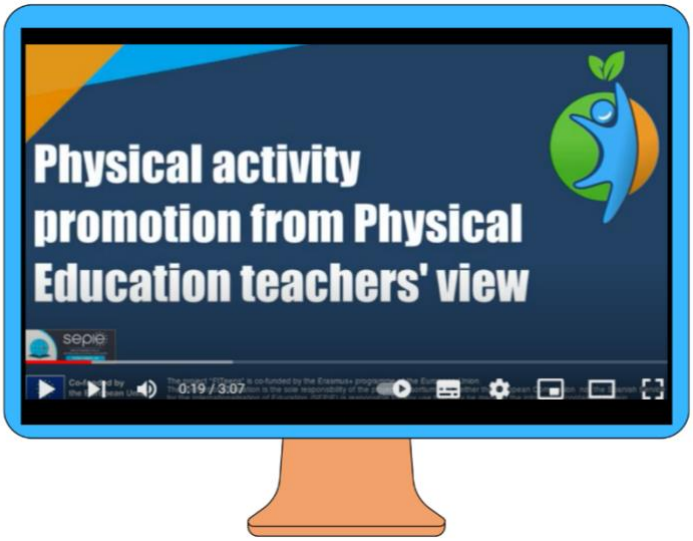
A **school** is an excellent setting where health education and intervention programmes can be implemented because this is the place where it is possible to reach virtually all children and adolescents. Consequently, **school-based interventions** have been used for the treatment and prevention of a number of health conditions, including obesity, diabetes, tobacco, alcohol and substance use, sexual abuse, depression, anxiety, suicide, and eating disorders (Amini et al., 2015; Hennessy et al., 2015). School-based interventions have also been used for promoting a broader range of energy balance-related behaviours such as physical activity, sedentary time, healthy diet, and sleep duration (Sevil et al., 2019). Often, the health promotion programs implemented in schools are offered as a supplement to the regular curriculum (Peters et al., 2009).

Adolescence is considered as the best period for **health education** and **health promotion programmes** since many health-risk behaviours, which contribute to the leading causes of morbidity and mortality among youth and adults, develop or augment during this sensitive period of life (Peters et al., 2009). Therefore, early adolescence is a crucial time to intervene and interrupt the trajectory leading to poor health in adulthood.

Sevil et al. (2019) have argued that many of the school-based health interventions have focused on a single health behaviour, reporting non-significant or small effect sizes. Recently, therefore, researchers have shifted

from interventions focusing on changing a single health behaviour to the interventions focusing on changing multiple health behaviours simultaneously. The rationale behind this lies in thefact that unhealthy behaviours seem to be interrelated, and that many of these behaviours share common determinants, which supports the development of interventions that tackle multiple behaviours simultaneously (Busch et al., 2013). Moreover, it is quite common that school staff feel overwhelmed by the ever-increasing supply of intervention programmes, especially since they are faced with overcrowded curricula and limited opportunities for implementing these programs. Therefore, intervention programmes that address multiple risk behaviours efficiently may reduce the burden on schools and teachers. Consequently, the multiple health behaviour interventions approach could have more effects on health benefits than single-behaviour interventions (Peters et al., 2009).

According to Busch et al. (2013), in addition to the **school setting** itself, the whole school approach to health promotion should also involve **families** and **communities**. The involvement of families and communities ensures that the intervention is integrated into most aspects of the students' life. Other characteristics of a whole school approach include the physical environment of the school such as creating a healthy school canteen or removing candy machines and implementing **healthy school policies** such as a no-smoking school yard.



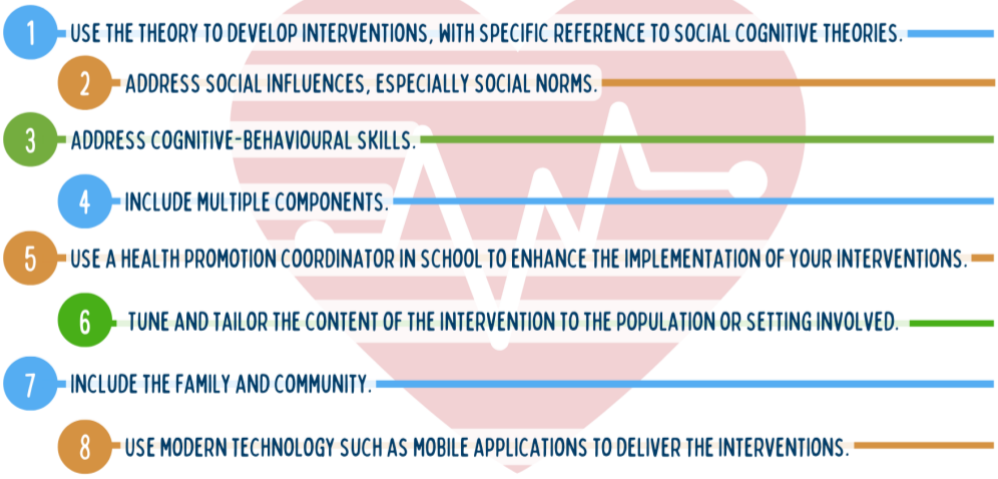
A recent study by Sevil et al. (2019) examined the effectiveness of a high school-based intervention on multiple health behaviours in adolescents such as 24-hour movement behaviours (i.e., physical activity, sedentary time, and sleep duration), diet, and substance consumption (i.e., alcohol and tobacco). It was found that boys and girls from the experimental school reported healthier lifestyle behaviours compared with boys and girls from the control school and their own baseline values, with the only exception of sedentary

time in girls. Larger effect sizes demonstrated by experimental school boys in most of the variables reveal that boys benefited more from the intervention program than girls. This suggests that for optimal effectiveness, school-based health promotion interventions need to be tailored to the population and/or setting involved (Owen et al., 2017).

The general consensus is that intervention studies need to conduct long-term follow-ups beyond post-intervention testing to assess maintenance of the intervention effect (Dobbins et al., 2009). An intervention that has been proven to be effective in the long-term has implications for policy decisions, government spending, and ultimately the health of children and adolescents as they progress to adulthood. For instance, a systematic review of follow-up studies revealed that 10 out of 13 school-based physical activity promotion interventions demonstrated sustained impact (Lai et al., 2014).

Recently, a different systematic review and meta-analysis was conducted to assess the effectiveness of eHealth (interventions delivered via internet, computers, tablets, mobile technology, or tele-health) school-based multiple health behaviour change interventions to prevent traditional (use of alcohol and tobacco, poor diet, and physical activity) and emerging (sedentary behaviour and sleep) chronic disease risk factors (Champion et al., 2019). Results revealed that eHealth school-based multiple health behaviour change interventions significantly increased fruit and vegetable intake and both accelerometer-measured and self-reported physical activity, and reduced screen time immediately after the intervention. However, no effect on alcohol or tobacco consumption, fat or sugar-sweetened beverage or snack consumption was evident. Moreover, even despite the high proportion of adolescents who own a smartphone (95%) stated by some authors (Vogels, Gelles-Watnick and Massarat, 2022), the potential of mHealth applications to supplement website-based programmes for school students has not been fulfilled. Therefore, future research should explore the feasibility and efficacy of mHealth interventions for lifestyle risk behaviours (Champion et al., 2019).

In conclusion, there are several points that should be considered when developing school-based health interventions for adolescents:



If you want to know more about the promotion of healthy lifestyles in schools, please visit the following links:

1. School Health Guidelines (Centers for Disease Control and Prevention)
2. Promoting Healthy Lifestyles in High School Adolescents (Melnyk, B. M., Jacobson, D., Kelly, S., Small, L., O'Haver, J. & Marsiglia, F. F., 2013)
3. What can I do as a teacher or school to encourage healthy eating habits and to be active? (SA Health)
4. Improve the health of schools (Let's Move!)
5. Improving well-being at school (Council of Europe)
6. Health promoting schools (World Health Organization)
7. School health promotion: evidence for effective action (Schools for Health in Europe)
8. What is Health Promoting School? (Western Australian Health Promoting Schools Association Inc)
9. Promoting healthy lifestyles (New Zealand Ministry of Education)
10. What works in schools and colleges to increase physical activity? (Public Health England)
11. Whole-schools ideas (Public Health England)
12. School Health Promotion (Well-Ahead)

3. Motivation as a key for healthy lifestyles promotion

There are many things that can get in the way when we try to live a **healthy lifestyle**. Staying motivated to keep up these habits can be quite difficult, especially considering the various reasons that may currently make it difficult to create a regular routine.

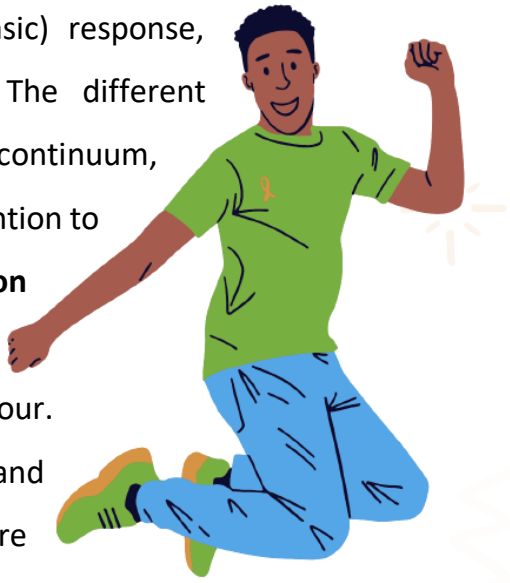
According to Eurobarometer (2022), the main reasons pointed out by people to justify **physical inactivity** (as an example of an unhealthy behavior) were “lack of time” and “lack of motivation” (66%, almost seven in ten Europeans). Caudwell and Keatley (2016) argue that both motives are associated with the psychological state of amotivation, meaning that the person does not feel motivated or lacks the intention to exercise.

Motivation works like an engine that gives us energy to act because it is linked to intensity, direction, and persistence of behaviour (e.g., healthy behaviors like physical activity or healthy food consumption): the "why", the "what" (Deci & Ryan, 2000), and the "how" (Chatzisarantis & Hagger, 2007). The main question that rises from that, is not about the quantity of motivation, but about the quality of motivation (Ryan & Deci, 2000a,b).

Among several theories that analyse motivation, **Self-Determination Theory** (SDT: Deci and Ryan, 1984) is the most widely motivational framework used by researchers on understanding the influence of human motivation on behavioral outcomes in the sport and exercise domain (Teixeira et al., 2018).

SDT postulates the existence of three basic psychological needs (autonomy, competence, and relatedness) innate to all human beings, whose satisfaction translates into a universal experience of physical and psychological well-being (Ryan & Deci, 2000b). The satisfaction of these basic psychological needs (BPN) is a strong predictor of more self-determined motivation (Chen et al., 2015), therefore being associated with several positive outcomes at the behavioral, cognitive, and affective level (Edmunds et al., 2006). For example, when it comes to the physical activity context, the satisfaction of BPN turns out to be a strong predictor of intrinsic motivation (Ryan & Deci, 2000a), being ultimately related to long-term exercise adherence (Teixeira et al., 2012). On the contrary, the frustration of BPN predicts amotivation (Vansteenkiste & Ryan, 2013), leading to low adherence and high dropout rates (Ng et al., 2013).

Ryan and Deci (2017) state that the level of motivation depends on the satisfaction of BPN and that, instead of a dichotomous (intrinsic vs. extrinsic) response, motivation can be manifested in six different ways. The different motivational regulations are spread along a motivational continuum, ranging from **amotivation** (lack of motivation or lack of intention to act accordingly to a given behavior) to **intrinsic motivation** (pleasure underlying a particular behaviour), the last one representing the prototype of self-determined behaviour. **Extrinsic motivation** arises in the middle of this continuum and includes four different types of regulation, two of which are more self-determined (autonomous regulation): identified regulation (the individual recognises the importance of the activity, although he/she may not enjoy to perform it) and integrated regulation (the person integrates the behaviour as inherent to him/herself and perceives it as being aligned with his own values); and other two less self-determined (controlled regulation): external regulation (the person performs the behaviour in order to satisfy external requirements) and introjected regulation (the person pressures him/herself to perform the behaviour). This distinction between autonomous and controlled regulation is the core characteristic of the SDT.



Previous research related to health-related behaviors (e.g., physical activity) emphasises the relationship between the degree of **autonomous regulation** and several **positive behavioral outcomes**, such as increased enjoyment (Ruby et al., 2011), and higher levels of persistence and adherence (Vlachopoulos & Neikou, 2007). On the contrary, less self-determined regulations require external motivational sources to perform a specific behaviour, making behaviour withdrawal more likely to occur (Ryan & Deci, 2000a).

So, it is essential to endorse some guidelines to promote motivation in any health-related behavior. For example, it is important to provide an appropriate motivational climate in physical activity domain, forecasting the satisfaction of BPN among adolescents and self-determined motivation (Cid et al., 2019).

In order to encourage an autonomous motivational climate, physical education teachers can focus activities on the action itself and not on the result, so that students care more for the personal development of their motor skills or abilities. To do this, physical education teachers should focus more on effort and less on the result itself. Furthermore, cooperation and mutual aid between pairs (e.g., the interdependence of the task) should be emphasized, decreasing thereby the almost innate tendency of students to demonstrate their skills to others.

Physical education teachers should increase options to their students when facing tasks for developing autonomy. Pair work and small groups facilitate this process. Teachers must likewise explain to the exercisers or students about the tasks to be undertaken, giving them the opportunity to choose the best way of performing. Additionally, working in small groups (considering students' level of expertise), will create social bonds and encourage cooperation among peers, in order to develop relatedness.

Regarding the development of more autonomous behaviors, it is important to promote intrinsic motivation, by individualising and adapting the teaching style to the characteristics and level of the students' performance, as well as encouraging them to actively participate in the decision-making process. In particular, teachers should try, whenever possible, to address

students with rational and logical explanations of the importance of physical activity, facilitating the development of the identified regulation.

People tend to repeat what gives pleasure and fun, for that reason exercise professionals or teachers should put effort into planning activities with this in mind.

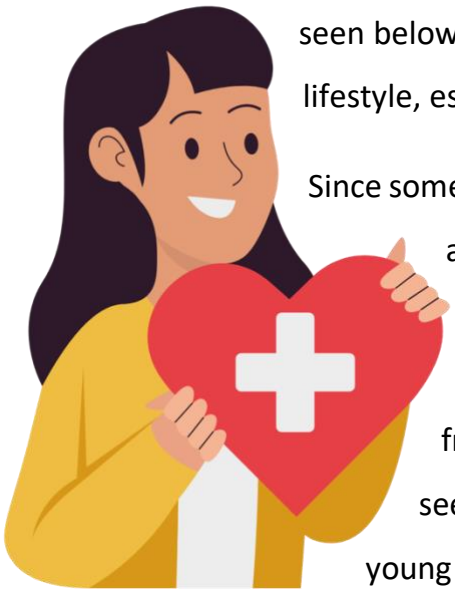
In short, Physical Activity could play a key role in the fight against high rates of inactivity and sedentary lifestyles especially among children and adolescents. The results obtained from several studies (Cid et al., 2019) emphasise the importance of three variables: autonomous motivational climate, satisfaction of basic psychological needs (especially competence), as well as self-determined motivation. As such, teachers should plan and develop their professional activity with the notion that an autonomous motivational climate can influence effort, persistence, cognition, emotions and behaviour of the students (Rodrigues et al., 2018), and they should be aware of promoting self-determined motivation, as a way to enhance individuals' intentions to be or to continue to be physically active (Monteiro et al., 2018). This explanation of the physical activity motivational process is an example that can be applied to any other health-related behavior.

If you want to know more about motivation for the acquisition of healthy habits and the practice of physical activity, visit the following links:

1. New Eurobarometer on sport and physical activity (European Commission)
2. Center for Self-Determination Theory
3. 5 Tips to Help You Stay Motivated to Exercise (National Institute of Aging)
4. How to Stay Motivated and Lead a Healthy Lifestyle (HealthHub)

4. Health-related behaviours

Why is it important to promote **health-related behaviours** in young people? There is ample scientific evidence that **healthy behaviours** such as regular physical activity, especially, moderate-vigorous intensity, optimal sleep duration and quality, and healthy eating are independently associated with a wide range of **physical** (adiposity, metabolic markers, physical fitness, bone health, etc.), **psychological/social** (improved quality of life, well-being, reduced stress, depression, anxiety, etc.) and **cognitive** (improved cognitive functioning, higher academic performance, etc.) **benefits**. On the contrary, **risk behaviours** such as physical inactivity, excessive and prolonged sedentary time (especially linked to recreational screen time), short or excessive sleep duration, unhealthy diet through the intake of ultra-processed products or sugary drinks, as well as tobacco and alcohol consumption are associated with **negative health consequences**. Moreover, in different systematic reviews, it has been observed that adopting a greater number of healthy behaviours, or avoiding certain risk behaviours, can maximise academic, health and economic benefits. However, as will be seen below, a large percentage of young people do not adopt a healthy lifestyle, especially during adolescence.



Since some studies have shown that there is a transfer between healthy and risky behaviours adopted in **childhood** and/or **adolescence** and the consolidation of these behaviours in adulthood, it seems essential to promote these behaviours from the earliest stages. Due to this interrelatedness, schools seem to be ideal places to promote healthy behaviours among young people.

Therefore, in the following section, different **health-related behaviours** appear such as **physical activity**, **sedentary** and **recreational screen time**, **sleep**, **diet**, and **tobacco** and **alcohol consumption**. For each of these six behaviours, a brief introduction is detailed, as well as videos or testimonials, on their definition, benefits, risks, recommendations and prevalence among young people. Likewise, different resources aimed at primary and/or secondary education students are included. It is important to highlight that these resources can be adapted to either educational stage with minor adaptations. Teachers are recommended to adapt them to their context, which can be done from different areas such as tutoring, Physical Education lessons or any other curriculum subjects.

4.1. Physical activity

Daily **physical activity** has been considered as an important part of life for children and adolescents. According to WHO (2020), physical activity is any bodily movement produced by skeletal muscles that requires energy expenditure. It is recommended that children and **adolescents aged 5-17 years** should do at least an average of **60 minutes per day of moderate to-vigorous intensity, mostly aerobic physical activity, across the week**. Examples of activities classified as aerobic may include walking, running, bicycle riding, dancing, and swimming. Moreover, activities that strengthen the muscle should also be incorporated at least 3 days a week in the daily life of children and adolescents. Examples of activities for younger children may include jumping, climbing, and gymnastics, whereas for older children and adolescents the supervised strength training programmes with the focus on developing proper exercise technique could be considered. Importantly, it is recommended that the amount of time spent being sedentary, particularly the amount of recreational screen time should be limited in the daily life of children and adolescents (WHO, 2020).

Physical activity is a **learned behaviour**. Basic movement skills such as running, jumping, and throwing serve as the building blocks for a lifetime of physical activity. Children who do not develop these skills early in life may be less likely to meet the recommendations for daily physical activity later in life (Tammelin et al., 2014). Today, however, various electronic devices and social media have tremendously

decreased the need and desire for children and adolescents to participate in physical activity. The study by van Sluijs et al. (2021) based on 1.6 million adolescents across 146 countries found that 81% did not meet current physical activity recommendations – including 77.6% of boys and 84.7% of girls. It is important to note that participation in physical activity decreases with age, and the decline is greater in girls than boys.

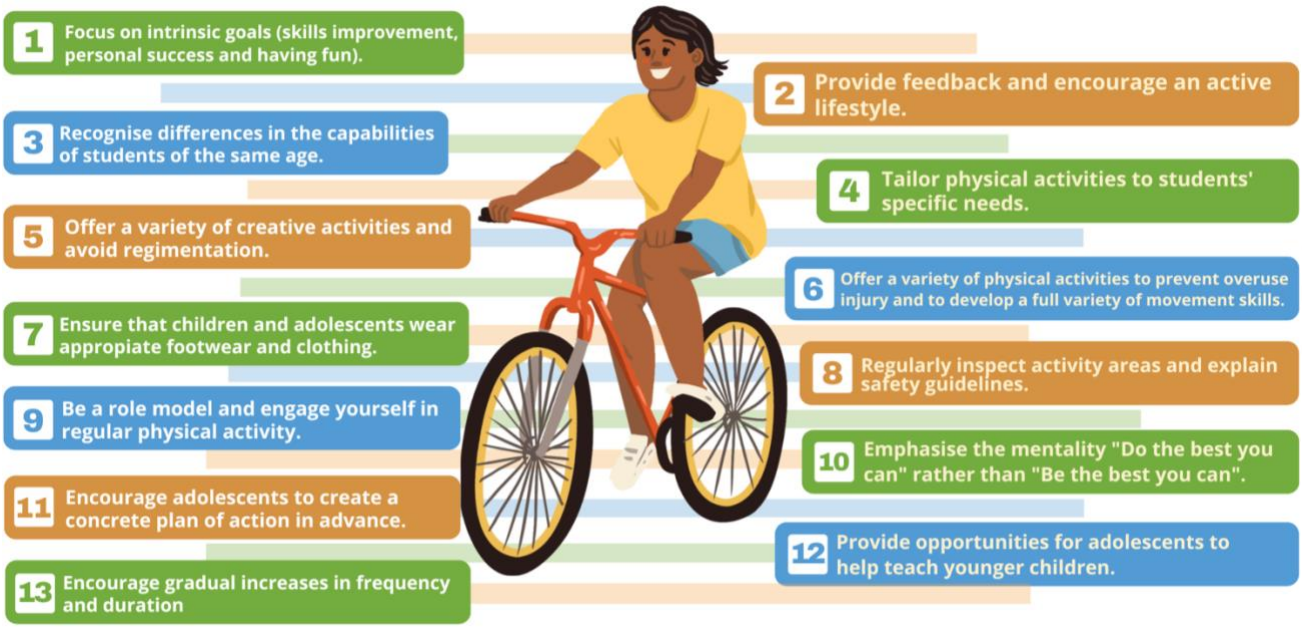
Adolescence has generally been considered as a healthy period in an individual's life. However, many non-communicable diseases that manifest later in life may be partly the result of modifiable risk behaviours established during the adolescence, such as tobacco use, unhealthy eating, and low levels of physical activity (Sawyer et al., 2012). There is a large body of evidence that regular participation in different types of physical activity is associated with beneficial effects on body composition, cholesterol, blood pressure, blood sugar, aerobic fitness, muscular strength, movement skills, and bone health (Poitras et al., 2016). Regular physical activity can also improve cognitive functioning, academic performance as well as promote feelings of wellbeing in children and adolescents. In addition, physical activity has shown reducing effects to the risk of experiencing depression and depressive symptoms in children and adolescents (Physical Activity Guidelines Advisory Committee, 2018).

In terms of the association between social support from significant others (e.g., parents, peers, and teachers) and physical activity of children and adolescents, the research shows that social support from family and peers is positively associated with physical activity in early and late adolescence. However, peers and friends become increasingly influential compared with adults (i.e., parents and teachers) during the

period of adolescence (Mendonça et al., 2014). Although the association between adolescents' physical activity and teacher support has shown to be ambiguous (Mendonça et al., 2014), there is evidence that students are more physically active outside of school if the teacher has created a learning environment in physical education classes that supports their basic psychological needs and thereby the development of intrinsic motivation towards physical activity (Kalajas-Tilga et al., 2020).

Considering that positive lifestyle behaviors such as participating in daily physical activity begin during childhood and adolescence and tend to carry over into adulthood, it is crucial to promote the physical activity of children and adolescents. Moreover, the physical inactivity of children and adolescents has already been recognised as a global pandemic (Kohl et al., 2012).

Below, you can find a series of recommendations based on scientific evidence, to promote success in physical activity participation among children and adolescents. These tips may be helpful for teachers, as well as parents and coaches for developing enjoyable and safe physical activity experiences for children and adolescents.



Physical activity

Lesson Plans

1.Are we physically active?

Different studies show that **regular physical activity** not only implies numerous **physical**, **psychological**, **social** and **health benefits**, but also contributes to **cognitive development** and **academic achievement** among children and adolescents. Nonetheless, previous research reports most children and adolescents fail to meet daily physical activity recommendations.

Objectives

- Understand the importance of regular physical activity
- Identify physical activity levels.
- Establish personalised strategies for every student to increase his/her physical activity levels.

The teacher begins with the explanation of the **benefits** derived from **regular physical activity** on academic achievement, cognitive development, and physical, psychological, social and health. Then, the teacher explains **daily physical activity recommendations** (at least 60-minutes of moderate-to-vigorous physical activity per day and, at least, three days a week of vigorous physical activity).
The teacher can ask several questions to further deepen the topic:

- *Do you practice regular physical activity?*
- *Do you know any way to measure physical activity?*

Task 1: The teacher introduces the International Physical Activity Questionnaire (IPAQ) to students.
First, every student completes the questionnaire using Google Forms®. Secondly, the teacher describes data about physical activity for the class group, indicating the percentage of students who meet physical activity recommendations. Furthermore, the teacher presents physical activity levels, and the percentage of compliance with physical activity recommendations in accordance with the students' gender.

Thirdly, the teacher asks a series of questions to sensibilize students on the benefits derived from regular physical activity and the risk to unmeet physical activity recommendations:
Why do you practice physical activity?
Do you think physical activity is good for you?
Have you made new friends with physical activity?
Task 2: Each student should individually raise possible strategies to increase moderate-to-vigorous physical activity levels and, in consequence, contribute to meeting physical activity recommendations for children and adolescents. Furthermore, students work in pairs. Each pair will argue and agree on the different proposed strategies, listing possible physical activity promotion strategies. Then, students form into groups of four members, where each of them will have to reach an agreement on effective physical activity promotion strategies. Lastly, each group will present the strategies that they have elaborated, while the remaining students may ask questions and give their opinions on the developed strategies. The teachers may also ask questions such as:

- *Why do you think these strategies would help to practice physical activity?*
- *Do you think that strategy is truly effective?*
- *Would there be other more effective strategies that could help you practice physical activity?*

Task 3: In small working groups, students will have to develop a poster with strategies to promote physical activity with the aim of showing it at the hall and on the walls of the school.
The goal consists of making the entire educational community aware of the importance of meeting daily physical activity recommendations.
Task 4: Every student will have to select the type of strategies that best suit their needs to try to increase their daily moderate-to-vigorous physical activity levels.

2. Perceived barriers to Physical Activity

Over the last few decades, the **levels of sedentary and inactivity physical lifestyles** have increased among **adolescents**. Moreover, screen time has also become increasingly problematic. Thus, is the lack of time a real barrier to physical activity or is it an issue of priorities?

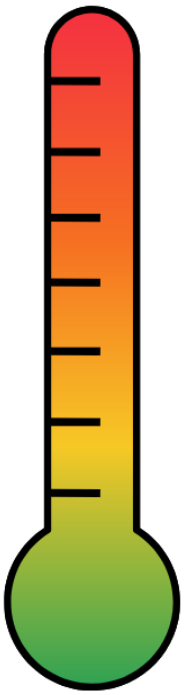
Objectives

- Understand the importance of having a healthy lifestyle.
- Discover the perceived common barriers to physical activity.
- Outline possible solutions to overcome the perceived barriers to physical activity.

The present task aims to discover the **perceived barriers to physical activity** by students. Furthermore, it will be interesting to create a discussion about the **possible and real solutions** to overcome the physical activity barriers.
The teacher will start with a brief introduction about the **risks** triggered by **sedentary lifestyles**, and will use different questions to create a discussion among the students:
Do you usually do physical activity?
How do you consider your lifestyle to be?
How many minutes of physical activity do you do per day?
What activities influence you to do physical activity or not to do physical activity?

Task 1: The teacher distributes small sheets for each student. They will write five perceived barriers to physical activity (one of them in each sheet). Once written, the teacher will collect them and the class group will be divided into small groups. The teacher will distribute all the sheets among each of the groups and one student per group will read each barrier written. Later, the group will think about how those physical activity barriers could be classified (e.g., personal barriers, social barriers, economic barriers, etc.). Finally, they will decide which of them is the most important.

Task 2: After task 1, the teacher will draw a thermometer on a blackboard .
At the bottom of the thermometer (green), as an example, the teacher will have written easier physical activity barriers to overcome. At the top of the thermometer (red), the teacher will have written harder physical activity barriers to overcome.
With the same small groups created for task 1, students will have to classify their perceived physical activity barriers using their own created thermometer depending on the perceived difficulty to overcome them. Specifically, they will focus and reflect on the barriers related to the lack of time.



Task 3: Finally, the aim of task 3 is to look for solutions to overcome physical activity barriers. The solutions should be real and adapted to the students' needs. When students have finished the discussion within their own group, the teacher will create a discussion among the whole class group. Therefore, from the solutions set by each small group, the class group will try to agree on which of these solutions are real.. The teacher could help them by asking the following questions:
Have you found any solutions to overcome each physical activity barrier?
Why do you think there are some barriers you cannot overcome?
What solutions have you set to overcome the perceived easy barriers to physical activity?
Do you think these are real solutions?
Are you able to overcome the physical activity barriers through the proposed solutions?

3. Is physical activity only for boys?

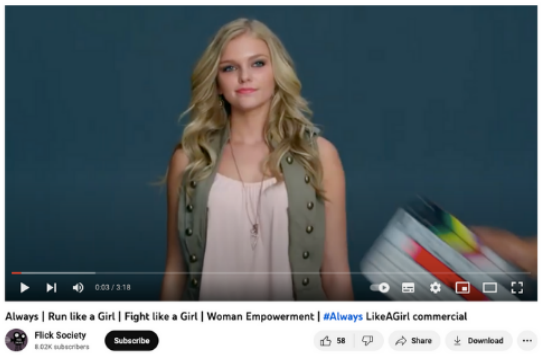
Different studies show that **physical activity** is a field in which masculine values and attributes abound. This causes many expressions to have a **negative connotation** when linked to **women**. In fact, previous research reports that gender stereotypes cause **girls** to **reduce their levels of physical activity and drop out at a younger age**.

Objectives

- Understand gender perspective in physical activity.
- Identify gender stereotypes in physical activity settings.
- Establish strategies to break gender stereotypes in physical activity

The teacher begins the lessons by pointing out that **physical activity environments**, including physical education classes, have been contexts in which characteristics normally associated as masculine (such as strength, endurance, speed) are rewarded, which has led most girls, adolescents and women to **drop out** of **physical activity**.

Task 1: Students visualize the following video:



Always | Run like a Girl | Fight like a Girl | Woman Empowerment | #Always LikeAGirl commercial (Flick Society)

Then, the teacher asks a series of questions for each student to respond individually:

- *Which meaning do the expressions "run like a girl", "strike like a girl" or "bat like a girl" have for you?*
- *Have you ever insulted or felt insulted with these expressions?*
- *Do you think there are gender stereotypes hampering girls' physical activity?*

Task 2: In small groups, students should look for news or digital resources on social media and in the press that involve negative gender stereotyping in sport, physical activity, and physical education. Then, the different group members will provide a justification for this phenomenon and a possible solution. After that, each group will expose the found stereotype, a justification on why it is happening and a possible solution. Likewise, the teacher could also ask questions such as:

- *Why do you think that this is a gender stereotype?*
- *Do you think that the raised solution is the best?*

Task 3: The class group will have to make a mural with all possible solutions to break gender stereotypes in physical activity in order to promote equality between men and women in the physical activity field.

4. How do you commute to/from school?

Active commuting is understood as walking, cycling or any other means that involve **energy expenditure to reach a destination**. Different studies show how active commuting to/from school helps to increase the physical activity levels of young people because it is done at least twice a day. Similarly, active commuting has numerous physical (e.g., physical fitness), cognitive (e.g., academic performance), psychosocial (e.g., well-being), as well as economic and environmental benefits.

Objectives

- Understand the importance of commuting actively.
- Identify the main barriers to active commuting.
- Know the main rules of road traffic.
- Establish strategies to move actively.

The lesson can start by introducing the topic and asking questions about how students usually commute to/from school and in their leisure time.

How many of you walk / cycle / drive a car / ride a motorcycle or an electric scooter / take a bus / streetcar / metro etc. to school?

Is the way of travelling to and from school different or the same? Why? In your free time, how do you normally commute?

Do you use a bicycle for any type of travel? Why?

Mentimeter can be used to count the number of students commute by each mode of transport.

Task 1: Different videos or images can be used to illustrate different ways of commuting to school (cycling, electric scooters, etc.), as well as common situations that occur (traffic jams, pollution at school exits, etc.). This activity can help students identify the benefits and risks of commute actively or passively.

Next, the following questions can be asked:

Why do you think that in other European countries many children/adolescents cycle to/from school? Why is this not the case in Spain/Portugal/Estonia, etc.?

What benefits/risks do you think it has to commute in one way or another?

Is it the same to travel by public transport than in your own vehicle?

Task 2: in small groups of 3-4 people, students have to identify the main barriers that prevent them from commuting actively (walking and/or cycling). Once the activity is finished, they have to expose these barriers to the rest of the group, proposing solutions. The teacher can guide the discussion, trying to show the students that many of the identified barriers can be overcome.

Task 3: to promote cycling, it is necessary that students know the main rules of the road. For this reason, students will have to look for information to answer to several questions such as:

1. How do we indicate the turns when we ride a bicycle?

2. Do we make the same indications on both sides of the road, and why?

3. Which side of the road should we ride on when we are on a bicycle?

4. How should you ride a bicycle if you are riding with a group of friends on a national road? and in the city?

5. Is it mandatory to wear a helmet in the city?

6. Is it compulsory to wear lights on our bicycles? Which ones?

7. Is it mandatory to wear reflectors?

Also, different traffic signs could be shown so that the students have to identify them and explain their function.

Task 4: Different collective challenges are given to the students.

- *Are you able to increase the number of people walking and/or cycling in this class by 20%?*
- *Are you able to get the teaching staff of this school to actively commute to school?*
- *Are you able to promote active commuting among the whole school?, how would you do it?*

Teachers can help students establish an action plan, listing possible strategies. Finally, teachers could publicize different recreational cycling clubs, cycling events in the city or trails close to their city so that students could also cycle in their leisure time.

5. My breaks, my activities

School recess is a space that can also help students increase their **physical activity levels**. However, most young people do not engage in physical activity during recess, especially older adolescents and girls.

Objectives

- Understand the importance of physical activity during recess.
- Identify the main barriers to not engaging in physical activity during recess.
- Facilitate the organization of physical activities by students, according to their interests and preferences

The lesson can begin by showing several photographs of different examples of recess, in which young people can be seen sitting without engaging in physical activity. Based on these photographs, the following questions could be posed to raise awareness among students about the importance of taking advantage of this time for physical activity:

Is recess a space to engage in physical activity?
How many people engage in physical activity during recess?
Do you do it daily or sporadically?
What do you play during recess?

Task 1: In small groups of 3-4 people, students have to identify different barriers to physical activity at recess. In the case that they do, they can identify possible barriers that they consider that the rest of their classmates could have. Once the activity is finished, they will have to expose these barriers to the rest of the group. The teacher can help the students to find solutions to the barriers raised.

Task 2: individually, students propose a series of activities that they would like to do during recess based on their interests. The teacher writes down on the board all the activities proposed. It is important that these activities are feasible to be carried out in the context and time that a recess lasts. From all of them, students should choose those that they would really like to play or do during recess.

Task 3: in small groups, students should specify some aspects that they would like to carry out in the chosen activities. It is important that all activities are mixed gender and that everyone can participate. Some of the aspects that could be specified in each activity are the following:

- Activity
- Organisers
- Number and days/week
- Maximum number of participants
- Persons per team (in case there are teams)
- Organization
- How to register
- Playing space

It is important that the teachers of the school also participate, being an example for the young people.

Task 4: Subsequently, students should choose how to promote their activity in the school (e.g., infographic/poster, hall screen, verbal information to each class, etc.). Finally, such material should be elaborated in the last part of the class. The teacher can show examples of posters produced in previous years.

6. Bringing out-of-school physical activities to the classroom

Different studies show that there is an ample range of **leisure-time physical activities** that take place in the **children's** and **adolescents' immediate surroundings**. Nevertheless, this type of leisure-time physical activities is greatly unknown by most people, which reduces the likelihood of improving children's and adolescents' levels of physical activity.

Objectives

- Discover the different leisure-time physical activities on offer in the city.
- Identify different choices of leisure-time activities related to physical activity in their city.
- Establish an updated calendar with leisure-time physical activities in their city.

The teacher begins the lessons by indicating that leisure activities represent a good choice for out-of-school physical activity.

Task 1: The teacher asks students a series of questions with the purpose of knowing which type of physical activities they practice during their leisure and free time.

- *Who practices out-of-school physical activities?*
- *Which type of physical activity is it?*
- *Who accompanies you to that after-school physical activity?*
- *Where do you practice it?*

Task 2: In small groups, each of them should look for ludic and sports events, clubs, associations, and other organizational ways of leisure-time physical activity that take place in the city. Then, the group members should list activities and events to classify them into single or family activities, free or payment activities, competitive or recreational activities.

Task 3: Each group will create a diptych with the different choices for leisure-time physical activities found. Then, the groups will present it to their classmates explaining the different choices for leisure-time physical activities that can be practiced in the city.
At that moment, the teacher could encourage the students' participation with questions such as:

- *Do you know about this event? Do you know when it is held?*
- *Who is going to this sports club or association?*
- *Are any of these choices for the whole family?*

Task 4: From the physical activities previously identified, students will create a calendar in which they will add activities and events related to physical activity in the city in which they can participate throughout the academic year.

4.2. Sedentary screen time

The beginning of the 21st century has led to a **new digital era** that has shown an increase in the consumption of different **technological screen media** by the population, making society increasingly sedentary and addicted to new technologies. There is a great social concern about how these changes are affecting the physical, psychological, social, and cognitive health of people, especially **young people**.

First, it is important to define the concept of **sedentary time and screen time** because they are sometimes used interchangeably. According to the Sedentary Behaviour Research Network (Tremblay et al., 2017), **sedentary behaviour** refers to any waking behaviour characterized by an energy expenditure of ≤1.5 METs, while sitting, reclining, or lying down. Therefore, **sedentary time** refers to the total minutes spent in different sedentary behaviours such as eating or studying while sitting, etc., whether they are linked to screen use. However**, screen time** refers exclusively to the time spent on different screen media technology such as televisions, computers, cell phones, video consoles or tablets.

Regarding **sedentary time**, no **recommendations** have been established to date on the maximum time it would be advisable for young people to remain seated during the day to avoid health risks. Despite this, different international organisations recommend limiting sitting time for prolonged periods. In relation to screen time, and despite the emergence of new technological media, the recommendations established by the

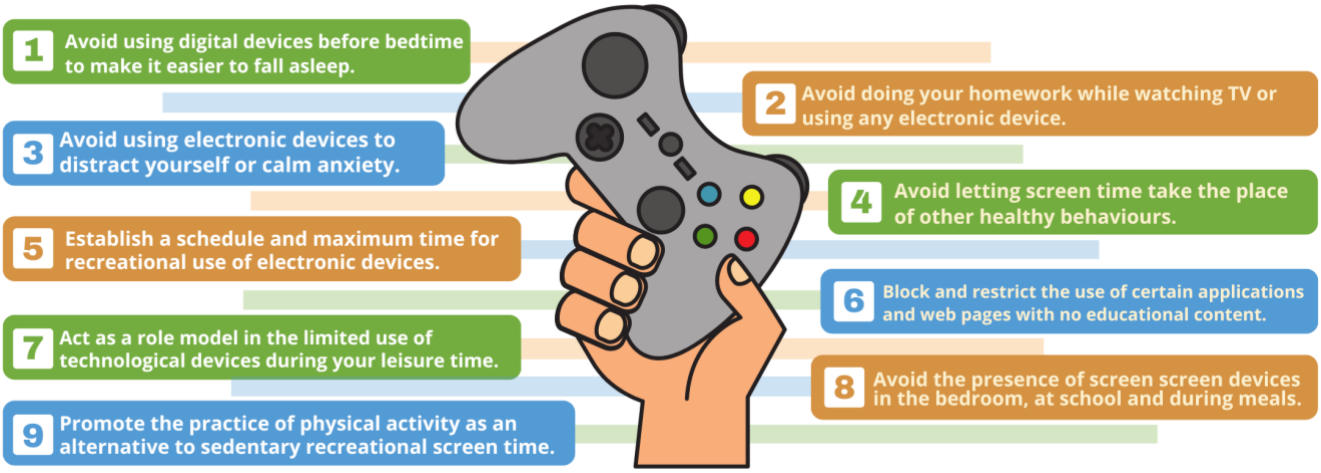
American Academy of Pediatrics (2001) established that **time spent watching television should not exceed 2 hours per day** in children and adolescents, aged 5 to 17 years old. Subsequently, the 24-hour motion recommendations, developed by Tremblay et al. (2016), also supported these recommendations of a maximum of **2 hours of screen time per day**. However, they qualified that they were not only alluding to television but also to the rest of technological screen media. Likewise, these authors emphasised that these recommendations referred to **recreational screen time** (time dedicated to screen technology media that did not refer to school or work). This nuance could be because recreational screen time is dispensable and, therefore, can take time away from other healthy behaviours such as physical activity and sleep. Recently, the World Health Organisation (Bull et al., 2020), has pointed out that screen time should be limited, although they did not establish recommendations. However, **active screen time**, such as talking on the phone while walking, is even associated with **health benefits**, as light activity is performed simultaneously.

Prolonged sitting and, especially the excessive use of different screen technological media, has been associated with numerous **negative health consequences** in **young people** such as

increased overweight and **obesity**, **stress**, and **anxiety**, as well as **lower academic performance**, among others (Lissak, 2018). Despite these detrimental effects, recent studies that are evaluating different screen technology media in children and adolescents show alarming figures. For example, a recent study conducted in Spain, in a sample of 2,021 young people aged between 12 and 17 years old, revealed that adolescents spend between 6 hours and 12 minutes per day (Simón et al., 2019), using their cell phone, being it the most used screen technological medium in all academic years. In general terms, boys seem to make more use of video games, while girls use the computer and the cell phone more. Screen time tends to be higher on weekends than on weekdays.

For all these reasons, we are currently facing not only an increase of physical inactivity (young people do not comply with the recommendations for physical activity), but also an increase of sedentary lifestyles.

See our recommendations, based on scientific evidence, to reduce screen time and to use screen digital devices responsibly:



Sedentary Screen Time

Lesson Plans

1.Stuck to screens

The latest era of technology has resulted in an increase in the amount of **time** spent using different **screen technology devices** (e.g. television, computers, mobile phones, video games, etc.) especially among children and **adolescents** in developed countries. This means that the average young person does not meet the **maximum 2 hours of screen time per day** recommended by some international organisations, which can have serious **consequences** on their physical, psychosocial and cognitive **health**. Raising awareness of this problem among students is one of the first steps to prevent screen addiction from an early age.

Objectives

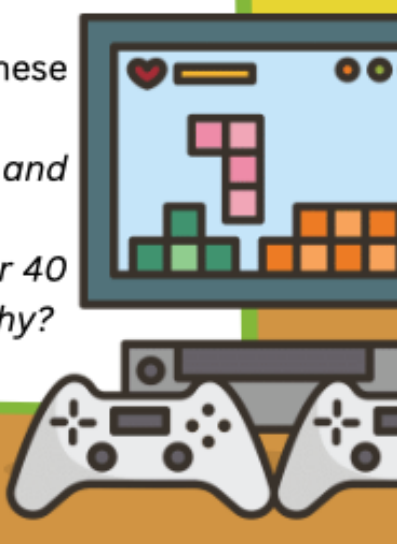
- Think about the lifestyle changes that have been triggered at the beginning of the 21st century.
- Know the screen recommendations and their associated risks.
- Know the difference between sedentary time and sedentary screen time.
- Examine sedentary daily time and sedentary screen time.

The lesson starts with a series of pictures from 30/40 years ago, explaining what young people's lifestyles were like in the past. Next, pictures and scenes that can be seen nowadays are shown, such as people riding electric scooters, looking at their mobile phones when they get up or go to sleep, playing video games in the park with their friends, eating with their mobile phones, etc. This dynamic is aimed to reflect on the changes in lifestyle that have taken place at the beginning of the 21st century.

Later, students can be asked a series of questions about these pictures:

Are these pictures common among your close family and friends?

Why do you think that life has changed significantly in 30 or 40 years? Do you think that people are more sedentary now? Why? Can this have consequences in people's health?



Task 1: It is recommended that before the lesson, students fill out a questionnaire about their average daily screen time during the week and at the weekend on five devices (television, computer, mobile phone, video games and tablets). In addition, it should detail the total sedentary time between weekdays and weekends (Annex 1).
Using the data obtained, teachers can create graphs showing in detail the following aspects:
-Total average of daily screen time.
-The average of daily time spent on each of the five devices during the week and at the weekend.
-Total sedentary time.
In addition, other graphs with possible differences according to gender and between weekdays and weekends can be added. Moreover, information from other scientific studies can be also added to raise students' awareness on this issue.
Teachers can ask students to interpret the graphs in order to work on their mathematical competence. At the same time, the teacher can ask the following questions to make students reflect on the topic:
Do you think that you spend a lot of time sitting down during the day? Why?
Of all the time that you spend sitting down, how much of it is dedicated to screens?
What is the technological screen device that you spend the most time on?
Is there a gender difference in the amount of time spent on looking at electronic communication devices?
Why do you think boys/girls spend more time on screens than boys/girls?
Which screen devices do you think boys/girls spend more time on?
Why do you think boys/girls spend more time on screens at weekends? Does this happen on all devices?

All these questions will allow teachers not only to know the daily sedentary time but also to know how students spend their time on these devices.

Task 2: Then, indicate to students that the excessive use of screens can generate numerous physical, psychological and cognitive risks to people's health. From there, students should identify the screen recommendations established by international organisations for different age groups. For example, students should review the Canadian 24-Hour Movement Guidelines and the World Health Organisation (WHO) Guidelines on physical activity and sedentary behaviour.

Once these recommendations have been identified, a final slide can be shown including their degree of compliance with these recommendations. Moreover, the following questions could be considered in order to continue reflecting on the topic:

How many people in the class follow the screen time recommendations?

Are there any differences according to the type of day (weekday or weekend) or gender?

Task 3: Finally, students can be shown different mobile applications to make them aware of the time they spend in front of a screen.

- Quality Time
- Your Hour
- Checky
- Forest
- Quantum
- Antisocial
- Screen Time

SCREEN TIME

Annex 1

Please, indicate the daily HOURS AND/OR MINUTES that you dedicate, SITTING OR LYING DOWN, to the following screen activities. If there are two screen activities that are performed simultaneously, consider only THE MAIN TASK

Screen time activities	Weekdays	Weekend
AVERAGE of DAILY television time	h/day	h/day
AVERAGE of DAILY videogames time (game, console, mobile phone, etc.)	h/day	h/day
AVERAGE of DAILY computer time (surf internet, homework, etc.)	h/day	h/day
AVERAGE of DAILY mobile phone time (chatting, WhatsApp, Instagram, TikTok, etc.)	h/day	h/day
AVERAGE of DAILY tablet time (communication, watch series etc.)	h/day	h/day
AVERAGE of DAILY on other screen devices (indicate which) _____	h/day	h/day

This questionnaire is adapted from: Cabanas-Sánchez, V., Martinez-Gomez, D., Esteban-Cornejo, I., Castro-Piñero, J., Conde-Caveda, J., & Veiga, Ó. L. (2018). Reliability and validity of the youth leisure-time sedentary behavior questionnaire (YLSBQ). *Journal of science and medicine in sport, 21*(1), 69-74. https://doi.org/10.1016/j.jsams.2017.10.031

2. Let's disconnect

Several studies warn about the **risks** of high **recreational screen use** on the **physical**, **mental** and **social health** of **young people**. For that reason, **raising awareness** of this problem among students is essential to prevent **screen addiction** from an early age.

Objectives

- Raise their awareness of the high use of screens.
- Identify different ways to reduce screen time.
- Establish a pedagogical contract to reduce screen use.

The teacher can start by recalling the contents of the previous lesson through different questions, as well as showing again the graphs used.

- *Do you remember how much screen time you spent, and on which device (TV, computer, game console, mobile phone, tablet)?*
- *Why did we say that screen time might have increased so much in recent years, and what consequences does it have on our health?*

Task 1: Students read a story or a news item about a case of screen addiction in small groups or individually (for example, a shocking news item like this one: https://www.bbc.com/news/business-58979895). This can also be replaced by watching a video. Afterwards, a series of questions are asked to make students aware of the serious consequences that excessive and prolonged use of screens can have.

- *What happened to the character in the news item/video?*
- *Why do you think he/she was addicted to video games/screens?*
- *How did he/she get into this situation?*
- *How can this situation affect his/her daily life?*

Task 2: Afterwards, students have to think individually about possible strategies to reduce screen time and help the person in the previous case to "disconnect" from screens.

Then, they will get together with a partner and share the different strategies they have thought of, making one single list. This process will be repeated again in groups of 4 people (2 pairs). Finally, each group of 4 people will present the strategies they have developed to the rest of the class, and the rest of the group will be able to ask them questions and give their opinion on the strategies they have developed.

This can also be complemented with a scientific explanation from the teacher, explaining why each of these strategies may or may not be effective and adding possible strategies that the students have not mentioned.

Task 3: Students will have to create an infographic or a poster with all the strategies to hang it in the hall and on the walls of the school. The aim is to raise awareness among the whole educational community about the importance of reducing screen time.

Task 4: Finally, from all the strategies that have been identified as most effective, each student will have to choose which strategies they could adopt to try to reduce their screen time (a pedagogical contract can be signed). The lesson will end by encouraging students to try to reduce their recreational screen time. In the following week it is important to ask students about their possible progress and to encourage them to change their behaviour.

3. Are we able to change?

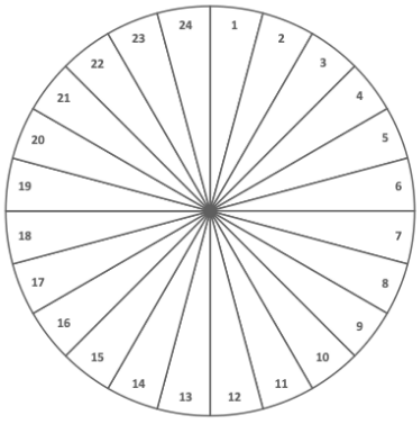
Nowadays, **screen addiction** is a serious social problem, and children are starting to use technological screen devices at an earlier age. In some scientific studies, young people report spending more than a third of their day on screens. Is there any solution to tackle this problem? Can we do something at school to reverse this situation?

Objectives

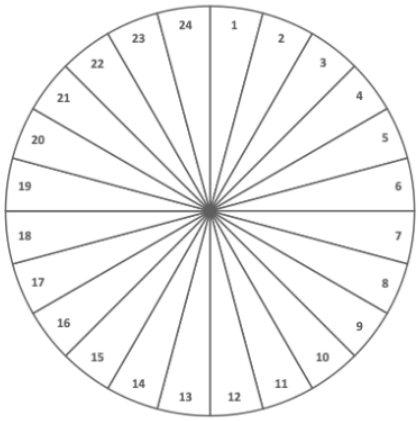
- Discuss possible changes in the amount of free time spent on screens.
- Analyse the distribution of their 24 hours a day in relation to physical activity, sleep and sedentary time.
- Identify strategies or establish a pedagogical contract to reduce recreational screen use.

Teachers can start by making students reflect on the possible impact that the previous two lessons may have had on their behaviour.
Do you think you have reduced sedentary time or sedentary screen time? Why?
What strategies have you used?
Why do you think it is so difficult to reduce screen time?
In the same way, they can be asked about the possible impact that the content of the infographics or posters has had on the school community and their families. Additionally, they can use different applications to find out the time they have spent using screens.

Task 1: Students have to colour the following circle during a typical weekday and a weekend day with three different colours, each of them associated to a specific behaviour (physical activity, sleep and sedentary time), to be aware of the time they spend on each of them. It is important that they specify the amount of free time spent on screens, for example by adding different comments mentioning what kind of screens have been used in each of the time slots.



Typical weekday



Typical weekend day

Task 2: Afterwards, a discussion can be held on how much time is spent on each of the behaviours during the week and at the weekend, with the objective of identifying which ones can be improved and which ones are difficult to change.

For example, the following questions could be asked:

Which behaviours cannot be changed during the week? Which ones can?

Are there differences between weekday and weekend behaviours? Why?

Which behaviours do you think can be improved to make healthier use of the 24 hours?

Task 3: Finally, each student, individually, will have to choose which of the most effective strategies, based on their distribution of behaviours during the 24 hours, they could adopt to reduce their screen time. In Elementary School, students could sign a pedagogical contract, committing themselves to try to change a specific number of behaviours.

The class will end by motivating students to try to reduce their recreational screen time. Therefore, in the following week, it is important to ask students about their possible improvements and encourage them to change their wrong behaviours.

4.3. Sleep time

It is well-recognised that **sleep** represents an essential element for **health** and **well-being**, including **cognitive performance**, **physiological processes**, **emotion regulation**, **physical development**, and **quality of life**.

Appropriate **sleep duration** ranges vary throughout the lifespan. Regarding children and adolescents, according to the Panel convened by the National Sleep Foundation, the recommended sleep duration for school-age children (6-13 years old) is 9-11 hours, whereas 8-10 hours for teenagers (i.e., 14-17 years old) and 7-9 hours for young adults (18-25 years old) (Hirshkowitz et al., 2015). These recommendations for the amount of sleep for promoting optimal health in children and adolescents are in line with the consensus recommendations provided by the members of the American Academy of Sleep Medicine (Paruthi et al., 2016).

Despite of the sleep duration recommendations, it has been documented that because of social factors (e.g., academic requirements or electronic media) and biological characteristics (e.g., tendency towards delayed sleep phase coupled with fixed wake up time) 75% of high school students do not meet the recommended eight or more hours of sleep per night and suffer from sleep deficit (Kann et al. 2018).

Inadequate duration of sleep among adolescents has been found to be associated

with several **health problems**. In their systematic review of literature and meta-analysis, Chen et al. (2008) found that children with shorter sleep duration had a 58% higher risk of being **overweight** or **obese**, and children with shortest sleep duration had an even higher risk (92%) when compared with children having longer sleep duration. Moreover, for each hour increase in sleep, the risk of being overweight or obese was reduced on average by 9%. Similarly, short sleep was found to be associated with a greater risk of developing overweight or obesity in more than 3,000 middle childhood aged participants and more than 26,000 adolescent participants (Miller et al., 2018).

Regarding the association between **sleep duration** and **cardiovascular risk factors** in children and adolescents, the review and meta-analysis by Sun et al. (2020) revealed strong evidence for an association between short sleep duration and **increased blood pressure**. In terms of the association between sleep duration and cognition in children and adolescents, results of the meta-analysis by Short et al. (2018) suggested that **longer sleep duration** measured objectively using actigraphy or polysomnography were associated with **better cognitive functioning**. Specifically, it was found that full/verbal IQ was positively and significantly associated with sleep duration, whereas fluid IQ, memory, executive function, processing speed, and attention came close to a significant association with sleep duration.

It is well-known that teenagers are normally interested in trying new experiences that can be sometimes associated to risk-taking behaviours, such as tobacco, drug and alcohol use, risky driving, unprotected sex, gambling, and petty crime. **Sleep loss** is considered as one of the factors that may heighten risk-taking propensity among adolescents (Davis et al., 2013). In their literature review and meta-analysis, based on empirical evidence obtained from over 500,000 adolescents, Short and Weber (2018) showed an **association** between **shorter sleep duration** and **risk-taking** in **adolescents** across domains of risk-taking such as drug use,

alcohol use, smoking, driving safety, sexual risk-taking, violent/delinquent behaviour and trait risk-taking/sensation seeking. In a more recent review and meta-analysis, Short and her colleagues (2020) demonstrated that shorter **sleep duration** significantly increased the odds of adolescents experiencing **mood deficits** by 55%. Mood deficits due to shorter sleep were observed across mood states including **depression**, **anxiety**, **anger**, **positive affect** and **negative affect**, indicating that short sleep can lead to a range of mood deficits in otherwise healthy, non-clinical samples of adolescents. Moreover, Chiu et al. (2018) demonstrated that sleep duration plays an important role in the development of youth suicidal behaviours, since both too long and short sleep duration were significantly associated with an increased incident risk of suicidal ideation and attempts.

Similarly, the **quality of sleep** also influences the risk of **medical diseases** such as cardiovascular disease, cancer and depression (Irwin, 2015). This sleep quality would be defined by a series of indicators such as falling asleep shortly after going to bed (30 minutes or less), sleeping through the night without waking up more than once, sleeping the recommended number of hours for your age, falling back to sleep within 20 minutes if you wake up and feeling rested, recovered and energetic when waking up in the morning (Suni, 2022).

Below, you can see our recommendations, based on scientific evidence to support good sleep habits:

Sleep Time

Lesson Plans

1. The sleep roller coaster

Numerous studies indicate that **sleep** is associated with numerous **physical** (e.g., adiposity), **psychosocial** (e.g., well-being) and **cognitive** (e.g., memory) **benefits**. To this end, **children between 5 and 13 years** should sleep between **9 and 11 hours/day**, while **adolescents between 14 and 17 years** should sleep between **8 and 10 hours/day**. However, sleep duration has decreased during the last 21st century by about 1 hour. The irruption of new technological screen devices is causing young people to alter their sleep cycle, sleeping fewer hours and of poorer quality. Due to these daily sleep deficits, daily and very long naps are very common among children and, especially, among adolescents. Although there are no nap recommendations, different studies point out the importance of **naps lasting less than 30 minutes** to avoid harmful effects.

Objectives

- Understand the importance of getting an optimal number of hours of sleep.
- Know the effects of screen time on the sleep cycle.
- Know the recommendations, benefits and risks associated with sleep time.
- Identify the main barriers to sleep.

We can start with a small debate on sleep duration in young people in the late 21st century. The question that can be posed is:
Do you think that young people today sleep more or less than before? Why?
Students should organize themselves into two groups (yes/no) to discuss this topic. To do this, they should look for possible arguments and structure them into a speech to be presented by the spokesperson of each group.

Task 1: Before the lesson, the students have to fill out a questionnaire to find out the sleep duration at night and nap duration every day, during the week and on weekends. To make the calculation more accurate, it is important to ask about the time they go to bed and wake up. With the information obtained, graphs can be made so they can check the average duration of nighttime sleep and naps on a daily, weekday, and weekend basis and whether they comply with the sleep recommendations. Similarly, graphs can be made according to gender to analyze if there are differences between boys and girls regarding this behavior.

Subsequently, students can be asked some questions to reflect on the causes and consequences of sleep debt during the week:

- *Why do you think you sleep more hours on the weekends than during the week?*
- *Why do you think naps are so long, and how could this be avoided?*

Task 2: Students watch several videos on the benefits and risks of getting the optimal number of hours of sleep.

Some examples of videos are:

What would happen if you didn't sleep? - Claudia Aguirre (TED-Ed)

What if you stopped sleeping? (AsapSCIENCE)

This can be followed by questions such as:

- *What are the benefits of sleeping an adequate number of hours?*
- *What do you think are the risks of sleeping too little or too much?*
- *Why is too little or too much sleep related to increased adiposity?*

Similarly, students can investigate whether whether sleeping during the day is the same as sleeping at night. To do this, students have to do a small research work on pages or videos provided by the teacher.

Task 3: In small groups of 3 or 4 people, students will have to identify the main barriers that prevent them from sleeping an optimal number of hours or quality sleep. Once the activity is finished, they have to expose these barriers to the rest of the group, proposing solutions. The teacher can guide the discourse, showing them that many identified barriers can be overcome.

The usual barriers to sleeping an optimal number of hours or resting properly are:

- I use screen devices late at night (TV, video games, WhatsApp, etc.).
- There is too much noise
- There is too much light
- I go to bed restless
- I have nightmares
- It is very hot/cold
- I get up many times to go to the bathroom
- I have trouble falling asleep
- I stay out late
- Homework/study
- Sports/physical activity (weekends)
- Personal grooming (weekdays)

Task 4: Students are proposed a challenge to see if they are able to spend a week without using screen devices 2 hours before going to bed. Withdrawing the use of screens before going to bed can help them to fall asleep and become more aware of the previously mentioned benefits.

2. Sleep, the joy of living

It is not only the **duration of sleep** that is important, but also the **quality of sleep**, the time of day when you sleep and the regularity during the week and the weekend. To this end, promoting proper sleep hygiene, through knowledge of a series of behaviors that favor or harm sleep, as well as recommendations for following a healthy sleep routine is fundamental among young people.

Objectives

- Discover a series of behaviors that promote or avoid sleep.
- Establish guidelines for a healthy sleep routine.

The lesson can begin by asking the students if they have met the proposed challenge or if, at least, they have managed to make some modifications in their sleep after the first lesson.

- *Have you managed to meet the challenge of not using screen devices 2 hours before going to bed? Has this measure made it easier for you to get to sleep?*
- *Have you managed to get more hours of sleep during the week? Has this change had any implications for your health? What aspects have you modified?*

Task 1: Students must identify whether the following behaviors are sleep-promoting or sleep-depriving:

- Exercising or engaging in vigorous-intensity physical activity just before bedtime.
- Doing moderate physical activity in the evening.
- Drinking alcohol before bedtime.
- Drinking coffee after mid-afternoon.
- Consumption of stimulant beverages.

- Thinking about the next day's tasks before going to sleep.
- Eating in bed.
- Using different screen devices before going to bed.
- Studying, making phone calls, etc. before going to bed.
- Trying to fall asleep even if you are not sleepy.
- Getting out of bed when you cannot sleep.
- Checking your cell phone if you cannot sleep.
- Going to bed at least two hours earlier than usual.
- Worrying about not getting enough sleep.
- Making up for lost sleep by sleeping as much as possible during naps or weekends.

Task 2: In small groups of 3 or 4 people, students will have to detail some individual tips that make it easier for them to fall asleep. Once the activity is finished, they have to present these recommendations to the rest of the group. The teacher can guide the speech, showing the students that there are recommendations for better sleep hygiene.

Task 3: Students should look for well-researched advice on how to sleep better. Similarly, an infographic or a poster can be created to synthesize all the information so that it can be of interest to the entire school.

Example:

- Try to ensure that the delay in bedtime and wake-up time during the weekend is no more than 2 hours longer than during the week.
- Avoid using electronic devices with light emissions, at least two hours before the usual sleep time.
- Sleep in darkness, not leaving the light or television on.
- Avoid eating large meals before going to sleep.
- Perform physical activity at a moderate intensity every day, avoiding vigorous intensity before going to sleep.
- Avoid listening to music with headphones before going to sleep.
- Achieve a room temperature between 18 and 21 degrees Celsius.
- Establish a relaxing bedtime routine, disconnecting from possible worries.
- Avoid consuming caffeine in the afternoon or evening.
- Limit after-school naps to 30 minutes or less and avoid naps after 4:00 pm.
- Avoid alcoholic beverages before bedtime.

4.4. Healthy diet

A **healthy diet** contributes to **well-being** and **health**, and it is crucial for the full overall harmonious development of the young population, in addition to being an excellent ally in the prevention and defence of diseases (Romão & Pais, 2021).

Although this is an unquestionable truth, there are still some barriers to the adoption of such an important habit and practice. Barrier examples are time constraints, daily stress, easy access to junk food, higher prices of healthier foods, as well as the social environments or socioeconomic status (Abdelhafez et al., 2020; Sogari et al., 2018; Zorbas et al., 2018).

In this context, and in the midst of the 21st century, other questions arise such as "what are healthy foods today?" or "what should I consider in order to adopt a healthy diet?" (Azevedo, 2018).

According to different academic and scientific contributions, the best option is to follow a diet which is **Balanced** from an energy point of view, with several meals throughout the day; **Varied,** seeking to diversify the intake of food and respecting its seasonality; **Complete**, providing the necessary daily amount of water and respecting the proportions suggested by the Healthy Eating Pyramid, as well as providing the necessary nutrients for the proper functioning of the body (carbohydrates, proteins, fats, vitamins, minerals, fibre, antioxidants), consumed with such texture and flavour that provide taste and pleasure.

Water should be ingested in daily quantities always greater than 1.5 litres, in order to provide balance to our organism. It can (and should) be consumed during meals.

Cereals (and their by-products) as well as **tubers** should represent around 28% of the weight in the daily diet, 4 to 11 portions (e.g. bread, potatoes, breakfast cereals, rice, pasta, beans, grains). They are good suppliers of carbohydrates, vitamins and mineral salts. Having practically no fat, they are very rich in fibre.

Vegetables should be consumed 3 to 5 portions a day (23% of the weight in the daily diet) and are generally rich in fibre and low in fat.

Fruit is rich in vitamins, fibre and has a high water content. It should represent about 20% of the weight in the daily diet, 3 to 5 portions.

Dairy products are extremely rich in proteins, essential for the formation and repair of the muscles. The consumption of 2 to 3 portions is recommended, corresponding to 18% of the weight in the daily diet.

Meat, Fish and Eggs represent 5% of the weight in the daily diet and should have an intake of 1.5 to 4.5 portions/day. These are foods which are rich in proteins, but also in vitamins and minerals (depending on the choice of consumption, which should favour, for example, white meat over red meat).

Pulses (e.g. peas, broad beans, lentils, lupins) are sources of protein, carbohydrates and fibre, and should be consumed in 1 to 2 portions, representing 4% of the weight in the daily diet.

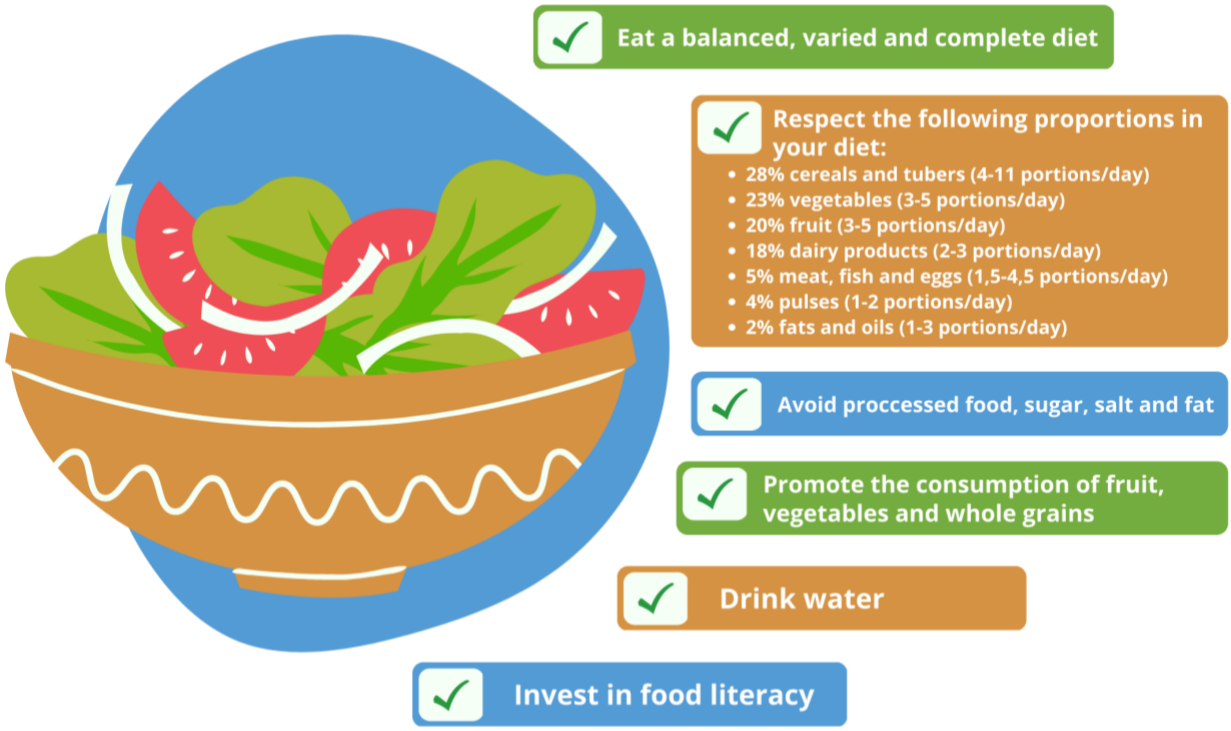
Fats and Oils (e.g. olive oil, lard, butter, margarine, cream) are the smallest group on the Healthy Eating Pyramid, with a reduced and selected consumption recommendation (due to

their high caloric load), of 1 to 3 portions (2% of the weight in the daily diet). They are great providers of energy and fat-soluble vitamins.

All in all, healthy eating habits involve adopting a diversified diet, rich in fruit, vegetables, and whole grains, avoiding sugar, salt and fat, as well as processed foods.

Food literacy should also be an important aspect to consider, since, without the slightest doubt, knowing the different foods and their distribution in the Pyramid, understanding and decoding labels and clearly understanding the relationship between food and health is a big step towards positively changing eating habits, choosing and selecting better nutritional options and building a more autonomous society in its health decision-making process.

In conclusion, in order to follow a healthy diet, it is necessary to pay attention to a number of requirements. In the following image, we offer you some recommendations for adopting a healthy diet and enjoying the benefits associated with it.



Healthy Diet

Lesson Plans

1. What unhealthy food do we usually consume?

Despite widespread recommendations about a **healthy diet** and the **negative consequences** to consume **unhealthy food** and to have **unhealthy eating patterns** (e.g., overweight, obesity, diabetes, decreasing academic performance, low self-esteem), most of the population does not meet the recommendations. In general, society intakes less fruit and vegetables, whole grains, dairy products, and legumes. On the other hand, limiting and reducing intake of free sugars (e.g., cookies, candies, bakery, etc.) is needed. Furthermore, it is also recommended to **moderate the intake** of meat, added sugar, butter and salt.

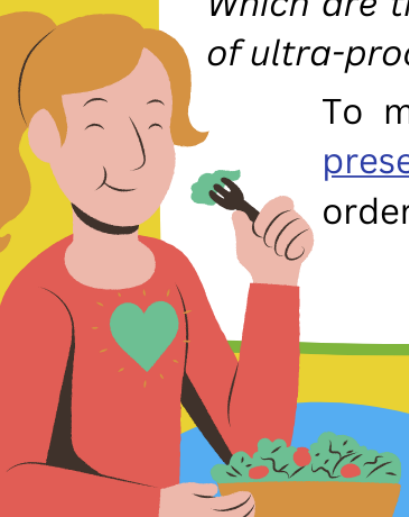
Objectives

- Discover the added sugar of the products usually consumed.
- Understand the risks triggered by ultra-processed food intaken.
- Suggest healthy alternatives to replace unhealthy food.

This learning scenario will start with a brief introduction about the risks triggered by unhealthy diet patterns. The teacher will show several pictures related to ultra-processed food (retrieved from the website sinazucar.org) and will ask some general questions:

What unhealthy food do we usually consume?
Are you aware that these products are unhealthy?
Why do you choose to consume ultra-processed food or food with added sugar?
Do you know the benefits of sugar?
Which are the risks and consequences triggered by the consumption of ultra-processed food or unhealthy food?

To make this first introduction, you can use the following presentation in which the sugar lumps have been removed, in order to carry out the activity in a correct way.



Task 1: after they have seen the pictures and reflect on the previous questions, students will work in small groups, and they will discuss the added sugar of ultra-processed food they usually consume. Moreover, they should answer the following questions:

How often do you consume the products that you have just seen?
Which elements contain added sugar?
How much added sugar do you think these pictures contain?
How do you feel when you intake these ultra-processed foods?

Task 2: After finishing task 1, the whole class group will discuss the answers to task 1. At the same time, the teacher will show the added sugar of each ultra-processed food (See sinazucar.org presentation).

Task 3: Later, the teacher will comment on the recommendations of sugar intake.

"*Less than 10% of total energy intake from free sugars, which is equivalent to 50 g (or about 12 level teaspoons) for a person of healthy body weight consuming about 2000 calories per day, but ideally is less than 5% of total energy intake for additional health benefits. Free sugars are all sugars added to foods or drinks by the manufacturer, cook or consumer, as well as sugars naturally present in honey, syrups, fruit juices and fruit juice concentrates*" (World Health Organization, 2020).

To finish the task, students will work again in the initial small groups and they will have to suggest healthy alternatives to replace unhealthy food.

2. The inverted food pyramid

Dietary recommendations for **adolescents** and the general population are well-known. However, most of the population does not meet these recommendations. Overall, **society intakes less fruit and vegetables, whole grains, dairy products, and legumes**. On the other hand, the **consumption of ultra-processed products has increased** over the last decades and, as a result, high rates of obesity, overweight and diabetes are found among adolescents.

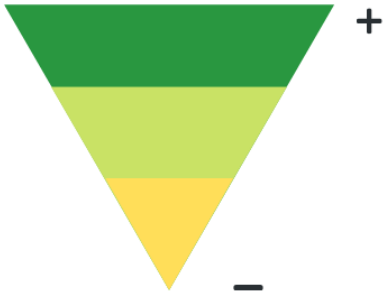
Objectives

- Acknowledge the diet recommendations for children and adolescents.
- Interpret properly the nutritional inverted pyramid.

At the beginning, the teacher could ask some questions and students should answer each of them individually:

- *How would you describe your diet?*
- *How many fruits and vegetables do you intake per day?*
- *How often do you consume fruits, vegetables, legumes, meat, and fish?*
- *How often do you consume ultra-processed products such as cookies, candies, soft drinks, etc.?*

Task 1: When students answer the questions, the teacher will divide the class group into small groups. The teacher will provide the students several small pictures of different foods (e.g., meat, fish, fruits, vegetables, milks, candies, cookies, oil, butter, soft drinks, etc.) and a drawing of a nutritional inverted pyramid, including a "(+)" at its base and a "(-)" at its vertex, where they will have to stick the food pictures).



After that, students will have to reflect and come to an agreement about the following question:

How often do we consume each of the food contained in the pyramid?

When students reach an agreement, they should stick each of these images on the picture. After that, in order to reflect on the correct place for each of the images, the teacher could ask the following questions:

- *What types of food should be reduced?*
- *In which part of the pyramid could we stick the ultra-processed products?*

Task 2: Finally, the students could create a large mural with the correct nutritional inverted pyramid and stick the different images together. At the same time, the teacher will explain the diet's recommendations for adolescents. So, adolescents could place the different images on their correct place and set realistic goals to meet the diet's recommendations.

3. Misleading advertising on products: How to interpret it?

When we consume any product, marketing and product's design influence our choice. However, people sometimes, people misinterpret the **advertising** of the products. To avoid consuming products which seem healthier than they really are, it is important to properly interpret their **labels**, and, consequently, to make the right decisions about **healthy food choices**.

Objectives

- Read and interpret the labels of the products correctly.
- Choose healthy food instead of ultra-processed products.

During the week prior to this activity, the teacher should inform the students to bring in different labels of healthy and unhealthy products that they regularly consume (e.g. milk, fried tomato sauce, coke, biscuits, etc.).

Over the lesson, the teacher could ask the students the following questions about the labels of the products:

- *What should you pay attention to when you look at a product label? (Students will have to underline the most important information on the labels)*
- *If we have two similar products, what information would you focus on in order to compare them?*

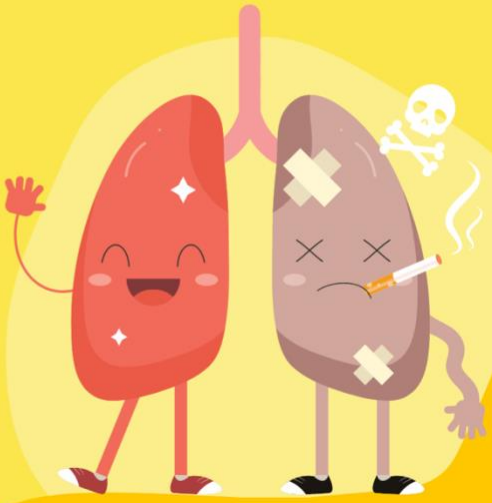
Task 1: After underlining the important information, students will be grouped in pairs. They will have to choose two products, a healthy product and an unhealthy one. After that, students will compare the information of each product paying attention to all the elements contained on the label.

After that, students could also answer the following questions:

- *Is it necessary to compare the quantity contained in each product?*
- *Could we compare product labels if the total quantity of the products is different?*
- *What percentage of fats does each product contain? Do you think the type of fat is important?*
- *What percentage of carbohydrates does the product have? What percentage of sugar does the product have?*
- *What percentage of proteins, salt and fiber does the product have?*

Finally, when students have answered the questions, they will have to decide which the healthiest product is. It will be important that students justify their answers.

4.5. Tobacco consumption



Tobacco consumption among **adolescents** remains a major public **health problem globally**. It is estimated that tobacco consumption in any form kills up to half of its users, and that tobacco use **kills more than 8 million people each year** (WHO, 2020). Although young people are aware of tobacco use as being a leading cause of death, many of them still use tobacco products. According to the recent WHO Report on the Global Tobacco Epidemic, there were 1.07 billion smokers aged 15 years and above, and 24 million children aged 13–15 smoked globally (WHO, 2019). It has been found that almost 90% of current adults who smoke cigarettes daily, tried smoking first before the age of 18 (Ranabhat et al., 2019), thus making adolescence a critical period for ending the tobacco epidemic.

Tobacco use **increases the risk for contracting a variety of diseases and health conditions**, including lung, bladder, colorectal, esophageal, kidney, larynx, mouth, throat and other cancers, respiratory infections, diabetes, and coronary heart disease (Centers for Disease Control and Prevention, 2010). **Passive smoking** or "secondhand smoke" also increases the risk for many diseases. For example, exposure to environmental tobacco smoke among non-smokers increases lung cancer risk by about 20 percent. In addition, exposure to tobacco smoke in the home is a risk factor for asthma in children (Jacobs et al., 2013). According to Martins-Green et al. (2014), smoking also leaves chemical residue on surfaces in rooms where smoking has taken place, which can persist long after the smoke itself has disappeared from the room, a phenomenon known as "thirdhand smoke". This has been increasingly recognized as a potential

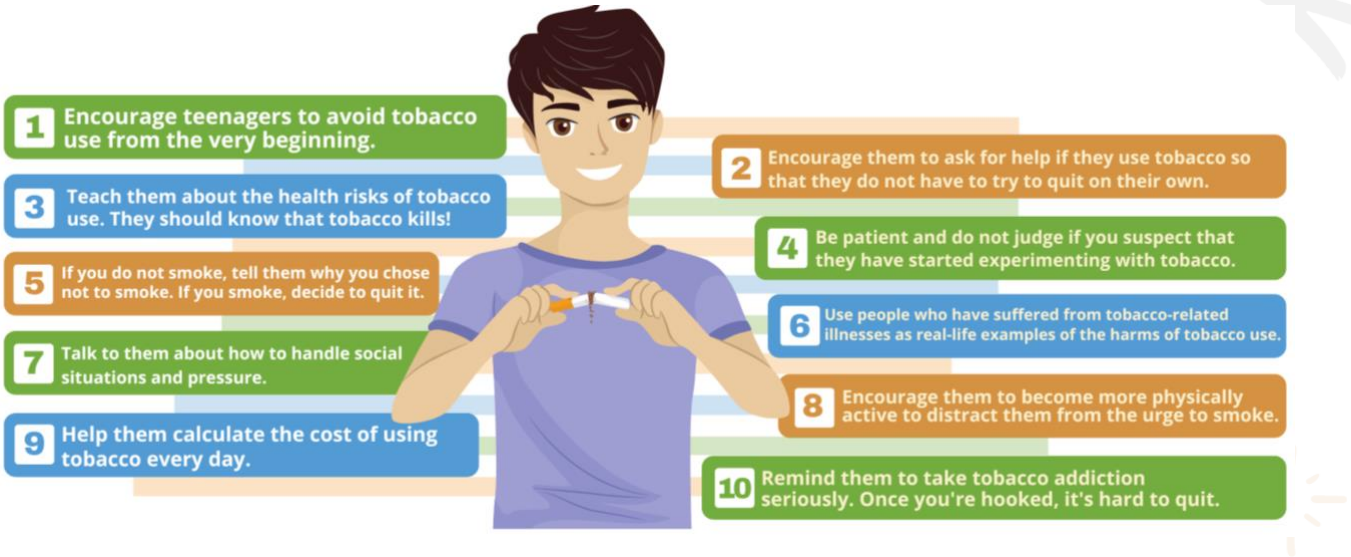
danger, especially to children and young people, who not only inhale fumes released by these residues but may also ingest residues that get on their hands after touching the furniture.

While other forms of inhaled tobacco have been present for decades, e-cigarettes usage has become more common since 2006 and 2007, when they were first sold in Europe and in the United States of America, respectively (Hsu et al., 2018). Although the debate on the balance of harms and benefits of e-cigarettes for established smokers is still ongoing, the toxicological profile and the impact of nicotine on the developing adolescent brain make their use among children and young people especially concerning (Green et al., 2018). Nevertheless, several surveys have shown an increase in e-cigarettes use among adolescents. For example, the USA-based National Youth Tobacco Surveys reported the increase of e-cigarette use among high-school students from 1.5% in 2011 to 20.8% in 2018 (Cullen et al., 2018). Furthermore, the study examining the latest state of e-cigarette use in youth in 17 European study sites found that compared to 2014, for the year 2019 the age-adjusted prevalence of e-cigarettes use more than doubled among young people in several European countries such as Georgia, Italy and Latvia (Tarasenko et al., 2022).

There are **several factors that influence adolescents' use of tobacco**, including the use of tobacco by peers or family members; lack of the involvement and support from parents; low levels of academic achievement; inadequate or low self-esteem; low socio-economic status; accessibility, availability, and price of tobacco products; and exposure to tobacco advertising. Preventive interventions, thus, need to focus on these factors (Thomas et al., 2016). For example, it has been found that 19% of 12th graders smoked if no parent smoked and 32% smoked if a parent smoked. Furthermore, the extensive literature review on determinants of

adolescents' smoking behaviour revealed that peers are the strongest predictor of smoking among adolescents. Specifically, an adolescent having friends who smoke doubles the risk of picking up the same unhealthy habit (Liu et al., 2017).

Preventing children and adolescents from starting to use tobacco is more effective and it costs less than helping them to quit. Below, you can check our recommendations, based on scientific evidence, to prevent the use of tobacco consumption among children and adolescents.



Tobacco Consumption

Lesson Plans

1. Is tobacco consumption really that harmful?

Tobacco consumption causes a wide variety of negative health consequences, being one of the main **mortality factors** nowadays, with more than eight million deaths per year. Considering that adolescence is characterized as a period in which young people start tobacco consumption, it is necessary to inform them, make them aware of the risks of its consumption.

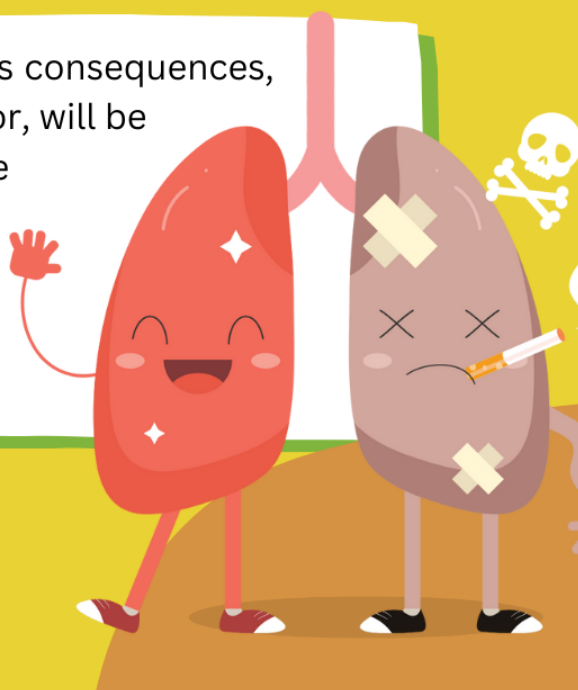
Objectives

- Understand the effects and risks associated with tobacco consumption.
- Identify different options to try to reduce tobacco consumption.

This activity could start by reminding students how **tobacco consumption** is a normal part of daily life for some people, even though we are aware of all the **negative consequences** it has. We could also emphasise that tobacco consumption usually begins in **adolescence**. Then, as a discussion, different questions could be asked about the possible consequences of prolonged tobacco consumption (without providing answers to them) and then the following tasks could be introduced.

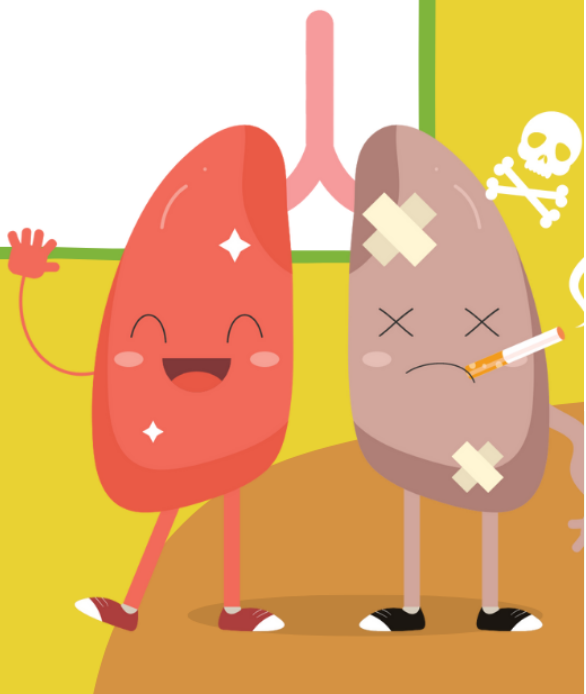
Task 1: to make them think about smoking and its consequences, a short video by Amanda Eller, an American doctor, will be shown to the whole group, showing the difference between the lungs of a smoker and a non-smoker.

https://metro.co.uk/video/your-lungs-look-like-youre-pack-day-smoker-1680824/?ito=vjs-link



Once the video has been shown, work groups will be formed to discuss their initial answers about tobacco consumption regarding its possible consequences. Finally, the teacher could highlight which of the possible consequences have the biggest impact on people's health, always explaining how harmful any type of tobacco consumption is.

Task 2: After identifying the many consequences of tobacco consumption, the teacher could present the situation of a smoker who has tried to quit several times but has not succeeded yet. After that, the students (in the same groups they had previously formed) will have to think of different strategies that could be effective in order to stop using tobacco.



2. The lung of a smoker

According to the **World Health Organization**, **tobacco consumption** kills more than 8 million people a year. Smoking can cause damage to our lungs because **cigarette smoke** contains a large number of **harmful chemicals** that reach our lungs very quickly. For this and several other reasons, it is important for our students to know the **effects** that smoking has on our **health**.

Objectives

- Understand the effects associated with tobacco consumption.
- Raise awareness of the negative consequences of smoking on our health.

This activity will help students to learn about some of the issues related to tobacco use. To do this, an experiment will be carried out to simulate what happens to the lungs when we smoke.

Task 1: The teacher will begin the activity by conducting a brief brainstorming session in which students will explain what they believe are the negative consequences associated with tobacco use. The teacher will write all students' ideas on the blackboard.
Then, students will watch an explanatory video in which these negative consequences are mentioned in a more detailed way, so that they become aware of these consequences.

How do cigarettes affect the body? - Krishna Sudhir (TED-Ed)

Task 2: Next, in groups of 4-5 students, they perform an experiment. For this the following materials will be needed:

- A plastic bottle with an opening at the bottom that can be capped.
- Cotton
- A cigarette
- Water
- Wax or silicone to seal the bottle tightly shut

Once they have all the materials ready, they will follow the next steps:

Step 1: Fill the bottle with water

Step 2: Place the cotton wool in the neck of the bottle, making sure that it is completely plugged and that the cotton wool does not get wet.

Step 3: Make a cut in the cap of the bottle to insert the cigarette. Once inserted into the hole, fill it with wax or silicone to seal it tightly.

Step 4: Light the cigarette and open the opening at the bottom of the bottle

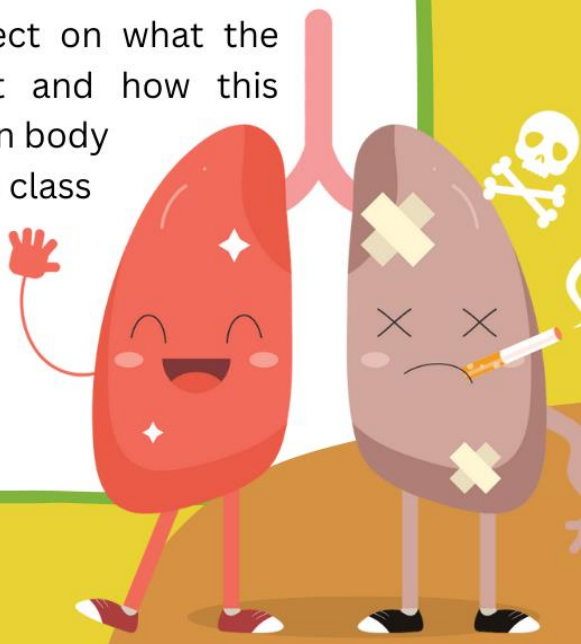
Step 5: Wait until the cigarette is completely consumed and check what has happened to the cotton.

The following video can be seen to check how to carry out the experiment:

How Smoking Just 1 CIGARETTE Affects Your Lungs ● You Must See This ! (Chris Notap)

Task 3: In small groups, students should reflect on what the cotton represents and what happened to it and how this experiment relates to what happens to the human body when we smoke. The teacher will walk around the class to make sure that all groups are getting the correct answers.

Finally, there will be a final reflection in which all the group responses will be shared.



3. Let's learn to say no to tobacco

Several studies show that adolescents begin to consume **tobacco** from increasingly younger ages. A possible cause would be due to the numerous **social pressures and tactics** used by the tobacco industry to encourage its consumption. Thus, there is a need for students to recognize these practices and develop an array of **strategies** to **prevent tobacco consumption**.

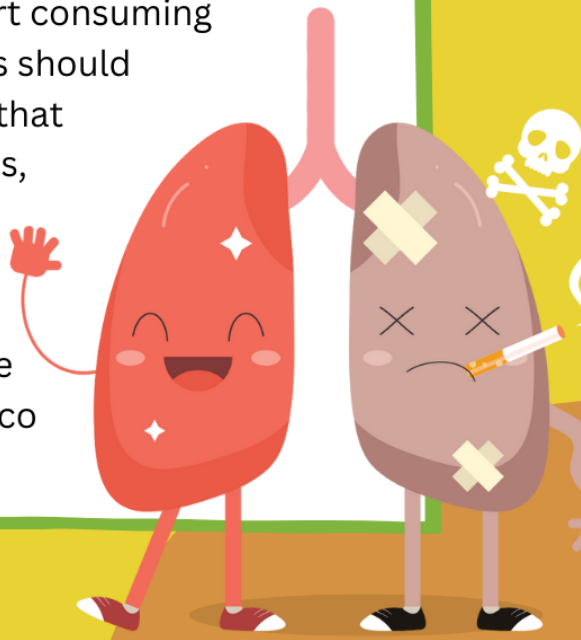
Objectives

- Identify social pressures for tobacco consumption.
- Identify and establish strategies to prevent tobacco consumption.

The teacher begins the lesson by remembering the negative effects that tobacco consumption has on our health. They will emphasize that tobacco consumption is a socially accepted behavior and that adolescents receive social pressures to begin to smoke. Thus, the teacher asks a series of questions:

- *Has anybody ever offered you to try tobacco?*
- *Do you think there are any pressures to consume tobacco?*

Task 1: The teacher explains that there are different types of tactics used by the tobacco industry to make people start consuming tobacco. Thus, students divided into small groups should look for different tactics of the tobacco industry that encourage people to consume tobacco (billboards, free products, social networks advertising, advertising on movies and television, promotion through influencers, etc.).
Then, the teacher will ask students if they are able to deal with this type of situations to avoid tobacco consumption.

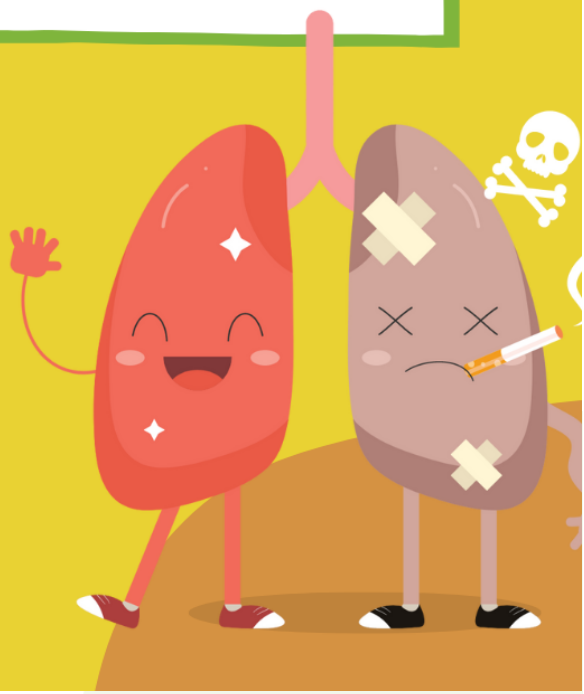


Task 2: In addition to these tactics used by the tobacco industry, there are a number of social pressures on adolescents that encourage them to start using tobacco. In small groups, students will draw a wheel with eight equal sections. Then, the members of each group will have to complete the wheel with different strategies to "say no" or to reject tobacco products.
Possible strategies:

- Say "no". Example: I am not interested, thank you so much.
- Switch to another topic.
- Tell the truth. Example: Tobacco is addictive and I unlike the vices.
- Use your sense of humor. Example: I cannot consume tobacco. I would not escape from my mum's smoke detector!
- Provide a rationale. Example: Tobacco smoke disturbs me.
- Other alternatives. Example: Do you prefer to play basketball instead of smoking?
- Leave.
- Tell a story. Example: My grandma died because of tobacco.

Task 3: After all the groups have finished completing the wheel, each group prepares a short representation. In this representation, a member should play the role of a person encouraging another member to consume tobacco, while this member rejects it. The other group members will make suggestions to help the person reject tobacco based on what they have written on their wheels. Then, the teacher will ask a series of questions such as:

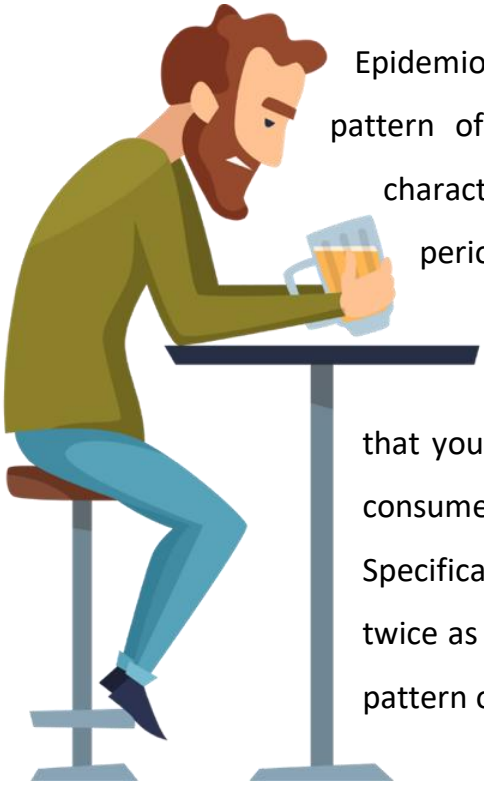
- *Do you think the strategy used to say no is the best?*
- *Do you think the peer groups could influence their decision?*



4.6. Alcohol consumption

Alcohol use and drunkenness tend to emerge during the adolescent years and has been described as a serious public health problem worldwide. Europe has the highest levels of alcohol consumption in the world and alcohol is one of the leading risk factors for premature mortality. Thus, alcohol poses enormous health and safety risks (WHO, 2018).

Because of its availability, alcohol is one of the most commonly used drugs for adolescents. Young people use alcohol to fulfill social and personal needs, enhance contact with peers, and initiate new relationships (WHO, 2018). Developmental transitions, such as puberty and increasing independence, have also been associated with alcohol use (Gutierrez & Sher, 2015; Marshall, 2014).



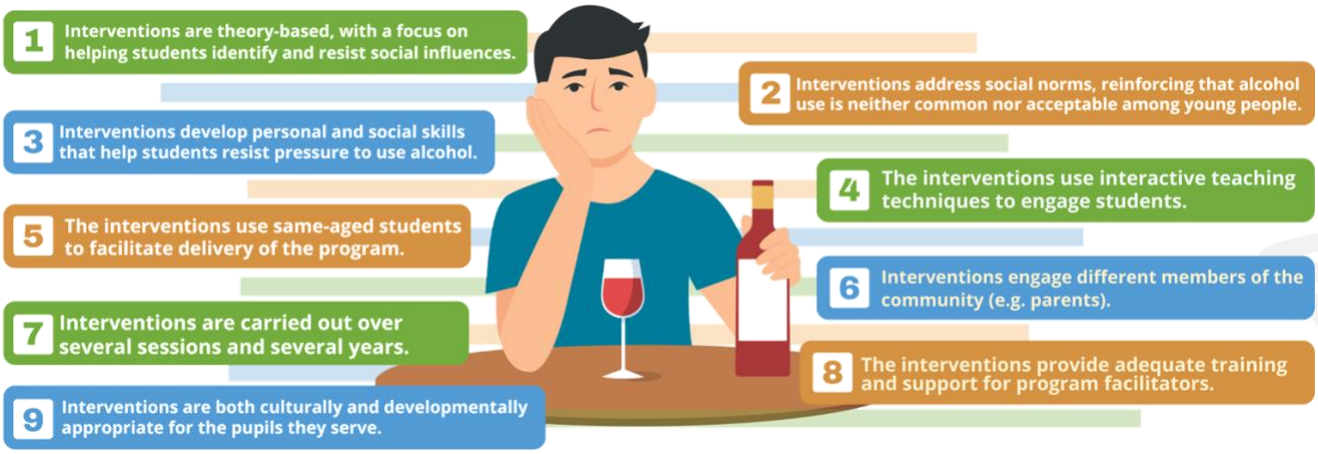
Epidemiological studies have detected the development of a new pattern of alcohol consumption in adolescents. This pattern is characterized by drinking large amounts of alcohol over a short period of time, especially in leisure time and weekends, with periods of abstinence between drinking episodes (Carvajal & Lerma-Cabrera, 2014). In spite of the fact that young people drink less often than adults, on average they consume more drinks per drinking occasion than adult drinkers. Specifically, compared to adults, adolescents drink more than twice as much per drinking episode. We can say that they show a pattern of binge drinking.

Adolescent alcohol use has important health consequences. Alcohol consumption in adolescence and young adulthood can progressively lead to alcohol dependence in adulthood. Drinking as a teenager has been associated with adverse outcomes such as fatal and non-fatal injuries, blackouts, suicide attempts, unintended pregnancy, sexually transmitted diseases, academic failure, and violence (Boden & Fergusson, 2011).

The impact of harmful use of alcohol is not just personal, it may also impose significant social and economic costs on society. The economic cost of alcohol abuse is estimated at more than $235 billion every year. More than 70% of the estimated cost of alcohol abuse is attributed to lost productivity. Other costs are largely the result of alcohol-related health care, motor vehicle accidents, and law enforcement and other criminal justice expenses (Burke, 1988).

Tackling higher-risk alcohol use forms a significant part of reducing alcohol-related harm in adolescents. Health, safety, and socioeconomic problems attributable to alcohol can be reduced when teachers and persons of authority formulate and implement appropriate policies. Raising awareness of the health and social problems for individuals and society at large caused by the harmful use of alcohol is of utmost importance (WHO, 2018). Feedback of behavior, self-monitoring of behavior, self-monitoring of outcomes related to the behavior, instructions on how to reduce alcohol consumption, social comparison and problem solving have been also described as important behavior change techniques on reducing alcohol consumption.

Thus, the findings from existing studies (Stigler et al., 2011) suggest that the following elements are essential to developing and implementing effective alcohol prevention interventions for adolescents:



Alcohol Consumption

Lesson Plans

1. Is any alcohol consumption harmful?

Alcohol consumption has been normalized in some societies. The information we receive about the outcomes of alcohol tends to normalize its consumption, largely due to economic and political interests. Given that adolescence is characterized as a stage in which young people begin to consume alcohol, it seems important to inform, educate, and sensitize them about the risks of their consumption. In the resource presented below, it is intended that students, through the viewing of different videos based on scientific evidence, discover a more realistic vision of the effects of alcohol and the outcomes it can have on their health.

Objectives

- Know the effects and risks associated with alcohol consumption.
- Increase the perception of risk in relation to alcohol consumption.
- Adjust normative beliefs about alcohol consumption.

This learning scenario could begin with a brief introduction by the teacher about how ingrained alcohol consumption is in our society, which, moreover, usually begins in adolescence. Next, to generate a discussion among students, the teacher could ask the whole group the following or similar questions:

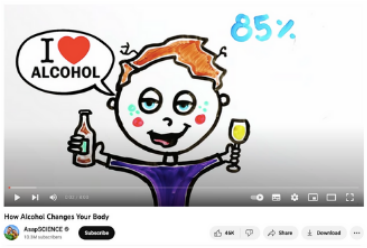
Is it normal to drink alcohol?
Do you, your friends or your parents drink alcohol?
What do you think of alcohol? Is it a drug? Is it better than other drugs?
Do you think that one or two beers, or glasses of wine, can be good for our health? And ten beers?

Task 1: In small groups of 3 or 4 students, they will further discuss and answer the following or similar questions in approximately half a page:

- *Is alcohol consumption good for our health? Why?*
- *Is there any amount of alcohol that can be considered positive? Why?*
- *What makes you drunk is the amount of alcohol or the speed at which you drink? Why?*
- *What consequences do you think alcohol consumption has on our bodies?*
- *Which is the best moment to drink during the day? Why?*

Task 2: Subsequently, the whole group will watch different videos which provides scientifically based answers to the previous questions:

How does alcohol make you drunk? - Judy Grisel (TED-Ed)



How Alcohol Changes Your Body (AsapSCIENCE)

There's no safe amount of alcohol, study says (CNN)

Once they watch these videos, with the information they will have, they will get back together in the previous small groups and reformulate their initial answers about alcohol consumption.

Finally, as a conclusion, the teacher could answer each of the questions asked, highlighting the scientific evidence and explaining that any alcohol consumption is negative for our health and that alternative consumption should be sought.

2. The Myths of Alcohol

Adolescence is a stage characterized by decision-making that includes **health risk related-behaviors**, especially, **alcohol consumption**. Some of these decisions about alcohol consumption are made based on beliefs or myths that generate a distorted picture of alcohol effects among young people.

Objectives

- Know the effects and risks associated with alcohol consumption.
- Increase the perception of risk in relation to alcohol consumption.
- Adjust normative beliefs about alcohol consumption.

The learning scenario could begin by reminding students that around alcohol consumption, there are economic and political interests that can create an erroneous image about its consequences.
Next, to start the activity, the teacher could formulate some open questions about whether the students know some popular myths related to alcohol consumption. For example, "Alcohol isn't as harmful as other drugs".

Task 1: Starting with an open debate that can be generated in small groups, the students would have to do an Internet search to resolve whether the following "myths or legends" associated with alcohol consumption are true or false:

- Alcohol can be used as food or food supplement
- Alcohol warms the body
- Hangovers are caused by switching drinks.
- Beer and wine are safer than liquor
- Men and women of the same height and weight can drink the same
- Alcohol is a great way to relax and reduce stress.
- If I drink only on weekends I will never have a problem with alcohol.

- I Do Not Have a Problem Because I Only Drink Wine and Beer
- Alcohol improves social relationships and helps create a festive atmosphere.
- Teens can't become alcoholics because they haven't been drinking long enough.
- Drugs are a bigger problem than alcohol.
- Alcohol makes you sexier
- People who drink too much only hurt themselves.
- One drink won't affect your driving.
- Eating a big meal before you drink will keep you sober
- Alcohol gives you energy
- You'll sleep better after a few drinks.

Task 2: Once the previous myths are "demystified" by the students, we could encourage each small group to look for information for at least two myths different from the previous ones to explain them to their classmates. For example: "Black coffee or a cold shower sobers everyone up".

Task 3: Once the myths found by the students have been shared, an infographic could be made. This visual document could be posted in a place of interest in the school to make other adolescents aware of these alcohol consumption myths.

3. Policymakers for a day

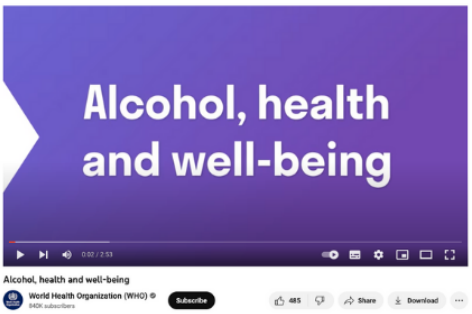
Alcohol consumption has a number of negative health-related consequences. According to the WHO (2022) “drinking alcohol is associated with a risk of developing **health problems** such as mental and behavioral disorders, including alcohol dependence, and major noncommunicable diseases such as liver cirrhosis, some cancers and cardiovascular diseases”.
Similarly, alcohol consumption has other negative consequences apart from those related to health, as it has a negative influence on some aspects of **society**, such as the high negative impact that alcohol consumption has on different institutions such as schools, the workplace, the health care system or society as a whole.

Objectives

- Raise awareness of the negative consequences of alcohol in both health and social settings.
- Identify different ways to try to reduce alcohol consumption.

This activity will focus on the creation of policies for the **reduction of alcohol consumption**. To this end, we will begin with a brief explanation of the consequences associated with alcohol consumption. In the same way, we will use an initiative carried out by WHO related to different actions to reduce the harm caused by this type of substance.
Students can also make a reflection on these topics in groups, through different activities such as debates. These debates can end up in proposals of change or recommendations for the reduction of alcohol consumption.

Task 1: The teacher can start the activity by recapping the different negative health-related consequences associated with alcohol consumption discussed in previous sessions. Similarly, some of the social consequences of alcohol consumption can be introduced. We can use the following video for this purpose:



Alcohol, health and well-being (World Health Organization)

After watching the video, we can do a short brainstorming activity to get students to reflect on these consequences.

Task 2: In small groups, students will act as politicians of a country and will have to take concrete measures to reduce alcohol consumption among citizens and to reduce the negative impact associated with alcohol consumption.

This will be done on the basis of the WHO SAFER initiative, which shows the most effective interventions to reduce the harm caused by this type of substance:

- Strengthen restrictions on alcohol availability
- Advance and enforce drunk driving countermeasures
- Facilitate access to screening, brief interventions and treatment
- Enforce bans or comprehensive restrictions on alcohol advertising, sponsorship, and promotion
- Raise prices on alcohol through excise taxes and pricing policies

Once all the measures have been drawn up by each of the groups, all these measures will be pooled together, discussing and reflecting on the importance and effectiveness that each of them could have.

Task 3: In small groups, students will have to create different posters trying to raise awareness about the importance of carrying out some of the measures chosen above.

Once all posters have been created, several copies will be hung in the corridors and walls of the school, trying to increase the involvement and awareness of the whole educational community.

5. Conclusions and final recommendations

In this publication you can find numerous resources to start developing healthy habits among your students. A common problem in the implementation of a school intervention program is trying to cover too many behaviors at the same time. In this sense, it seems important when setting up a program to promote healthy habits to be cautious and not start with overly ambitious goals. For example, we could incorporate different behaviors progressively throughout the academic year, or in subsequent years.

This document, therefore, could be an excellent tool where you can find different resources and ideas that allow you to configure your intervention program, whether your objective is to apply a specific task or if you want to implement a more ambitious program of one or more health-related behaviors. In addition, the resources and learning scenarios shown in this toolkit should serve as an idea and example for their application in a given context. In this sense, it is important to adapt these tasks to the specific context of each school. Therefore, these activities should not be applied in a rigid way, but rather to provide a general guidance for each teacher to adapt them within his or her own context.

Finally, we would like to encourage the implementation of this type of programme from a multidisciplinary point of view. The promotion of health-related behaviours should not only be the responsibility of PE teachers, but should involve all curricular areas and be a commitment of all school agents that make up the educational context. This will provide a much more complete approach and will make it possible to be more successful in the implementation of the intervention program. Although the initiative comes from PE, we can all participate in the promotion of healthy habits.

6. References

Abdelhafez, A., Akhter, F., Alsultan, A., Jalal, S., & Ali, A. (2020). Dietary Practices and Barriers to Adherence to Healthy Eating among King Faisal University Students. *International Journal of Environmental Research and Public Health*, *17*(23), 8945. https://doi.org/10.3390/ijerph17238945

American Academy of Pediatrics. Committee on Public Education (2001). *American Academy of Pediatrics: Children, adolescents, and television. Pediatrics*, *107*(2), 423–426. https://doi.org/10.1542/peds.107.2.423

Amini, M., Djazayery, A., Majdzadeh, R., Taghdisi, M. H. & Jazayeri, S. (2015). Effect of school-based interventions to control childhood obesity: A review of reviews. *International Journal of Preventive Medicine*, *6,* 68. https://doi.org/10.4103%2F2008-7802.162059

Azevedo, E. (2018). Healthy food: For who/m? *Geografares*, *25*, 105–112. https://doi.org/10.7147/GEO25.17377

Bendtsen, M., Åsberg, K. & McCambridge, J. (2022). Effectiveness of a digital intervention versus alcohol information for online help-seekers in Sweden: a randomised controlled trial. *BMC Medicine*, *20*, 176. https://doi.org/10.1186/s12916-022-02374-5

Boden, J. M., & Fergusson, D. M. (2011). The short- and long-term consequences of adolescent alcohol use. In J. B. Saunders & J. M. Rey (Eds.), *Young people and alcohol: Impact, policy, prevention, treatment* (pp. 32–44). Wiley Blackwell.

Bull, F. C., Al-Ansari, S. S., Biddle, S., Borodulin, K., Buman, M. P., Cardon, G., Carty, C., Chaput, J. P., Chastin, S., Chou, R., Dempsey, P. C., DiPietro, L., Ekelund, U., Firth, J.,

Friedenreich, C. M., Garcia, L., Gichu, M., Jago, R., Katzmarzyk, P. T., Lambert, E., … Willumsen, J. F. (2020). World Health Organization 2020 guidelines on physical activity and sedentary behaviour. *British Journal of Sports Medicine*, *54*(24), 1451–1462. https://doi.org/10.1136/bjsports-2020-102955

Burke T. R. (1988). The economic impact of alcohol abuse and alcoholism. *Public Health Reports*, *103*(6), 564–568. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC1478160/pdf/pubhealthrep00167-0010.pdf

Busch, V., de Leuw, J. R., de Harder, A. & Schrijvers, A. J. (2013). Changing multiple adolescent health behaviors through school-based interventions: A review of the literature. *Journal of School Health*, *83*(7), 514-523. https://doi.org/10.1111/josh.12060

Carreiro, S., Chai, P. R., Carey, J., Lai, J., Smelson, D., & Boyer, E. W. (2018). mHealth for the Detection and Intervention in Adolescent and Young Adult Substance Use Disorder. *Current Addiction Reports*, *5*(2), 110–119. https://doi.org/10.1007/s40429-018-0192-0

Carvajal, F., & Lerma-Cabrera, J. (2014). Alcohol Consumption Among Adolescents — Implications for Public Health. In D. Claborn (Eds.), *Topics in Public Health*. https://doi.org/10.5772/58484

Caudwell, K. M., & Keatley, D. A. (2016). The Effect of Men's Body Attitudes and Motivation for Gym Attendance. *Journal of Strength and Conditioning Research*, *30*(9), 2550–2556. https://doi.org/10.1519/JSC.0000000000001344

Champion, K.E., Parmenter, B., McGowan, C., et al. (2019). Effectiveness of school-based eHealth interventions to prevent multiple lifestyle risk behaviours among adolescents: A systematic review and meta-analysis. *Lancet Digital Health*, *1*(5), e206-e221. https://doi.org/10.1016/S2589-7500(19)30088-3

Chatzisarantis, N., & Hagger, M. (2007). Intrinsic Motivation and Self-Determination in Exercise and Sport. In M. Hagger & N. Chatzisarantis (Eds.), *Intrinsic Motivation and*

Self-Determination in Exercise and Sport (pp. 281-296). Human Kinetics. https://doi.org/10.5040/9781718206632.0008

Chen, B., Vansteenkiste, M., Beyers, W., Boone, L., Deci, E., and Verstuyf, J. (2015). Basic psychological need satisfaction, need frustration, and need strength across four cultures. *Motivation and Emotion*, *39*, 216–236. https://doi.org/doi: 10.1007/s11031-014-9450-1

Chen, X., Beydoun, M.A. & Wang, Y. (2008). Is sleep duration associated with childhood obesity? A systematic review and meta-analysis. *Obesity (Silver Spring)*, *16*(2), 265-74. https://doi.org/10.1038/oby.2007.63

Chiu, H.Y., Lee, H.C., Chen, P.Y., et al. (2018). Associations between sleep duration and suicidality in adolescents: A systematic review and dose-response meta-analysis. *Sleep Medicine Reviews*, *42*, 119-126. https://doi.org/10.1016/j.smrv.2018.07.003

Cid, L., Pires, A., Borrego, C., Duarte-Mendes, P., Teixeira, D. S., Moutão, J. M., & Monteiro, D. (2019). Motivational determinants of physical education grades and the intention to practice sport in the future. *PloS one*, *14*(5), e0217218. https://doi.org/10.1371/journal.pone.0217218

Cullen, K.A., Ambrose, B.K., Gentzke, A.S., Apelberg, B.J., Jamal, A. & King, B.A. (2018). Notes from the field: Use of electronic cigarettes and any tobacco product among middle and high school students — United States, 2011–2018. *Morbidity and Mortality Weekly Report*, *67*, 1276–7. https://www.cdc.gov/mmwr/volumes/67/wr/pdfs/mm6745a5-H.pdf

Davis, A.L., Avis, K.T. & Schwebel, D.C. (2013). The effects of acute sleep restriction on adolescents' pedestrian safety in a virtual environment. *Journal of Adolescent Health*, *53*(6), 785-90. https://doi.org/10.1016/j.jadohealth.2013.07.008

Deci, E., & Ryan, R. (1985). *Intrinsic Motivation and Self-Determination in Human Behavior*. Plenum Press. https://doi.org/10.1007/978-1-4899-2271-7

Deci, E. L., & Ryan, R. M. (2000). The "what" and "why" of goal pursuits: Human needs and the self-determination of behavior. *Psychological Inquiry*, *11*(4), 227–268. https://doi.org/10.1207/S15327965PLI1104_01

Direção Geral da Saúde (2022). *Programa Nacional de Promoção da Alimentação Saudável*. https://alimentacaosaudavel.dgs.pt/

Dobbins, M., De Corby, K., Robeson, P. Husson, H. & Tirilis, D. (2009). School-based physical activity programs for promoting physical activity and fitness in children and adolescents aged 6–18. *Cochrane Database of Systematic Reviews*, *21*(1). https://doi.org/10.1002/14651858.cd007651

Edmunds, J., Ntoumanis, N., & Duda, J. L. (2006). A Test of Self-Determination Theory in the Exercise Domain. *Journal of Applied Social Psychology*, *36*(9), 2240–2265. https://doi.org/10.1111/j.0021-9029.2006.00102.x

European Commission. (2022, September 19). *New Eurobarometer on sport and physical activity shows that 55% of Europeans exercise* [Press Release]. https://ec.europa.eu/commission/presscorner/detail/en/ip_22_5573

Green, L.W., Fielding, J.E. & Brownson, R.C. (2018). The debate about electronic cigarettes: harm minimization or the precautionary principle. *Annual Review of Public Health*, *39*(1), 189–91. https://doi.org/10.1146/annurev-publhealth-102417-124810

Gutierrez, A., & Sher, L. (2015). Alcohol and drug use among adolescents: an educational overview. International Journal of Adolescent Medicine & Health, *27*(2), 207–212. https://doi.org/10.1515/ijamh-2015-5013

Hennessy, E. A. & Tanner-Smith, E. E. (2015). Effectiveness of brief school-based interventions for adolescents: A meta-analysis of alcohol use prevention programs. *Prevention Science*, *16*(3), 463-474. https://doi.org/10.1007/s11121-014-0512-0

Hirshkowitz, M., Whiton, K., Albert, S.M., et al. (2015). National Sleep Foundation's updated sleep duration recommendations: Final report. *Sleep Health*, *1*(4), 233-243. https://doi.org/10.1016/j.sleh.2015.10.004

Hsu, G., Sun, J.Y. & Zhu, S-H. (2018). Evolution of electronic cigarette brands from 2013-2014 to 2016-2017: analysis of brand websites. *Journal of Medical Internet Research*, *20*(3), e80. https://doi.org/10.2196/jmir.8550

Irwin, M.R. (2015). Why sleep is important for health: a psychoneuroimmunology perspective. *Annual Review of Psychology*, *66*, 143-179. https://doi.org/10.1146%2Fannurev-psych-010213-115205

Jacobs, M., Alonso, A.M., Sherin, K.M., et al. (2013). Policies to restrict secondhand smoke exposure: American College of Preventive Medicine Position Statement. *American Journal of Preventive Medicine*, *45*(3), 360-367. https://doi.org/10.1016/j.amepre.2013.05.007

Kalajas-Tilga, H., Koka, A, Hein, V., Tilga, H. & Raudsepp, L. (2020). Motivational processes in physical education and objectively measured physical activity among adolescents. *Journal of Sport and Health Science*, *9*(5), 462-471. https://doi.org/10.1016/j.jshs.2019.06.001

Kann, L., McManus, T., Harris, W.A., et al. (2018). Youth risk behavior surveillance - United States. *Morbidity and Mortality Weekly Report*, *67*(8), 1-114. https://www.cdc.gov/mmwr/volumes/67/ss/ss6708a1.htm

Kohl, H.W. 3rd, Craig, C.L., Lambert, E.V., et al. (2012). The pandemic of physical inactivity: Global action for public health. *Lancet*, *380*(9838), 294–305. https://doi.org/10.1016/s0140-6736(12)60898-8

Lai, S. K., Costigan, S. A., Morgan, P. J., Lubans, D. R., Stodden, D. F., Salmon, J. & Barnett, L. M. (2014). Do school-based interventions focusing on physical activity, fitness, or fundamental movement skill competency produce a sustained impact in these

outcomes in children and adolescents? A systematic review of follow-up studies. *Sports Medicine*, *44*(1), 67-79. https://doi.org/10.1007/s40279-013-0099-9

Lissak, G. (2018). Adverse physiological and psychological effects of screen time on children and adolescents: Literature review and case study. *Environmental Research*, *164*, 149–157. https://doi.org/10.1016/j.envres.2018.01.015

Liu, J., Zhao, S., Xi, C., Falk, E. & Albarracín, D. (2017). The Influence of Peer Behavior as a Function of Social and Cultural Closeness: A Meta-Analysis of Normative Influence on Adolescent Smoking Initiation and Continuation. *Psychological Bulletin*, *143*(10), 1082-1115. https://doi.org/10.1037/bul0000113

Marques, A., Loureiro, N., Avelar-Rosa, B., Naia, A., & Matos, M. G. de. (2020). Adolescents' healthy lifestyle. *Jornal de Pediatria*, *96*(2), 217–224. https://doi.org/10.1016/j.jpedp.2018.09.001

Marshall, E. (2014). Adolescent Alcohol Use: Risks and Consequences. *Alcohol and Alcoholism*, *49*(2), 160–164. https://doi.org/10.1093/alcalc/agt180

Martins-Green, M., Adhami, N., Frankos, M., et al. Cigarette Smoke Toxins Deposited on Surfaces: Implications for Human Health. *PLOS ONE*, *9*(1), e86391. https://doi.org/10.1371%2Fjournal.pone.0086391

Mendonça, G., Cheng, L.A., Mélo, E.N., de Farias Júnior, J.C. (2014). Physical activity and social support in adolescents: A systematic review. *Health Education Research*, *29*(5), 822–39. https://doi.org/10.1093/her/cyu017

Miller, M.A., Kruisbrink, M., Wallace, J., et al. (2018). Sleep duration and incidence of obesity in infants, children, and adolescents: A systematic review and meta-analysis of prospective studies. *Sleep*, *41*(4). https://doi.org/10.1093/sleep/zsy018

Monteiro D., Pelletier L., Moutão J., and Cid L. (2018). Examining the motivational determinants of enjoyment and the intention to continue of persistent competitive

swimmers. *International Journal of Sport Psychology*, *49*, 1–21. https://doi.org/10.7352/IJSP.2018.49

Ng, J. Y., Ntoumanis, N., Thøgersen-Ntoumani, C., Stott, K., & Hindle, L. (2013). Predicting psychological needs and well-being of individuals engaging in weight management: the role of important others. *Applied Psychology: Health and Well-Being*, *5*(3), 291–310. https://doi.org/10.1111/aphw.12011

Owen, M. B., Curry, W. B., Kerner, C., Newson, L. & Fairclough, S. J. (2017). The effectiveness of school-based physical activity interventions for adolescent girls: A systematic review and meta-analysis. *Preventive Medicine*, *105*, 237-249. https://doi.org/10.1016/j.ypmed.2017.09.018

Paruthi, S., Brooks, L.J., D'Ambrosio, C., et al. (2016). Consensus statement of the American Academy of Sleep Medicine on the recommended amount of sleep for healthy children: Methodology and discussion. *Journal of Clinical Sleep Medicine*, *12*(11), 1549-1561. https://doi.org/10.5664/jcsm.6288

Peters, L. W., Kok, G., Ten Dam, G. T., Buijs, G. J. & Paulussen, T. G. (2009). Effective elements of school health promotion across behavioral domains: A systematic review of reviews. *BMC Public Health*, *12*(9), 182. https://doi.org/10.1186/1471-2458-9-182

Physical Activity Guidelines Advisory Committee. (2018). *2018 Physical Activity Guidelines Advisory Committee Scientific Report*. US Department of Health and Human Services. https://health.gov/sites/default/files/2019-09/PAG_Advisory_Committee_Report.pdf

Poitras, V.J., Gray, C.E., Borghese, M.M., Carson, V., Chaput, J.P., Janssen, I., et al. (2016) Systematic review of the relationships between objectively measured physical activity and health indicators in school-aged children and youth. *Applied Physiology, Nutrition and Metabolism*, *41*(6 Suppl 3), S197–239. https://doi.org/10.1139/apnm-2015-0663

Ranabhat, C.L., Kim, C.B., Park, M.B. & Jakovljevic, M.M. (2019). Situation, impacts, and future challenges of tobacco control policies for youth: an explorative systematic policy review. *Front Pharmacol*, *10*. https://doi.org/10.3389/fphar.2019.00981

Rao, S., Aslam, S.K., Zaheer, S. & Shafique, K. (2014). Anti-smoking initiatives and current smoking among 19,643 adolescents in South Asia: findings from the global youth tobacco survey. *Harm Reduction Journal*, *11*. https://doi.org/10.1186/1477-7517-11-8

Rodrigues, F., Bento, T., Cid, L., Pereira Neiva, H., Teixeira, D., Moutão, J., Almeida Marinho, D., & Monteiro, D. (2018). Can Interpersonal Behavior Influence the Persistence and Adherence to Physical Exercise Practice in Adults? A Systematic Review. *Frontiers in Psychology*, *9*, 2141. https://doi.org/10.3389/fpsyg.2018.02141

Romão, P., Pais, S. (2022). *Educação Física - 10.º, 11.º, 12.º Anos*. Porto.

Ruby, M. B., Dunn, E. W., Perrino, A., Gillis, R., & Viel, S. (2011). The invisible benefits of exercise. *Health Psychology*, *30*(1), 67–74. https://doi.org/10.1037/a0021859

Ryan, R. M., & Deci, E. L. (2000a). Intrinsic and extrinsic motivations: Classic definitions and new directions. *Contemporary Educational Psychology*, *25*(1), 54–67. https://doi.org/10.1006/ceps.1999.1020

Ryan, R. M., & Deci, E. L. (2000b). Self-determination theory and the facilitation of intrinsic motivation, social development, and well-being. *American Psychologist*, *55*(1), 68–78. https://doi.org/10.1037/0003-066X.55.1.68

Ryan, R., and Deci, E. (2017). *Self-determination theory. Basic Psychological Needs in Motivation, Development, and Wellness*. Guildford Press.

Sawyer, S.M., Afifi, R.A., Bearinger, L.H., et al. (2012). Adolescence: A foundation for future health. *Lancet*, *379*(9826), 1630–40. https://doi.org/10.1016/s0140-6736(12)60072-5

Sevil, J., García-González, L., Abós, Á., Generelo, E. & Aibar, A. (2019). Can high schools be an effective setting to promote healthy lifestyles? Effects of a multiple behavior change

intervention in adolescents. *Journal of Adolescent Health*, *64*(4), 478-486. https://doi.org/10.1016/j.jadohealth.2018.09.027

Short, M.A., Blunden, S., Rigney, G., et al. (2018). Cognition and objectively measured sleep duration in children: A systematic review and meta-analysis. *Sleep Health*, *4*(3), 292-300. https://doi.org/10.1016/j.sleh.2018.02.004

Short, M.A., Booth, S.A., Omar, O., et al. (2020). The relationship between sleep duration and mood in adolescents: A systematic review and meta-analysis. *Sleep Medicine Reviews*, *52*. https://doi.org/10.1016/j.smrv.2020.101311

Short, M.A. & Weber, N. (2018). Sleep duration and risk-taking in adolescents: A systematic review and meta-analysis. *Sleep Medicine Reviews*, *41*, 185-196. https://doi.org/10.1016/j.smrv.2018.03.006

Simon, L., Aibar, A., García-González, L., Abós, A., & Sevil-Serrano, J. (2019). "Hyperconnected" adolescents: sedentary screen time according to gender and type of day. *European Journal of Human Movement*, *43*, 49-66. https://www.eurjhm.com/index.php/eurjhm/article/view/524

Sogari, G., Velez-Argumedo, C., Gómez, M., & Mora, C. (2018). College Students and Eating Habits: A Study Using an Ecological Model for Healthy Behavior. *Nutrients*, *10*(12), 1823. https://doi.org/10.3390/nu10121823

Stigler, M. H., Neusel, E., & Perry, C. L. (2011). School-based programs to prevent and reduce alcohol use among youth. *Alcohol Research & Health*, *34*(2), 157–162. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3860568/

Sun, J., Wang, M., Yang, L., et al. (2020). Sleep duration and cardiovascular risk factors in children and adolescents: A systematic review. *Sleep Medicine Reviews*, *53*, 101338. https://doi.org/10.1016/j.smrv.2020.101338

Suni, E. (2022). How to determine poor sleep quality. *Sleep Foundation*. https://www.sleepfoundation.org/sleep-hygiene/how-to-determine-poor-quality-sleep

Tammelin, T., Viikari, J.S. & Raitakari, O.T. (2014). Tracking of physical activity from early childhood through youth into adulthood. *Medicine & Science in Sports & Exercise*, *46*(5), 955-62. https://doi.org/10.1249/mss.0000000000000181

Tarasenko, Y., Ciobanu, A., Fayokun, R., Lebedeva, E., Commar, A. & Mauer-Stender, K. (2022). Electronic cigarette use among adolescents in 17 European study sites: findings from the Global Youth Tobacco Survey. *European Journal of Public Health*, *32*(1), 126-132. https://doi.org/10.1093/eurpub/ckab180

Teixeira, D., Silva, M., and Palmeira, A. (2018). How does frustration make you feel? A motivational analysis in exercise context. *Motivation and Emotion*, *42*, 419–428 https://doi.org/10.1007/s11031-018-9690-6

Teixeira, P. J., Carraça, E. V., Markland, D., Silva, M. N., & Ryan, R. M. (2012). Exercise, physical activity, and self-determination theory: a systematic review. *The International Journal of Behavioral Nutrition and Physical Activity*, *9*, 78. https://doi.org/10.1186/1479-5868-9-78

Thomas, R. E., Baker, P. R. A., & Thomas, B. C. (2016). Family-based interventions in preventing children and adolescents from using tobacco: A systematic review and meta-analysis. *Academic Pediatrics*, *16*(5), 419-429. https://doi.org/10.1016/j.acap.2015.12.006

Tremblay, M. S., Carson, V., Chaput, J. P., Connor Gorber, S., Dinh, T., Duggan, M., Faulkner, G., Gray, C. E., Gruber, R., Janson, K., Janssen, I., Katzmarzyk, P. T., Kho, M. E., Latimer-Cheung, A. E., LeBlanc, C., Okely, A. D., Olds, T., Pate, R. R., Phillips, A., Poitras, V. J., … Zehr, L. (2016). Canadian 24-Hour Movement Guidelines for Children and Youth: An Integration of Physical Activity, Sedentary Behaviour, and Sleep. *Applied Physiology,*

Nutrition, and Metabolism, *41*(6), S311–S327. https://doi.org/10.1139/apnm-2016-0151

Tremblay, M. S., Aubert, S., Barnes, J. D., Saunders, T. J., Carson, V., Latimer-Cheung, A. E., Chastin, S. F. M., Altenburg, T. M., Chinapaw, M. J. M., & SBRN Terminology Consensus Project Participants (2017). Sedentary Behavior Research Network (SBRN) - Terminology Consensus Project process and outcome. *The international Journal of Behavioral Nutrition and Physical Activity*, *14*(1), 75. https://doi.org/10.1186/s12966-017-0525-8

U.S. Department of Health and Human Services. (2010). *How tobacco smoke causes disease: The biology and behavioral basis for smoking-attributable disease*. https://www.ncbi.nlm.nih.gov/books/NBK53017/pdf/Bookshelf_NBK53017.pdf

Van Sluijs, E.M.F., Ekelund, U., Crochemore-Silva, I., Guthold, R., Ha, A., Lubans, D., et al. (2021). Physical activity behaviours in adolescence: Current evidence and opportunities for intervention. *Lancet*, *398*(10298): 429–42. https://doi.org/10.1016/s0140-6736(21)01259-9

Vansteenkiste, M., & Ryan, R. M. (2013). On psychological growth and vulnerability: Basic psychological need satisfaction and need frustration as a unifying principle. *Journal of Psychotherapy Integration*, *23*(3), 263–280. https://doi.org/10.1037/a0032359

Vlachopoulos, S. P., & Neikou, E. (2007). A prospective study of the relationships of autonomy, competence, and relatedness with exercise attendance, adherence, and dropout. *The Journal of Sports Medicine and Physical Fitness*, *47*(4), 475–482. https://pubmed.ncbi.nlm.nih.gov/18091690/

Vogels, E.A., Gelles-Watnick, R., & Massarat, N. (2022). Teens, social media and technology 2022. *Pew Research Center*. https://www.pewresearch.org/internet/2022/08/10/teens-social-media-and-technology-20

World Health Organization (2018). *Adolescent alcohol-related behaviors: trends and inequalities in the WHO European Region, 2002–2014*. https://apps.who.int/iris/handle/10665/342239

World Health Organization. *Tobacco fact sheet*. https://www.who.int/docs/default-source/campaigns-and-initiatives/world-no-tobacco-day-2020/wntd-tobacco-fact-sheet.pdf

World Health Organization. (2020). *WHO guidelines on physical activity and sedentary behaviour*. https://www.who.int/publications/i/item/9789240015128

World Health Organization. (2019). *WHO report on the global Tobacco epidemic*. https://www.who.int/teams/health-promotion/tobacco-control/who-report-on-the-global-tobacco-epidemic-2019

Zorbas, C., Palermo, C., Chung, A., Iguacel, I., Peeters, A., Bennett, R., & Backholer, K. (2018). Factors perceived to influence healthy eating: A systematic review and meta-ethnographic synthesis of the literature. *Nutrition Reviews*, *76*(12), 861–874. https://doi.org/10.1093/nutrit/nuy043