1

2

3

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Module 1
mHealth for monitoring health indicators

mHEALTH-AD

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Module 1

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Modules

1. mHealth for Monitoring Health Indicators
2. mHealth for Tracking and Feedback
3. mHealth for Training Health Condition
4. mHealth for Communication and Planning

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Introduction

- Do you want to learn more about….
  - …how to monitor one's own state of health?
  - …how to improve your own safety?
  - …how to train health conditions?
  - …how to improve strategies for communication and planning?

Source: Pixabay

Then you will be very interested in the contents of the training program!

The content is specially developed for persons with memory disorders.

Objectives of the session

- “We will get to know each other.”
- “We will receive an idea of the use of mHealth technologies.”
- “We will understand the usefulness of mHealth technologies.”
- “ We will get an explanation of Self-Monitoring and Self-Management and how mHealth technologies can improve Self-Management.”
- “We will talk about mHealth technologies which measure physiological and psychological parameters.”

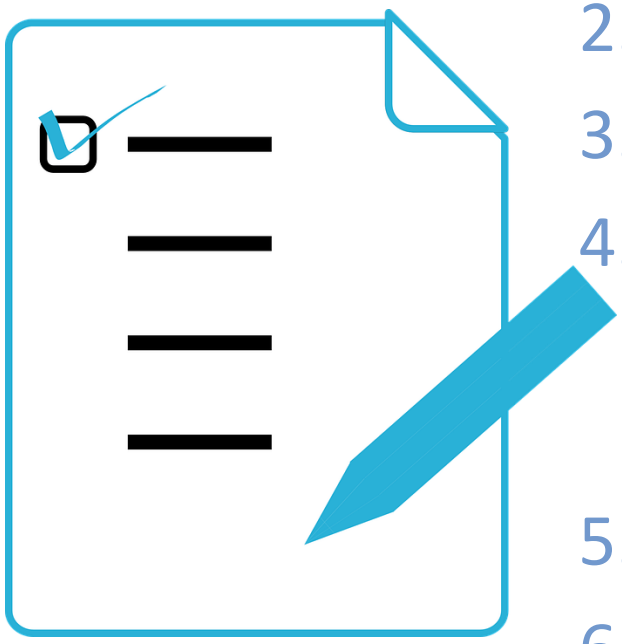
Source: Pixabay

Aims

Source: Canva

At the end of this session you are able to name important physiological and psychological parameters, and you know some technologies which could help you measure them. Also you will learn some strategies to improve your Self-Management.

Agenda



Source: Pixabay

1. Getting to know each other
2. Explanation on mHealth technologies
3. Collection of health indicators
4. Explanation on monitoring health indicators
   - Use cases
   - Practical activity
5. Self-Management and Empowerment
6. Home Activity

Getting to know each other

- Please present yourself shortly by:
  - Telling your name
  - Age
  - Level of experiences with digital technologies

Source: Pixabay

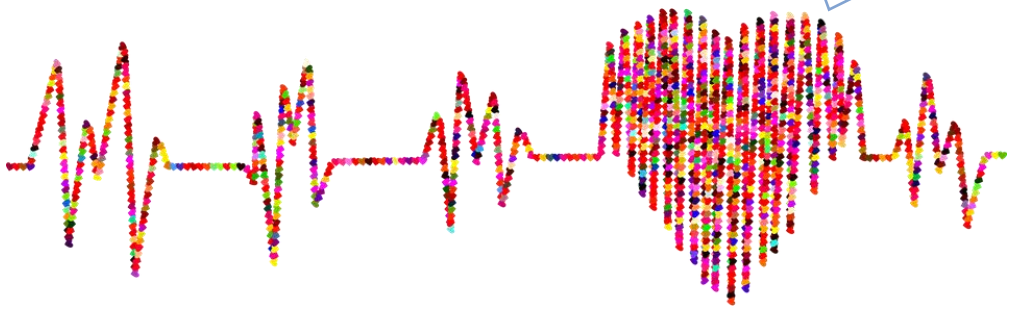
What is mHealth?

In the next step, we want to create a common understanding of mhealth.

To begin, please tell what do you think mhealth means.

- Start a list:
  - ✓.....
  - ✓.....
  - ✓.....

What do you think mHealth means?



Source: Pixabay

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Explanation of mHealth

- *mHealth (mobile health) is a general term for the use* of mobile phones and other wireless technology in health care and health promotion.
- mHealth is defined by the WHO as “medical and public health practice supported by mobile devices, such as mobile phones, patient monitoring devices, personal digital assistants (PDAs), and other wireless devices”
- There are different mHealth applications available.
- Examples are: monitoring apps for tracking vital signs, “Wearables” like Smartwatches and Fitness wristbands, or medication reminder

Source: Pixabay

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Explanation of mHealth

- The following video gives a good explanation of mHealth:

  https://www.youtube.com/watch?v=WsccL8WQ_zU

Source: Canva

Examples of mHealth technologies

For improving the understanding of mHealth technologies, two examples are provided.

1. App for helping tracking blood glucose level “The mySugr app” (https://www.mysugr.com/en-us/diabetes-app/): this is a diabetes management app,
   where all your data is in one place to make the diabetes management easier
   - Video: https://youtu.be/2J651YaRI6A

Source: Pixabay and Canva

Examples of mHealth technologies

2. App for helping measuring blood pressure, the App “SmartbP” https://de.smartbp.app/; SmartBP is a blood pressure management app that allows you to record, track, analyze and share your Blood Pressure information
   - Video: https://www.youtube.com/watch?v=PMD7m6X7SEo

Source: Pixabay and Canva

Why to use mHealth technologies?

- On the one hand, mHealth technologies can provide support by acute health problems and on the other hand they can support to keep an eye on the state of health through regular monitoring, so that preventive measures can be taken at an early stage. mHealth technologies encourage to care for health!

  - If mHealth technologies are used frequently, they can prevent emergence, progression of cardiovascular diseases.

Source: Pixabay

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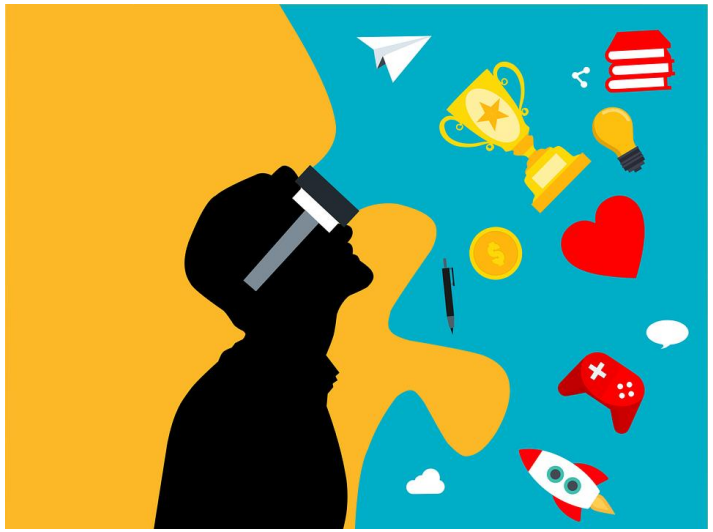
Examples of mHealth technologies

Did someone of you already used some of these technologies? How did you experience the use of these technologies?



Source: Pixabay

Tracking of health indicators with mHealth

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To begin with the discussion, please tell what do you think which health indicators can be tracked.

- Start a list:
  - ✓.....
  - ✓.....
  - ✓.....

Which health indicators can be tracked?

Source: Pixabay

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Tracking of health indicators with mHealth

To begin with the discussion, please tell what do you think which health indicators can be tracked.

List:

- Heart beat
- Pulse
- Blood sugar
- Sleep duration
- Sleep quality
- Physical activity

Which health indicators can be tracked?

Source: Pixabay

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Tracking of health indicators with mhealth – fears, anxieties, inhibitions

Source: Pixabay

- Never heard of such technologies
  → *mHealth technologies are still a fairly new field and therefore not yet widespread*
- No idea how useful mHealth technologies can be
  → *some technologies will be introduced within this session*
- Lack of digital skills
  → *have the chance to try technologies and improve skills within this session*
- Fear of data misuse
  → *short excursus (next slide)*

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Tracking of health indicators with mHealth - excursus data protection

- mHealth technologies underlie specific data protection regulations
- In Europe data protection is a **fundamental right in the European Convention** on Human Rights
- The consent of the data subject is required
- The data subject has many rights, e.g. to access, to rectification, to erasure, to restrict processing, to data portability and more

Source: Canva

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Use case 1 – Smart Watch

- Smart Watches can be used for **measuring the pulse**: Pulse measurement is an important examination to draw conclusions about the heart.

Source: Canva

- Physiological background:
  - Our organs need to be supplied by oxygen via the blood.
  - Through the pumping action of the heart, the oxygen-enriched blood is transported through the vessels to our organs.
  - Blood volume in the vessels changes, depending on the pumping motion of the heart.

Use case 1 – Smart Watch

- Technical background:
  - In pulse watches, there are LED lamps and an optical sensor on the back of the watch case.
  - The light from the small lamps passes through the skin and the blood vessels underneath.
  - Depending on the volume of blood in the vessels, the light is absorbed or reflected back.
  - The optical sensor measures whether the light is reflected back or not. This enables the watch to measure a person's pulse.

Source: Pixabay

Use case 1 – Smart Watch

Source: Smartwatch from Telekom. TCL Safety Watch

- Check for special watches for seniors:
  - Simplified menu and only essential information
  - The icons are extra large and the contrasts higher
  - The watch can be connected to the smartphone and the data can be displayed in an app

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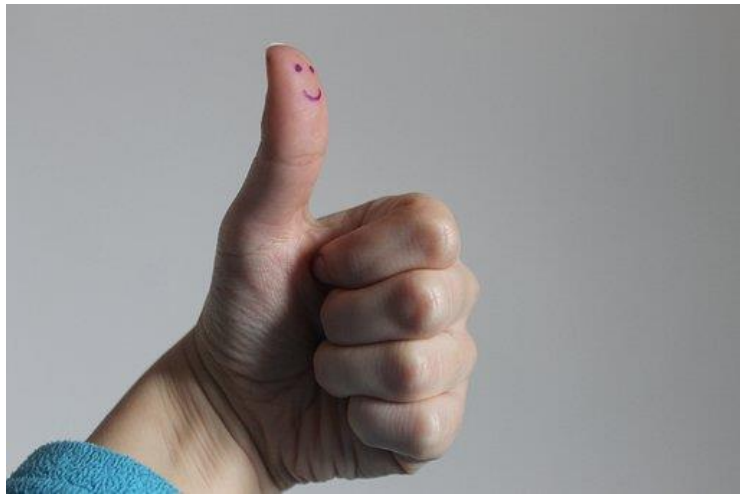
Use case 1 – Smart Watch



Source: Pixabay

- Recommendations:
  - simple operation of the system
  - made of sturdy material, so that shocks or impacts cannot harm
  - should be waterproof, so that it can be worn even when showering
  - battery life is as long as possible, so that the watch does not have to be charged too often.

Use case 2 – Digital blood glucose monitoring system

- **Digital blood glucose measurement** is an important examination to draw conclusions about the amount of sugar in the blood.
- Especially for patients with diabetes mellitus, this is important.
- Physiological background:
  - Too much sugar in the blood can lead to a strong feeling of thirst, frequent urination, tiredness, lack of drive, nausea or dizziness.
  - Too less sugar can lead to rapid pulse, cold sweat, pale complexion, headache, ravenous appetite, trembling, weak knees, restlessness and nervousness, anxiety, concentration disorders up to confusion.

→ Thus to prevent these occurrences it is important to measure the blood glucose level regularly!

Source: https://www.freestylelibre.de/homepage.html

Use case 2 – Digital blood glucose monitoring system

- Technical background:
  - A very small sensor is pricked, for example on the upper arm.
  - This sensor is worn permanently for six to ten days and measures the sugar.
  - The blood glucose is measured automatically every few minutes.
  - A sensor sitting on top of it transmits the data to a smartphone.
  - If blood glucose is too high or too low, an alarm is sounded.

The sensor is mostly very small and the size is comparable with a 5-cent piece.

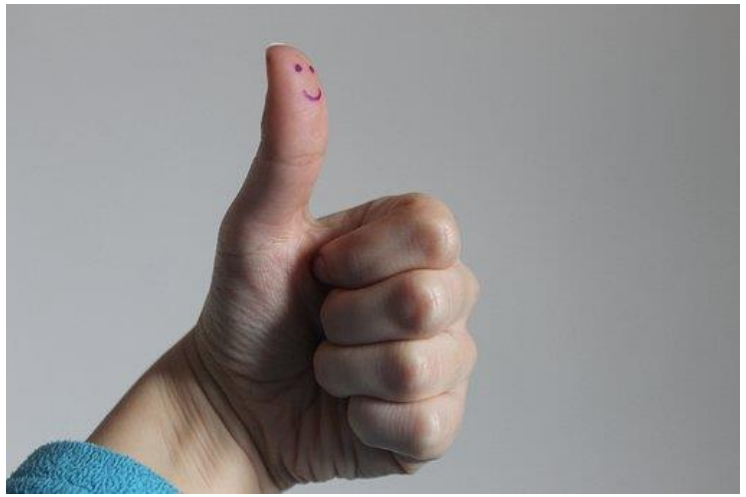
Source: https://www.freestylelibre.de/homepage.html

Use case 2 – Digital blood glucose monitoring system

Source:
https://www.freestylelibre.de/homepage.html

- Advantages :
  - You do not have to remember to measure regularly.
  - In addition, a small blood sample no longer has to be taken several times a day.
  - Through the connection with the smartphone the app can give an alert when individually defined blood glucose values are exceeded or undershot.
  - Relatives and caregivers can be informed.
  - If desired blood glucose values can also be shared with doctors.
  - Furthermore, the app creates reports on the daily pattern.

Use case 2 – Digital blood glucose monitoring system



Source: Pixabay

- Recommendations:
  - It should be checked regularly whether the sensor is still seated adequately.
  - It is also recommended that the sensor be connected to the smartphone of a family caregiver and that the family caregiver be informed in the event of an emergency.

Practical Activity

Source: Canva

Try on a smart watch!

Exchange experiences!

Group discussion about mHealth technologies.

Self-Management and Empowerment

1. Introduction into definition and concept
2. Self-reflection and goals
3. Practical activity: Find a daily routine

Source: 123rf

Introduction

What is Self-Management?

“ [...] a person-centred approach in which the individual is empowered and has ownership over the management of their life and condition.”

Source: Freepik

[Der Selbstmanagement-Prozess - YouTube]

[Self-Managing and Self-Management Support - YouTube]

Example

Source: Canva

Possible routine:

- “Put on smart-watch every morning”
- “Check heart frequency 3 times/day”
- “Share my health status with caregiver”

Practical Activity

Source: Canva

"How does your typical day look like?"

"What kind of health indicators are you already measuring on a daily basis?"

"What kind of healthy habits would you like to implement?"

Practical Activity: Development of a daily routine

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- **Task:** You have learned about different technologies that can be used to collect health data. Choose something that you and your partner particularly liked and that could help in your everyday life. Try to develop a habit where you use technology. Write down all the steps.

Practical Activity

Source: Canva

- **Example:** *I want to look at my sleep from last night on my smartphone every day at 9 o'clock and enter into a diary how I slept*.

Home Activity

Source: Canva

Action 1.1: Please write down all physiological and psychological parameters, that are important four you/ in your daily routine.

Action 1.2: Collect with your relative mHealth solutions that could be useful for you and that are affordable/ available.

Action 1.3: Implement the self-management routine you have developed previous and set a reminder.