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# DIFFERENCES IN SHORT-TERM HEALTH EFFECTS OF X-FITTT GLI BETWEEN LOW-SES AND HIGH-SES PARTICIPANTS

A MIXED METHODS STUDY

**MSc thesis: HSO-80336**

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## Acknowledgements

In recent years I have become interested in everything that has to do with health, which is the reason why I have chosen for the master specialization Health and Society. Personally, I have a passion for strength training and healthy food. This made me very motivated to start my thesis at Formupgrade, a fitness center in Arnhem. I am grateful for the support that I received from many people during my research. First of all, I want to thank Formupgrade for providing the thesis assignment and providing access to its locations in Arnhem. I especially want to thank the contact person, Marloes Makkink, for helping me to make sense of all the information so that I could get started with my research. I also want to thank her for structuring the research data and answering the questions that I had. Furthermore, I want to thank my supervisor, Sabina Super, for providing me with critical feedback and guiding me throughout the process of writing my thesis. Because of my supervisor, I learned to look at things in a different way and I gained new insights. In addition, I want to thank all participants of X-Fittt GLI, for participating in this research in their free time. Lastly, I want to thank my boyfriend, friends and family for their ongoing support during this period.

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## Abstract

**Background:** X-Fittt GLI is a two-year lifestyle intervention that includes guidance in physical activity, healthy eating and behaviour change. X-Fittt GLI is partly funded by the basic insurance and therefore it is more accessible for people with a low socioeconomic status (SES).

**Objectives:** This research had two aims: (1) to examine whether there are differences in short-term health effects of X-Fittt GLI between low-SES and high-SES participants, and (2) to examine the causes of these possible differences in health effects.

**Methods:** A mixed methods approach was used. Physical measurements and questionnaires were conducted at baseline and after three months, in order to examine whether there are differences in health effects of X-Fittt GLI between low-SES and high-SES participants. Semi-structured interviews were conducted in order to find out the causes of these possible differences in health effects.

**Results and conclusion:** A total of 53 X-Fittt GLI participants have participated in this research, of which nine people participated in the interviews. There were no significant differences in physical health outcomes of X-Fittt GLI between low-SES and high-SES participants. However, there was an indication that these groups differed with regard to health-related quality of life, illnesses and medicine use. Qualitative results did not show substantial differences between low-SES and high-SES participants, but rather differences between individual participants, irrespective of their SES. Future research should examine the long-term differences in health effects of X-Fittt GLI between people with a different SES.

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Source of the picture on the front page: Physique (n.d.).

# 1. Problem statement and research questions

From 1990 onwards, the percentage of people in the Netherlands who are overweight has steadily increased. According to the RIVM (n.d.-a), in 1990, 35.1% of Dutch people older than 18 were overweight. In 2018, this percentage has increased to 50.2%. Furthermore, in 2018, 15% of the Dutch people older than 18 was obese (RIVM, n.d.-b). This relatively high prevalence of overweight and obesity has several economic consequences, such as increased health care costs and decreased work productivity. Moreover, overweight and obesity affect people's mental and physical health. Being overweight has been associated with several diseases including diabetes type 2 and heart disease (Hruby et al., 2016). Therefore, it is important to reduce overweight and obesity.

However, overweight and obesity rates differ between people with a different socio-economic status. Socio-economic status (SES) can be defined as "an individual's or group's access to the basic resources required to achieve and maintain good health" (Shavers, 2007, p. 1013). Within the Netherlands, there are health differences between people with a different SES. The RIVM (2018a) has stated that people with a low SES generally have a more unhealthy lifestyle than people with a high SES. This puts low-SES people at a higher risk of being overweight and experiencing negative health effects that are associated with being overweight (Hildebrandt, Bernaards, & Hofstetter, 2015; Hruby et al., 2016). Therefore, it is important that people with a low SES adopt a healthier lifestyle.

The lifestyle intervention *X-Fittt GLI* aims to improve people's health and should be attractive for people with a low SES as it is the only weight-loss program in the Netherlands which is largely reimbursed by the basic insurance of multiple health insurers. *X-Fittt GLI* is a program within the general program "X-Fittt", which stands for *eXtra Frequency, Intensity, Time, Training and Transformation*. The aim of *X-Fittt* is to help people who are overweight to lose weight and adopt a healthier and more active lifestyle. *X-Fittt GLI* exists since January 2019 and the abbreviation "GLI" stands for *Gecombineerde Leefstijl Interventie* (Combined Lifestyle Intervention). *X-Fittt GLI* is a two-year program that combines guidance in three areas: physical activity, healthy eating and behavior change (Ministerie van Volksgezondheid, Welzijn en Sport, n.d.). Since *X-Fittt GLI* is largely reimbursed by the basic insurance, low-SES people, who often have a lower income, are provided with an equal chance to participate in the program as compared to high-SES people. Therewith, *X-Fittt GLI* takes away one barrier for low-SES people to improve their health.

However, even though the program is the same for everyone, there may be a difference in health improvement during *X-Fittt GLI* between people with a different SES. Turrell, Oldenburg, McGuffog, and Dent (1999) found that health promotion efforts are less effective for low-SES people, since they often experience larger pressures than high-SES people. Furthermore, people with a low SES often have multiple problems that they have to deal with, such as debts, poverty or unemployment (Mulderij, Verkooijen, & Wagemakers, 2019). For women, a low SES is related to several stressors such as lower self-esteem, job strain, lack of social support and a poorer quality of life (Wamala, Wolk, & Orth-Gomér, 1997). Baumeister (2002) states that, in order to cope with these stressors, self-regulation is required. However, self-regulation depends on an infinite resource and when this resource is depleted (which is called ego depletion), people may become more impulsive. This means that they may be less able to choose their long-term goals, such as losing weight, over direct satisfaction, such as engaging in unhealthy behaviour (Baumeister, 2002; Kaplan & Berman, 2010).

Since people with a low SES generally experience more stress than people with a high SES (Turrell et al., 1999), they may be more likely to engage in unhealthy behaviour through this process. This is called the psycho-social explanation of health inequalities. With regard to X-Fittt GLI, this means that it may be more difficult for low-SES people to improve their health during the program than for high-SES people. As a consequence, people with a low SES may benefit less from X-Fittt GLI than people with a high SES.

Therefore, the first objective of this research is to examine the differences in short-term health effects of X-Fittt GLI between participants with a low SES and participants with a high SES. Thus, the first research question is formulated as follows:

RQ1: “What is the difference between low-SES and high-SES participants with regard to the short-term health effects of X-Fittt GLI?”

Since X-Fittt GLI is partly funded by health insurers, it is very important that information is gathered about the effectiveness of the program in terms of health benefits. If it turns out that people with a low SES benefit less from X-Fittt GLI than people with a high SES, then the program would not be successful in reducing health inequalities. Reducing inequalities is one of the 17 Sustainable Development Goals (SDG’s) that all member countries of the United Nations should aim to improve on from 2015-2030. Within the Netherlands, of all SDG’s, the least progress is made regarding the SDG “reducing inequalities” and therefore it is especially important to make improvements regarding this goal (Centraal Bureau voor de Statistiek, 2018). However, health inequalities between people with a different SES can only be reduced if the cause(s) of these inequalities are known.

Therefore, with regard to X-Fittt GLI, it is important to assess the cause(s) of the potentially different health effects of the program between people with a different SES. In literature, different explanations of socioeconomic health inequalities are mentioned. The psycho-social explanation of health inequalities states that stress affects health in two ways (UCL Institute of Health Equity, 2017). First, through influencing health behaviours, as has been described above, and secondly, through a purely bodily reaction. When a person experiences stress, a fight-or-flight response is induced in the body (Jacobs, 2001). During this response, sugars are released into the blood stream, the heart beats faster and blood pressure increases, in order to enable fighting or running away. This response is not harmful, as the body recovers from it when the experience of stress is over. However, in today’s modern world, people are likely to experience prolonged stress, which results in health problems such as heart disease and heart attacks (Jacobs, 2001). Having certain resources (e.g. social support) helps to reduce or prevent the fight-or-flight reaction (Hostinar & Gunnar, 2015). However, since low-SES people generally experience more stress and have less resources available than high-SES people (Bartley, 2016), they may be more vulnerable to negative health outcomes. Thus, a difference in the amount of stressors that people experience and the amount of resources they have available could account for health differences between low-SES and high-SES people. Besides the psycho-social explanation of health inequality, there is also a materialist explanation and a behavioural explanation of health inequality, which are both very much related to the psycho-social pathway (Bartley, 2016). All three explanations will be explained in more detail in subchapter 2.1.

In order to improve the health of low-SES people, it is important to understand how stressors and resources are related and how they affect health. Examples of resources are self-esteem, optimism, social support and perceived control (Matthews, Gallo, & Taylor, 2010). When people do not have these resources, these resources can become stressors (e.g. lack of self-esteem, lack of social support). One model that explains the relation between stressors, resources and health is the salutogenic model. This model explains that the more resources a person has available and the better they are able to use these resources, the better this person is able to deal with stressors (Mittelmark and Bauer, 2017). Successful stress management is likely to result in better health and also improves a person's ability to successfully deal with subsequent stressors. Unsuccessful stress management, on the other hand, is likely to lead to worse health and a lower ability to successfully deal with subsequent stressors (Mittelmark & Bauer, 2017). Thus, the salutogenic model provides one reason why low-SES people, who often experience more stress than high-SES people, may have a lower ability to successfully deal with stressors, which in turn may result in differences in health outcomes between people with a different SES. The salutogenic model will be described in more detail in subchapter 2.2.

Since X-Fittt GLI is a relatively new program, no previous research has been done regarding the potentially different health outcomes of X-Fittt GLI. Therefore, it is yet unknown whether differences in stressors and resources between low-SES and high-SES participants of X-Fittt GLI play a role in causing potential differences in health outcomes. Therefore, the second objective of this research is to examine what the causes are of potential differences in health outcomes between low-SES and high-SES participants of X-Fittt GLI. Therefore, the second research question is formulated as follows:

RQ2: "What are the causes of possible differences in health outcomes of X-Fittt GLI between low-SES and high-SES participants?"

If it turns out that stressors and resources are indeed a cause of differences in health outcomes of X-Fittt GLI between low-SES and high-SES participants, then it can in turn be examined how we can reduce the amount of stressors experienced or increase the amount of resources available for people with a low SES. As a consequence, it could become possible for low-SES people to gain similar health improvements from the program than high-SES people, which contributes to socioeconomic health equality.

In this research, people were considered to have a low SES when they have attained their highest diploma in secondary or pre-university education (VMBO, MBO, HAVO, VWO), and a high SES when they have attained their highest diploma in higher professional education (HBO) or university education (WO).



## 2. Theory

*This chapter describes the factors that underlie socio-economic health inequalities. First, three pathways are described serve as an explanation for why it is expected that there are differences in health effects of X-Fittt GLI between people with a different SES. Secondly, the salutogenic model is explained in order to provide a cause of potential differences in health effects of X-Fittt GLI between people with a different SES. Both the pathways theory and the salutogenic model will be used in the interpretation of the results.*

### 2.1 Pathways that explain health inequality

There are several causes of health inequality. Bartley (2016) describes three pathways that can help to explain why there are health inequalities between people with a different SES: the psycho-social pathway, the materialist pathway and the behavioural pathway. Figure 1 is a schematic representation of the three pathways and their interactions. The pathways describe how certain factors influence the health of low-SES people differently than the health of high-SES people. Therefore, they explain why differences are expected in health outcomes of X-Fittt GLI between people with a different SES.

#### 2.1.1 Psycho-social pathway

The psycho-social pathway explains how psycho-social factors can influence people's health (UCL Institute of Health Equity, 2017). One example of a psycho-social factor is stress. Stress may arise through social comparison: when people compare themselves to others and see that they are doing less well (called relative deprivation), this will negatively affect their well-being (Kearns, Whitley, Bond, Egan, & Tannahill, 2012). In addition to stress resulting from social comparison, low-SES people also experience stress resulting from problems that they experience, such as debts, poverty or unemployment (Mulderij et al., 2019). Stress affects health both directly and indirectly (UCL Institute of Health Equity, 2017).

First, stress affects health indirectly, through influencing health behaviours (see arrow 1 in figure 1). Dealing with stressors requires self-control. However, a person's self-control can be depleted, which is called ego-depletion. In a state of ego depletion, a person is more likely to make choices based on immediate gratification, such as consuming unhealthy food, rather than making choices based on their long-term goals, such as losing weight (Baumeister, 2002). Dohrenwend (1973) found that people with a low SES are exposed to a higher rate of stressful life events than people with a high SES. This means that low-SES people may be more likely to experience ego depletion and thus to make short-term choices (e.g. abstaining from exercise, consuming high-sugar or high-fat foods). These behaviours, in turn, may lead to more negative health effects for people with a low SES as compared to people with a high SES. This could lead to health inequalities between low-SES and high-SES people, as shown by arrow 3 in figure 1.

Secondly, stress affects health directly through a purely bodily reaction. This part of the psycho-social pathway is also called the physiological pathway. When we experience stress, our body goes into the fight-or-flight response, also called the stress response (see arrow 2 in figure 1). This means that sugars are released into the blood stream, that our heart starts beating faster and that our blood

pressure increases, so that we are either able to fight or run away (Jacobs, 2001). In the past, the fight-or-flight response helped us to escape from a threat (e.g. a wild lion), however, nowadays, people are unable to fight or flee from modern day stressors (e.g. deadlines or financial problems). This makes people more likely to experience prolonged stress, which can result in several health problems through a bodily reaction (Jacobs, 2001). The fats and sugars that are released during the fight-or-flight response may build up in the blood during prolonged stress. They may form blood clots, which clogs the arteries and therewith increases the risk of a heart attack (Bartley, 2016). Other health problems that are related to prolonged stress are heart disease and hypertension (Jacobs, 2001). Since people with a low SES have a higher exposure to stressors as well as a lower availability of resources (Bartley, 2016), they are more vulnerable to these health problems. Therefore, the fight-or-flight response contributes to health inequalities between people with a different SES. This is represented by arrow 4 in figure 1.

### **2.1.2 Materialist pathway**

The materialist pathway includes experiences that are caused by the social structure and over which people have no control (Bartley, 2016). These material factors are shown in the upper left box in figure 1. One example of a material factor are health hazards in people's environment. The extent to which a person experiences health hazards, depends partly on the amount of money available to that individual. People's income is related to the type of job they do, the type of home in which they live and the area in which their home is located. People with a low SES often have jobs with bad working conditions, in which there is a higher risk of health hazards such as fumes, dust, chemicals and work accidents. Besides, they are more likely to have a home with damp and mold and insufficient heating during the winter. Furthermore, people with a low SES may only be able to afford a home in areas with high exposure to fumes and dusts from nearby factories and noise and pollution of passing traffic. These health hazards, both at work and at home, increase the risk of illness and mortality for people with a low SES (Bartley, 2016). Therewith, there is a direct relation between material factors and socioeconomic health inequality (see arrow 5 in figure 1).

There is also an indirect relation between material factors and health inequality, which is mediated by the psycho-social pathway (UCL Institute of Health Equity, 2017). Low-SES people, who often have a lower income, may have less money to spend, which affects their food choices. They may be more likely to choose unhealthy (energy-dense) food because this is generally cheaper than healthy food (Waterlander et al., 2010). Furthermore, the UCL Institute of Health Equity (2017) states that people with a low SES, who may experience economic hardship, are less likely to adopt health-related behaviours compared to high-SES people, because their attention is often focused on short-term coping rather than on long-term decisions. This relation is shown by arrow 6 in figure 1. Besides, certain circumstances, such as having a job with bad working conditions, can lead to stress (see arrow 7 in figure 1), which may result in health inequalities through the psycho-social pathway. This way, the materialist pathway provides an explanation of how low-SES participants of X-Fittt GLI may make less health improvements during the program than high-SES participants.

### **2.1.3 Behavioural pathway**

The behavioural pathway includes behaviours that are subject to individual choice and that influence health (Bartley, 2016). This pathway assumes that there is a direct relation between health behaviours and health inequality (see arrow 3 in figure 1). It was found that there are differences

between social groups in the behaviours that they engage in: people with a low SES are more likely to engage in risky behaviours such as unhealthy eating, smoking and drinking alcohol (Bartley, 2016). These behaviours, in turn, lead to worse health (Slattery et al., 1992). This way, the behavioural pathway could explain why low-SES people may benefit less from X-Fittt GLI than high-SES people.

However, even though this pathway assumes that health-related behaviours are under individual control, literature states that these behaviours are likely to be rooted in the social and material context, which lie beyond an individual's control (Bartley, 2016). Unhealthy behaviours often depend on psycho-social or material factors (arrow 1 and 6 in figure 1), which means that pathways are not separate, but rather interact with each other.

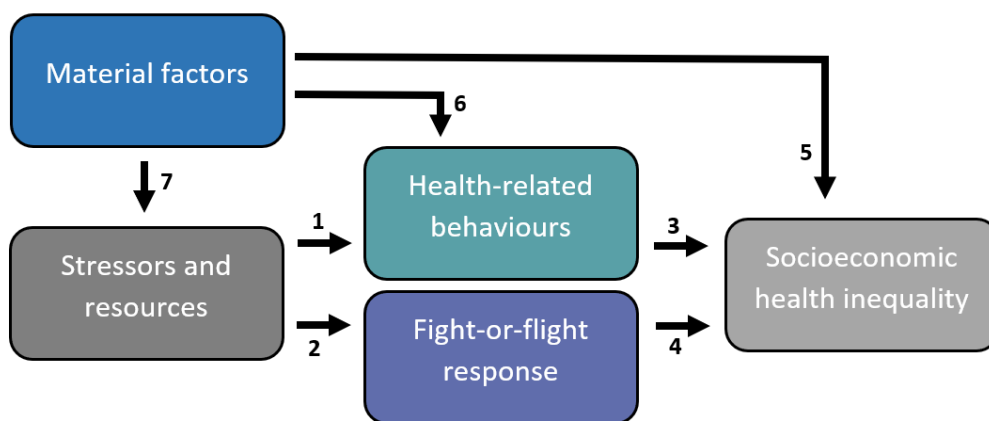


Figure 1: A schematic representation of the three pathways (adapted from UCL Institute of Health Equity, 2017, p. 5)

## 2.2 The salutogenic model

The salutogenic model, which was introduced by Antonovsky in 1979, focuses on how to create health, which is called the *salutogenic approach*, rather than focusing on how to prevent disease, which is called the *pathogenic approach* (Mittelmark & Bauer, 2017). The salutogenic model can help to explain the relation between stressors, resources and health. It is important to understand this relation, since this research aims to find out what the causes are of possible differences in health outcomes of X-Fittt GLI between low-SES and high-SES people. The salutogenic model can help to explain how differences in stressors and resources can result in differences in health. Therefore, it will be used to analyse what the causes are of these possible differences in health outcomes between people with a different SES.

The salutogenic model, which is shown in figure 2, includes several key concepts. In the lower right of figure 2, there is a health-ease/dis-ease continuum, where health is assumed to range from dis-ease to health-ease (Lindstrom & Eriksson, 2005). People's state of health influences their Generalized Resistance Resources (GRR's), which refers to the resources that a person has available in themselves and in their environment and that a person uses to deal with stressors. This is represented by arrow 6 in figure 2. Good health helps to acquire other resources (Mittelmark & Bauer, 2017). However, people with a low SES generally have poorer health than high-SES participants, since they are more likely to be overweight and to have an unhealthy lifestyle (RIVM, 2018a). Therefore, low-SES people may be less likely to acquire resources than high-SES people.

GRR's, in turn, provide people with life experiences (see arrow 7 in figure 2). These life experiences are characterized by three components: (1) consistency: the extent to which one's environment is clear and structured, (2) socially-valued decision-making: the extent to which one participates in shaping one's life outcomes, and (3) underload-overload balance: the extent to which one's resources are balanced with the demands that are made upon a person (Idan, Eriksson, & Al-Yagon, 2017). Thus, when people have less GRR's, their life experiences are likely to be less consistent, they may feel like their life outcomes depend upon the power of others, and they may experience an imbalance between resources and demands. As people with a low SES generally have less GRR's available than high-SES people (Bartley, 2016), this could negatively affect their life experiences.

Mittelmark and Bauer (2017) state that life experiences shape one's sense of coherence (SOC), which reflects the extent to which people are able to cope with everyday stressors. It consists of three elements: (1) comprehensibility: the ability to understand the situation, (2) manageability: the ability to identify and use available resources in order to move in a health promoting direction and (3) meaningfulness: the extent to which a person finds it worth investing their energy into going in a health promoting direction (Lindstrom & Eriksson, 2005). The more favorable one's life experiences are, the stronger a person's SOC will be. However, people with a low SES, who are likely to have less favorable life experiences, are therefore also likely to have a weaker SOC.

The strength of one's SOC is associated with a person's ability to cope with the stressors that they experience. If a person has a strong SOC, that person is more likely to cope with stressors successfully (as shown by arrow 1 and 2 in figure 2). The relation between SOC and stress management is mediated by GRR's: the more resources a person has available and the better they are able to use these resources, the less likely it is that the state of tension is interpreted as a stressor (Super, Wagemakers, Picavet, Verkooijen, & Koelen, 2015). Whether or not a person is able to engage in successful tension management, influences the health-ease/dis-ease continuum (see arrow 4 and 5 in figure 2) (Mittelmark & Bauer, 2017). Whereas unsuccessful tension management does not directly affect a person's SOC, successful tension management strengthens a person's SOC, as shown by arrow 3 in figure 2. As a consequence, low-SES people, who may be more vulnerable to having a weak SOC, may be more likely to engage in unsuccessful tension management. This means that they will shift towards the dis-ease end of the health-ease/dis-ease continuum.

The place that a person has within the health-ease/dis-ease continuum, in turn, affects that person's GRR's. This makes the salutogenic model a circular process. For a person with a low SES, who is likely to shift towards the dis-ease end of the continuum, this negatively affects their GRR's, which in turn has a negative effect on their life experiences, etc. As a consequence, low-SES people may keep shifting further towards the dis-ease end of the continuum.

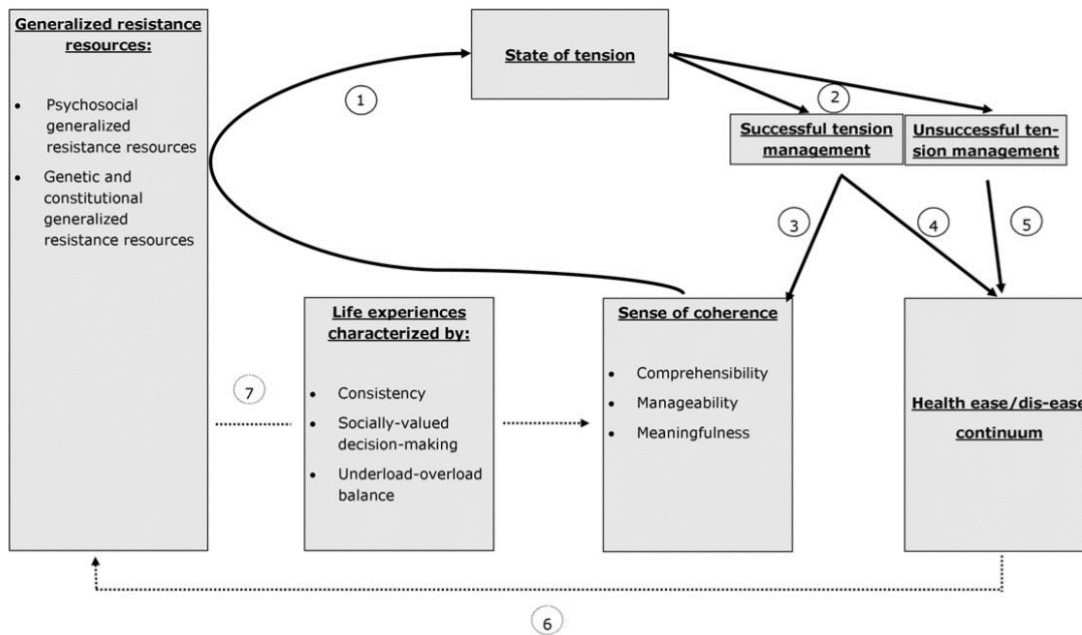


Figure 2: The salutogenic model of health (copied from Super et al., 2015)

The salutogenic model will help to provide an answer to the second research question, which is: “What are the causes of possible differences in health outcomes of X-Fittt GLI between low-SES and high-SES participants?”. The following concepts from the salutogenic model will be measured by means of interview questions: health-ease/dis-ease continuum, GRR’s (resources), life experiences, SOC and state of tension (stressors). By comparing the interview data from people with a low SES to the interview data from people with a high SES, differences regarding these concepts may be found. This way, it can be examined what the causes could be of a potential differences in health outcomes of X-Fittt GLI between low-SES and high-SES people.

### 3. Methods

#### 3.1 Research design

This research had a mixed methods design since both quantitative and qualitative data were used. This provides a more complete understanding of socioeconomic health differences than using only one of both methods, since it allows for integration of the results. In this research, a convergent design was used, where qualitative and quantitative data were done at the same time and were integrated after completion (Tobi & Kampen, 2017). Integration was done by comparing the quantitative and qualitative results in order to see whether the results support each other or whether they diverge. The first research question, namely “What is the difference between low-SES and high-SES participants with regard to the short-term health effects of X-Fittt GLI?”, was answered with the use of questionnaires and physical measurements. The second research question, which was “What are the causes of possible differences in health outcomes of X-Fittt GLI between low-SES and high-SES participants?”, was answered by conducting semi-structured interviews.

#### 3.2 The X-Fittt GLI program

To participate in X-Fittt GLI, people had to be at least 18 years old, and either have (1) a BMI above 25, in combination with either increased co-morbidity or an abdominal circumference above 88 cm for women or 102 cm for men, or (2) a BMI above 30 (Formupgrade, n.d.). Furthermore, people needed to have a referral from their general practitioner or medical specialist before they could participate in the program. A flow chart of X-Fittt GLI is shown in figure 3. X-Fittt GLI is a two-year program. Before the program started, all participants had an individual intake with the lifestyle coach. In the first three months of X-Fittt GLI, participants exercised three times per week: they had two group lessons and exercised independently once. Furthermore, they received a nutrition plan that they had to comply to. From the fourth month to the end of the first year of the program, participants were in the guidance phase, where there were no more group lessons. In this phase, there was an evaluation (i.e. a check-up on how the participants are doing) every four weeks, alternately over the phone and at Formupgrade. During the second year of X-Fittt GLI, participants were in the maintenance phase, where there was an evaluation every six weeks (Formupgrade, n.d.). The current research was limited to the first three months of the program.

X-Fittt GLI takes place at various fitness- and exercise centers throughout the Netherlands. This research focused on the fitness center *Formupgrade*, which has two locations in Arnhem: location South and location North. At Formupgrade, a new round of X-Fittt GLI starts several times a year. This research was about the round that started at 16 September 2019. In this round, there were eight groups (with approximately 12 participants per group), of which five groups exercised at location South and three groups exercised at location North. There were 57 X-Fittt GLI participants in total.

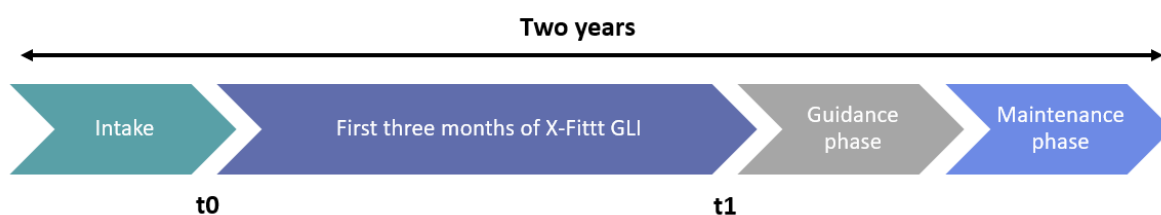


Figure 3: Flow chart that shows the different phases of X-Fittt GLI

### **3.3 Research methods**

In this subchapter, the research methods that were used are further explained. The aim of conducting questionnaires and taking physical measurements was to assess what the differences are in health outcomes between X-Fittt GLI participants with a low SES and a high SES. Interviews were conducted in order to find out the causes of a potential difference in health outcomes of X-Fittt GLI between low-SES and high-SES participants.

#### ***3.3.1 Questionnaires and physical measurements***

The first research question was: *“What is the difference between low-SES and high-SES participants with regard to the short-term health effects of X-Fittt GLI?”*. A short-term panel study was chosen as study design, because this allowed the researcher to collect information on the same individuals over a short period of time (i.e. three months). Two types of data were collected: questionnaire data and physical measurements. These data were collected at t0 (baseline) and t1 (after three months). See figure 3. By comparing baseline data to data from t1 for both low-SES and high-SES participants, it could be determined whether there are differences in health effects of X-Fittt GLI between participants with a different SES.

##### **3.3.1.1 Participants and procedure**

A total of 57 people started the X-Fittt GLI program in September 2019. Of those 57 people, three people quit during the first week and one person did not want to participate in this research. This means that 53 participants of X-Fittt GLI participated in this research, of which 27 participants have a low SES and 24 participants have a high SES.

The following physical measurements were taken of each X-Fittt GLI participant: height and weight (to calculate BMI), abdominal circumference, fat percentage (using a skin fold meter), blood pressure, and a fitness test (by means of a VO<sub>2</sub>max test). These physical measurements were taken by the lifestyle coach at Formupgrade. At baseline, for 29 of the 53 participants (54.7%), there is at least one missing value for the physical measurements. The reason for these missing values was that the participant was either absent, or had previously participated in another program at Formupgrade and the lifestyle coach decided not to take all measures again. At t1, there were one or more missing values for 38 of the 53 participants (71.7%), which was caused by people quitting the program or being absent during the final measurements.

The questionnaires were handed out on paper by the researcher to all X-Fittt GLI participants after the group training at baseline and at t1. Filling in the questionnaire took approximately 10 minutes. The questionnaires were immediately recollected after they were filled in. At baseline, four participants were absent, so 49 participants filled in the first questionnaire. At t1, 15 participants were absent, of which three participants quit the program. The remaining 12 participants have received the questionnaire by post in the week of 6 January, of which five people have filled in and returned the questionnaire. This means that 43 participants have filled in the second questionnaire. A total of 39 participants have filled in both questionnaires. All questionnaires were completed independently, without people discussing their answers with other participants, which increases the reliability of the results.

On the first page of the questionnaire, an informed consent form was included that stated that the participant's name is treated confidentially, that data from the questionnaires will be used for research purposes and that participants can decide to stop their participation in the research at any moment without having to provide a reason (see Appendix I). Since anonymity was guaranteed through the informed consent form, the risk of people giving socially desirable answers was reduced, which increased the validity of this study (Booth-Kewley, Edwards, & Rosenfeld, 1992). The questionnaires were stored in a locked place. Furthermore, the laptop that contains the imported questionnaire data was protected with a password at all times.

### **3.3.1.2 Instruments**

The questionnaire consisted of 31 items regarding the health of the participants. The questionnaire already existed and was previously used to measure the health outcomes of other X-Fittt programmes (e.g. X-Fittt Diabetes: Janssen, 2018). The questionnaire can be found in Appendix I and included the following measures:

*Demographic variables:* nine demographic variables were included, namely sex, age, country of birth, years living in the Netherlands (if not born in the Netherlands), highest level of education, household composition, main daily activity, income and having a Gelrepass. A Gelrepass is a pass that gives people with a low income a discount on a sports membership and other activities.

*Health-related quality of life:* a modified version of the EuroQol 5 Dimensions 3 Level scale (EQ-5D-3L) was used to measure the participant's health-related quality of life (HRQoL) (EuroQol Research Foundation, 2018). It consists of five items that each describe a different aspect of health: mobility, selfcare, usual activities, pain/discomfort and anxiety/depression. Each item in the EQ-5D-3L was measured on a three-point scale (no problems, some problems, extreme problems). The EQ-5D-3L was slightly altered to be better understandable for people with a low SES: the three-point scale was modified (yes, sometimes, no) as well as the formulation of the items. An example item was "Can you wash or dress yourself?". Cronbach's alpha for the five-item scale was .591 for t0 and .402 for t1, which indicates an unreliable scale (Field, 2018, p. 823). Tavakol and Dennick (2011) proposed that this low reliability could be caused by heterogeneous items, which is plausible since the items measured very different aspects of health. An existing scoring system was used to calculate an overall score for HRQoL (Lamers, Stalmeier, McDonnell, Krabbe, & Van Busschbach, 2005). The lowest possible score was -0.33 and the highest possible score was 1. The answer "yes" at all five dimensions resulted in an overall score of 1, and for each different answer that was given, a certain amount of points was subtracted from 1. Thus, the higher one's score, the higher their HRQoL. The specific deductions that were used can be found in the article by Lamers et al. (2005, table 2).

*Self-rated health:* a modified version of the EQ-VAS was used to measure participant's self-rated health (EuroQol Research Foundation, 2018). The EQ-VAS consists of one item which was measured on a scale from 0 (the worst health you can imagine) to 100 (the best health you can imagine). This item was also modified to be better understandable for low-SES participants. In this research, self-rated health was measured on an 11-point scale from 0 (very sick) to 10 (very healthy) and the item was rephrased to "How healthy do you feel today?". For this item, a higher score indicated better self-rated health.



*Illness and medicines:* three items were used to assess the illnesses that participants had and the medicines they used. These items were developed by the researcher who had composed the questionnaire (which was a different researcher than the researcher who conducted this study). The first item was a multiple choice item that indicated which illness(es) people have. The other two items were open questions and related to the type(s) of medicine(s) taken and the average number of pills taken per day. The number of illnesses that someone had and the number of pills that they take per day, are indicators of their health.

*Visits to health care providers:* a six-item measure was used to assess participant's visits to different health care providers. These items were developed by the researcher who had composed the questionnaire. Three of the six items had a two-point scale (yes, no). An example question was "Do you sometimes visit (or call with) the general practitioner?" Two other items assessed what was the last time that participants have visited a health care provider. These items were measures on a three-point scale (last three months, three months to a year, more than a year ago). An example item is: "When did you last visit the general practitioner?" The seventh item, namely "Which other health care providers do you visit?" was a multiple choice question. The last time that someone had visited a health care provider and how often they have visited a health care provider in the past three months, are indicators of their health.

*Keeping track of exercise:* whether participants keep track of whether they exercise enough was measured by a single item with a two-point scale (yes, no). If participants chose "yes", they could indicate in which ways they kept track of exercise. This measure was developed by the researcher who has composed the questionnaire.

*Activities:* part of the Utrecht Scale for Evaluation of Rehabilitation-Participation (USER-P) was used to measure societal participation (Kenniscentrum Revalidatiegeneeskunde Utrecht, 2010). It had three components (i.e. frequency, restrictions and satisfaction) of which only the frequency component was used in this research because the other components were excluded from the pre-made questionnaire. The formulation of the questions and the answering scales were slightly altered to be better understandable for people with a low SES. The USER-P version that was used in this research consisted of 12 items. The first four items were measured on a six-point scale from "36 hours or more" to "I do not do this activity". An example item was "How many hours per week do you spend doing a paid job?". The other items were measured on a four-point scale from "every day" to "never". An example item was "How often do you cycle or walk somewhere?" The items were recoded to allow the researcher to calculate the average time spent on each activity and the average number of times per week that participants did a certain activity. The answering categories of the first part of the scale were recoded to an average as follows: "I do not do this activity" > zero hours, "1-8 hours" > 4.5 hours, "9-16 hours" > 12.5 hours, "17-24 hours" > 20.5 hours, "25-35 hours" > 30 hours, and "more than 36 hours" > 40 hours. The answering categories of the second part of the scale were recoded in a similar way: "Never" > zero times per week, "once per week" > once per week, "a few times per week" > four times per week, and "every day" > seven times per week.

*Smoking and alcohol:* smoking and alcohol consumption were measured using four items. These items were developed by the researcher who had composed the questionnaire. The items "Do you smoke?" and "Do you drink alcohol?" were measured on a two-point scale (yes, no). The other two

items were open questions (“How many cigarettes do you smoke per day?” and “How many glasses of alcohol do you drink per day/week/month?”). Less/no smoking and less/no alcohol consumption are related to better health.

### **3.3.1.3 Data analysis**

The data were processed using the statistical computer program IBM SPSS Statistics (version 22). An existing codebook was used to import the questionnaire data and the physical measurements into SPSS. Frequencies were calculated regarding *gender, SES, nationality, education, income, having a Gelrepas, activities and living situation*. Basic descriptive parameters (mean, standard deviation, range) were calculated for *age, BMI, fat percentage, abdominal circumference, blood pressure and VO2max*. Two different statistical tests were performed because there were both continuous and ordinal variables that were used as health indicators.

The continuous variables that were included in the analysis as health indicators are *BMI, fat percentage, abdominal circumference and blood pressure*. The variable *VO2max* was excluded from the analysis since it depends on age (Fleg & Lakatta, 1988) and no scientific source could be found that makes a classification of *VO2max* values for different age categories. A two-way mixed ANOVA was used to test for differences between low-SES and high-SES participants with regard to the short-term health effects of X-Fittt GLI. The variables were approximately normally distributed, as assessed by Shapiro-Wilk’s test of normality ( $p > .05$ ). There was homogeneity of variances ( $p > .05$ ) and covariances ( $p > .001$ ), as assessed by Levene’s test and Box’s M test, respectively. Effect size was calculated using  $\eta^2$  (partial eta squared). Guidelines that were used to interpret the effect size of a two-way ANOVA are described by Rafieyan, Sharafi-Nejad, and Lin (2014, table 1).

With regard to the ordinal outcome variables, data were analyzed using descriptive statistics. For *HRQoL*, an overall score was calculated for each participant at baseline and t1 using SPSS. The plan was to conduct a two-way mixed ANOVA for *HRQoL* and *self-rated health*, however, since extreme outliers were found and the assumption of normality was violated, this was not possible. Therefore, for *HRQoL* and *self-rated health*, descriptive statistics were calculated for low-SES and high-SES participants at baseline and t1. For *illness and medicines, visits to health care providers, keeping track of exercise, activities and smoking and alcohol*, the many categories within each variable made it too complex to conduct a chi-square test. Therefore, frequencies or percentages were given in order to examine differences between low-SES and high-SES participants with regard to the short-term health effects of X-Fittt GLI.

### **3.3.2 Interviews**

The second research question was: “*What are the causes of possible differences in health outcomes of X-Fittt GLI between low-SES and high-SES participants?*”. Qualitative research was suitable to answer this question, because it helped to gain insight into the different views, experiences and interpretations that people have. This allowed the researcher to extract deeper information, such as *why* a participant had a certain opinion or *how* a participant dealt with a certain event. Interviews were chosen as data collection method, because some questions were very personal (e.g. “*Have you ever experienced a very difficult situation in your life?*”) and it was found that participants were willing to share more information on very sensitive topics in a personal setting as compared to a group setting (Wutich, Lant, White, Larson, & Gartin, 2009). The interviews were semi-structured

because the aim was to explore the causes of possible differences in health outcomes. Semi-structured interviews, to some extent, allowed the researcher to deviate from the interview questions, which made it possible to gain new insights (Low, 2013). However, it also made sure that a certain structure in the interview questions was retained, in order to allow comparison between the interviews from low-SES and high-SES participants.

### **3.3.2.1 Participants and procedure**

The ethical committee of Wageningen University & Research gave permission to conduct interviews with the participants of X-Fittt GLI. All participants received an email from Formupgrade, on behalf of the researcher, with an invitation to participate in the interview. Then, together with each person who wanted to participate in the interview, a date and time were determined. A total of 11 participants wanted to participate, of which two participants did not answer the second email (to arrange a date and time). This means that nine participants of X-Fittt GLI participated in the interviews, of which four participants have a low SES and five participants have a high SES. The interviews took place in November and December 2019 at Formupgrade. The interviews were held in a room where no other people were present than the researcher and the participant (except for one interview, where the participant brought her son). The interviews were audio-recorded with a password-protected mobile phone and took 35 minutes on average.

The participants were informed by email that the interviews would be recorded, but that their personal information will remain private. Before the interview began, interviewees had to sign an informed consent form (see Appendix II) that stated that the interview would be recorded, but that interviewees remain anonymous: their name will not be mentioned anywhere in the research report. Furthermore, the informed consent form stated that participants can stop their participation in the interview at any moment without having to provide a reason.

### **3.3.2.2 Data collection**

The aim of the interviews was to find out how potential differences in health outcomes between participants with a different SES can be explained, using the salutogenic model. In literature, most studies that were related to the salutogenic model used quantitative methods (e.g. Ngai & Ngu, 2012; Wiesmann & Hannich, 2010). The few studies that did use qualitative methods often conducted unstructured interviews and therefore did not report the questions asked (e.g. Idan, Braun-Lewensohn, & Sagy, 2013). Thus, since no previously used set of questions could be found in relation to the salutogenic model, the current interview questions were made by the researcher. All questions were related to one or more concepts from the salutogenic model. Each interview began with the researcher giving a short introduction about the research and explaining the set-up of the interview. Respondents were only told that the research aimed to examine the health effects of X-Fittt GLI, but not that a comparison would be made between low-SES and high-SES participants, in order to prevent stigma. Furthermore, it was found that when SES was made salient, this may lead to lower self-confidence for low-SES people and this may influence their answers (Spencer & Castano, 2007). This was the reason why the true aim of the research was not disclosed.

First, a few questions were asked in order to gather background information. Examples of these questions were: “What is your job?” and “Can you describe yourself as a person?” This was followed by questions that were meant to examine the participant’s current state of health, such as “What

would you like to improve about your health?”. Next, questions were asked that aimed to examine which and how many stressors participants experience and which and how many resources they have available in their lives (aside from X-Fittt GLI). Examples of these questions are: “Have you ever experienced a difficult event in your life?” and “How did you achieve your goals?”. In addition, a few questions were asked about how the participant found out about X-Fittt GLI (i.e. “How did you found out about X-Fittt GLI?”) and about exercise behaviour in their social environment (e.g. “Does your family/do your friends also engage in exercise?”). The next set of questions was about stressors and resources that were specifically linked to X-Fittt GLI. Examples of these questions were: “What is your nicest experience so far regarding X-Fittt GLI?” and “What difficulties did you experience during your participation in X-Fittt GLI?”. The interview ended with a few questions regarding future stressors and resources in people’s lives, such as “In the future, do you think you will be able to maintain a healthy lifestyle? Why (not)?”. The interview guide can be found in Appendix II.

### 3.3.2.3 Data analysis

A content analysis was done that combined a bottom-up and a top-down approach (using the steps proposed by Bengtsson, 2016). A list of codes was made prior to the analysis, based on the salutogenic model. Atlas.ti version 8 was used to analyze the interviews. Each code was linked to all pieces of text to which it was applicable, so that one piece of text could have multiple codes. While coding the interviews, four additional codes were discovered. This resulted in a final coding list with both inductive and deductive codes. These codes, along with a brief description of each code, are shown in table 12 and 13 in Appendix III. After all interviews were coded, the final coding list was used to go over each interview again, in order to check whether the researcher would still ascribe the same codes to the same pieces of text. If differences were found, necessary adjustments or additions were made. Table 1 shows when a certain piece of text was assigned a particular code, along with an example of a piece of text that had been assigned that code.

Table 1: Code types, code names, coding instructions and examples of coded text

Code type	Code name	Coding instructions	Example of coded text
Deductive	<i>Health-ease / dis-ease continuum</i>	Their own perceived state of health	“I have knee osteoarthritis. And I am talking to my doctor about that, to probably get the syringe in there. Besides that, I feel very healthy.”
	<i>GRR’s</i>	Things that they perceive as resources	“I train together with my sister. She also cooks and that is an advantage. I could not have done that alone.”
	<i>Life experiences</i>	New insights that they have gained; whether they participate in shaping their life outcomes; and their balance between stressors and resources	“I like the fact that you are all on the same boat. And that it has results. So that you also notice: ohh yes I am really losing weight, and I really feel better, and exercising is just good for me. That helps you to keep it up.”

	<i>Sense of coherence</i>	Ability to use their resources in order to deal with a stressor; and whether they find it meaningful to deal with stressors	“Well if there is stress then I can always enter a mania so I have to live stress free and take enough rest after activities. Just to remain in balance.”
	<i>Stressors</i>	Things that they perceive as stressors	“That is also part of the program, following those workshops. And if they plan it between 16:00 and 17:00 on a Saturday, it will be difficult. For me that is not possible. I just have to work.”
Inductive	<i>Leisure</i>	Activities that they engage in in their free time	“I love to read. Yes. If it is possible and I have a minute off, I often like to read a book.”
	<i>Sense of responsibility</i>	Extent to which they feel responsible for their life outcomes	“I am of course responsible for what I put in my mouth. And if the result of that is uhh.. that I am less healthy, yes then I am responsible for that.”
	<i>Other programs</i>	Engaging in a different program than X-Fittt GLI, either at Formupgrade or somewhere else	“My goal is to lose 10 kilos. So after this I will keep exercising and in January I will do X-Fittt Pro again. So I will keep going.”

A systematic and consistent way of analysis was used to reduce bias (e.g. making use of memos and comments throughout the whole coding process in order to show the researcher’s thoughts and interpretations). Demographical data and data about leisure activities were used to describe the interview sample. Then, interview data from the low-SES group was compared to interview data from the high-SES group in order to analyze the causes of potential differences in health effects between people with a different SES. Each participant was given a pseudonym to ensure anonymity.

## 4. Results

### 4.1 Sample characteristics

A total of 53 people participated in this research (75.5% female, 24.5% male). The ages of the participants ranged from 23 to 64 ( $M = 44.36$ ,  $SD = 10.5$ ). All participants were born in the Netherlands, except for one participant who was born in Suriname but has lived in the Netherlands for 46 years. Most participants lived together with their partner/wife/husband and children (54.9%), together with their partner/wife/husband without children (21.6%) or alone (17.6%). For most participants, the main activities that they engaged in were a paid job (58.8%) or a combination of a paid job and doing the household/caring for their family (23.5%). A large share of the participants had a monthly household income of €1.801 or more (66.7%). Only two participants had a monthly household income of €1000 or less (3.8%). Only one person had a Gelrepass (1.9%). Table 2 provides the means, standard deviations and range of all physical measurements at baseline and t1.

For 27 participants, their highest diploma obtained was from secondary or pre-university education; for 21 participants it was higher professional education and for three participants it was university education. Therefore, according to the SES definition that was used in this research, 27 participants had a low SES (52.9%) and 24 participants had a high SES (47.1%). Between low-SES and high-SES participants, there were no large differences in gender, age, household composition and income.

*Table 2: Physical measurements of the participants of X-Fittt GLI*

		<b>N</b>	<b>Min</b>	<b>Max</b>	<b>Mean</b>	<b>SD</b>
Length		53	1.61	1.96	1.73	0.08
Weight	t0	53	71.5	145.7	102.48	16.81
	t1	49	67.3	139.0	97.81	16.42
BMI	t0	53	26.1	51.6	34.32	5.34
	t1	48	25.1	49.2	32.62	5.20
Fat percentage	t0	41	25.4	51.0	39.75	6.48
	t1	38	18.6	49.0	36.35	7.74
Abdominal circumference	t0	47	88.5	148.0	115.15	12.88
	t1	44	81.0	135.0	107.51	13.25
VO2max	t0	33	17.0	49.4	31.26	8.14
	t1	25	17.0	56.2	32.66	10.88
Systolic blood pressure	t0	31	110	160	130.29	11.83
	t1	23	102	170	127.09	16.74
Diastolic blood pressure	t0	31	55	110	81.97	11.49
	t1	25	58	92	78.08	8.56

N = number of cases, Min = minimum, Max = maximum, SD = standard deviation

### 4.2 Physical measurements

The two-way mixed ANOVA's showed that there were no statistically significant interaction effects between SES and time on health (measured through BMI, fat percentage, abdominal circumference and blood pressure). This is shown in table 3. This means that there were no significant differences in

short-term health effects of X-Fittt GLI between low-SES and high-SES participants. Furthermore, there was a statistically significant main effect of time for BMI,  $F(1, 44) = 56.47, p < .001$ , partial  $\eta^2 = .562$ , fat percentage,  $F(1, 32) = 36.89, p < .001$ , partial  $\eta^2 = .535$  and abdominal circumference,  $F(1, 38) = 61.15, p < .001$ , partial  $\eta^2 = .617$ . A non-significant main effect of time was found for systolic and diastolic blood pressure ( $p = .062$  and  $p = .053$ , respectively). This means that BMI, fat percentage and abdominal circumference significantly changed between baseline and t1, whereas there was no significant change in blood pressure between baseline and t1. Furthermore, the two-way mixed ANOVA yielded a statistically significant main effect of SES for diastolic blood pressure,  $F(1, 12) = .29, p = .047$ , partial  $\eta^2 = .291$ . Thus, there was a significant difference between low-SES and high-SES participants regarding their diastolic blood pressure. For the other variables, the main effects of SES on health were non-significant ( $p > .160$ ).

*Table 3: Means and standard deviations for each physical measurement at baseline and t1 for low-SES and high-SES participants, and interaction effects between SES and time*

Variable	Low SES		High SES		M	SD	M	SD	F	p	partial $\eta^2$
	t0	t1	t0	t1							
BMI	34.34	6.02	32.90	5.72	33.38	4.46	31.83	4.59	.08	.779	.002
Fat percentage	40.44	6.01	37.28	5.84	37.48	6.93	33.84	8.59	.18	.677	.006
Abdominal circumference	116.85	14.29	107.68	11.73	112.35	12.04	105.70	13.92	1.56	.220	.039
Systolic blood pressure	133.00	17.09	113.00	6.22	136.38	12.73	135.25	20.81	3.51	.091	.260
Diastolic blood pressure	78.50	6.61	70.75	2.99	85.90	11.55	83.10	6.81	1.01	.335	.078

M = mean, SD = standard deviation, *F*-statistic obtained from interaction effects between SES and time on health (measured by BMI, fat percentage, abdominal circumference and systolic and diastolic blood pressure), N varies between different variables, SES and time

## 4.3 Questionnaire data

### 4.3.1 Health-related quality of life

For people with a low SES, the mean score for HRQoL increased from .714 to .845 between baseline and t1. For high-SES participants, it increased from .858 to .864, as shown in table 4. Thus, low-SES participants on average started with a lower HRQoL score than high-SES participants, but after three months, their score was almost equal to that of high-SES participants.

*Table 4: Descriptive statistics regarding the overall scores for HRQoL*

	Low SES		High SES	
	t0	t1	t0	t1
N	23	22	23	21
Min	-.03	.30	.37	.37
Max	1.00	1.00	1.00	1.00
Mean	.714	.845	.858	.864
SD	.248	.162	.161	.183

N = number of cases, Min = minimum, Max = maximum, SD = standard deviation

### 4.3.2 Self-rated health

For low-SES participants, their self-rated health score increased from 7.46 to 7.52, whereas for high-SES participants, this score increased from 7.35 to 7.88, as shown in table 5. Thus, although the average self-rated health score was similar between low-SES and high-SES participants at baseline, high-SES participants made a slightly larger improvement.

Table 5: Descriptive statistics regarding the participant's self-rated health

	Low SES		High SES	
	t0	t1	t0	t1
N	24	22	23	21
Min	5.0	3.0	5.0	6.5
Max	10.0	10.0	9.0	9.0
Mean	7.46	7.52	7.35	7.88
SD	1.29	1.61	1.02	.74

N = number of cases, Min = minimum, Max = maximum, SD = standard deviation

### 4.3.3 Illness and medicines

For people with a low SES, the percentage of people that had one or more diseases decreased from 87.5% to 61.9% between baseline and t1, whereas for high-SES participants, it slightly increased (from 56.5% to 57.1%). The percentage of people who take medicines has also decreased for low-SES participants (from 70.8% to 50.0%) and increased for high-SES participants (from 34.8% to 42.9%). Between baseline and t1, the average number of pills taken per day decreased from 2.75 to 2.55 for low-SES participants and increased from 2.83 to 2.86 for high-SES participants. This is shown in table 6. Thus, the percentage of people who had one or more diseases as well as the percentage of people who take medicines seemed to be much higher for low-SES than for high-SES participants at baseline, and largely decreased for low-SES participants, whereas it slightly increased for high-SES participants. With regard to the average number of pills taken per day, there were no substantial differences between low-SES and high-SES participants.

Table 6: Descriptive statistics of illnesses and medicines

	Low SES		High SES	
	t0	t1	t0	t1
N	24	22	23	21
Percentage of people with one or more diseases	87.5%	61.9%	56.5%	57.1%
Percentage of people who take medicines	70.8%	50.0%	34.8%	42.9%
Average number of pills taken per day	2.75	2.55	2.86	2.86

N = number of cases, only the people who take medicines were included in the average number of pills taken per day

### 4.3.4 Visits to health care providers

Between baseline and t1, there were no large differences between low-SES and high-SES participants regarding the last time that they visited a health care provider and the type of health care providers that they visited. There were also no large differences between low-SES and high-SES participants with respect to how often they visited certain health care providers in the past three months.



### 4.3.5 Keeping track of exercise

For participants with a low SES, the percentage of people who kept track of whether they exercise enough increased from 60.9% to 68.2% between baseline and t1. For high-SES participants, this increased from 47.8% to 61.9%. Thus, although the percentage of people who kept track of exercise was higher for low-SES participants at both baseline and t1, both groups made a similar increase.

### 4.3.6 Activities

Table 7 shows the means and standard deviations of the number of hours that low-SES and high-SES participants spent per week on different activities. It can be seen that participants with a high SES on average seemed to spend more time per week doing a paid job, volunteering and education than low-SES participants, both at baseline and t1. Low-SES participants, on the other hand, on average seemed to spend more time per week doing the household at baseline and t1 as compared to high-SES participants. However, since no statistical test was carried out, it is not known whether these differences were significant.

*Table 7: Means and standard deviations of the number of hours spent on several activities per week*

Variable	Low SES		High SES		t0		t1	
	M	SD	M	SD	M	SD	M	SD
Paid job	24.67	16.12	28.79	12.92	32.67	11.16	33.55	8.32
Volunteering	2.57	5.40	2.21	5.17	3.87	6.21	5.50	6.67
Education	1.08	2.87	.21	.98	5.36	8.78	2.65	3.23
Household	13.65	10.43	13.50	9.68	10.50	10.29	9.62	7.09

M = mean, SD = standard deviation, N varies between different variables, SES and time

Table 8 shows the means and standard deviations of the number of times per week that low-SES and high-SES participants did a certain activity. From baseline to t1, both low-SES and high-SES participants exercised more often on average. Furthermore, participants with a low SES more often seemed to go out, visit family or friends, have family or friends coming over, and have contact with others via the phone or computer, whereas high-SES participants less often did these activities at t1 as compared to baseline. Low-SES as well as high-SES participants less often seemed to do fun things outside the home or inside the home. Furthermore, whereas participants with a low SES less often seemed to walk or cycle somewhere, high-SES participants did this slightly more often at t1 as compared to baseline. However, overall, there were no large differences between low-SES and high-SES participants regarding the number of times per week that they did each activity.

Table 8: Means and standard deviations of the number of times per week that participants did a certain activity

Variable	Low SES		High SES		Low SES		High SES	
	t0	t1	t0	t1	t0	t1	t0	t1
Exercising	3.46	1.25	4.27	.88	3.52	1.28	4.00	.00
Walking or cycling somewhere	5.21	1.87	4.91	2.25	4.35	2.35	4.62	2.82
Going out (e.g. party, cinema)	.74	.45	1.10	1.07	.95	1.15	.85	.37
Doing other fun things (e.g. shopping, going to the beach)	1.80	2.04	1.75	1.33	1.91	1.48	1.58	1.31
Doing fun things at home (e.g. reading, handcrafting)	5.05	2.08	4.67	2.20	3.73	2.25	3.67	2.83
Visiting family or friends	1.86	1.78	2.27	1.88	2.43	1.53	2.35	1.53
Family or friends visiting you	1.64	1.79	1.95	1.86	2.05	1.60	1.55	1.28
Contact via phone or computer (e.g. emailing, texting)	5.96	1.46	6.18	1.37	5.64	1.79	5.57	2.04

M = mean, SD = standard deviation, N varies between different variables, SES and time

#### 4.3.7 Smoking and alcohol

Table 9 shows the percentage of low-SES and high-SES participants at baseline and t1 who smoked and drank alcohol, including the average number of cigarettes smoked per day and the average number of glasses of alcohol consumed per week. For low-SES participants, the percentage of people who smoked as well as the percentage of people who drank alcohol seemed to have increased between baseline and t1. For high-SES participants, the percentage of people who drank alcohol seemed to have increased, whereas the percentage of people who smoked has decreased between baseline and t1.

Table 9: Percentages and counts of smoking and drinking behaviour of the participants

	Low SES		High SES	
	t0	t1	t0	t1
N	24	22	22	21
Percentage of people who smoke	8.3%	13.6%	9.1%	4.8%
Average number of cigarettes smoked per day	15.0	11.7	6.0	10.0
Percentage of people who drink alcohol	58.3%	59.1%	63.6%	66.7%
Average number of glasses of alcohol per week	1.39	1.41	2.48	1.70

N = number of cases, non-smokers and non-alcohol consumers were not included in the calculation of the average number of cigarettes smoked per day and the average number of alcohol consumptions per week

## 4.4 Interview data

### 4.4.1 Sample characteristics

Nine people participated in the interview, of which their pseudonyms and demographical information are provided in table 10. The mean age of the participants was 50.1 years.

Table 10: Pseudonyms and demographics of the people who participated in the interviews

Pseudonym	Sex	Age	SES	Household composition	Main daily activity	Leisure activities
Anna	Female	63	Low	Alone	Paid work	Reading, handcrafting, cycling, playing with children / grandchildren
Chris	Male	59	Low	With partner	Paid work	Watching TV, going for a walk
Erika	Female	47	Low	Alone	Disability Insurance Act	Reading, going for a walk, watching TV, going out with friends
Sophia	Female	41	Low	With partner	Volunteer work and caring for dogs	Gardening, caring for dogs, coloring
Alex	Male	42	High	Alone	Paid work	Traveling, going out with friends, watching series, mountain biking
Doris	Female	53	High	With husband and two children	Household / caring for family	Going for a walk in nature, Tai Gong
Ruby	Female	40	High	With partner and two children	Combination of paid work and household / caring for family	Reading, going to the sauna, taking a bath
Jade	Female	49	High	With husband	Paid work	Reading, going on vacation, shooting
Michelle	Female	57	High	Alone	Paid work	Going for a walk, cycling, watching documentaries / movies, going out with friends / family

#### 4.4.2 Differences in health effects

The aim of the second research question was to find the causes of potential differences in health effects of X-Fittt GLI between low-SES and high-SES participants. The quantitative results showed that there was an indication that the low-SES and high-SES group have developed differently in terms of their HRQoL and having illnesses and using medicines. However, since no statistical tests could be done regarding these variables, no conclusion can be drawn about whether or not there is a significant difference in the health outcomes of X-Fittt GLI between low-SES and high-SES participants.

The data from the interviews showed that there seems to be no substantial difference in health outcomes of X-Fittt GLI between low-SES and high-SES participants. First, a code-document table showed that there were no large differences in occurrences of the different codes between data from low-SES participants and data from high-SES participants. Secondly, many similarities were found between low-SES and high-SES participants with regard to the types of resources and stressors that were mentioned and how often these were mentioned (as shown by table 14 and 15 in Appendix IV). Furthermore, the average amount of resources and stressors that were mentioned was very similar between low-SES and high-SES participants.

Thus, similar to the quantitative analysis, the qualitative analysis also did not disclose major differences in the health effects of X-Fittt GLI between low-SES and high-SES participants. Therefore, no statement can be made about the possible causes of these differences in health effects. However, there were differences between individual participants, irrespective of their SES. These differences can be divided into three categories, namely “the amount of stressors and resources”, “sense of responsibility” and “sense of coherence”. These differences are elaborated upon below:

#### **4.4.2.1 The amount of stressors and resources**

First, there were differences between individual participants concerning the amount of resources that they had available and the amount of stressors that they experienced. The amount of resources that were mentioned by the participants ranged from 8 to 23, as shown in table 11. A few examples of resources that were related to X-Fittt GLI are “motivation” (being motivated to lose weight), “exercising in groups” (having a bond with the group, being in a group with like-minded people), and the “nutrition app” (an app that helps to keep track of calories). For Chris, his motivation was an important resource, because it helped him to achieve good results.

(1) Chris: *“Well I might be tempted [to eat chocolate], but I do not do it. I would like it. I could eat a kilo of chocolate, but I don’t. I just don’t do it. [...] And that is a piece.. a piece of motivation. And you must have that, otherwise you should not start this program.”*

For Anna, the nutrition app was an important resource. The nutrition app is an app in which participants can keep track of what and how much they eat. Anna describes that she kept using the nutrition app after the first three months of X-Fittt GLI, because it helped her to decide whether or not to eat something:

(2) Anna: *“Well I am very conscious about nutrition. I constantly update the nutrition app, even now.. Or constantly, actually. Uhh.. and it just helps me. That nutrition app uhh.. gives me a hold on what I eat. And if I let go of that, I know of myself that.. [...] that I just uhh.. now you are very conscious of what you have eaten on a day and then you just know that you cannot take something in the evening.”*

The amount of stressors that participants mentioned, ranged from 5 to 12, as can be seen in table 11. Some examples of stressors that were related to X-Fittt GLI are “being tempted by unhealthy food”, “pain/injury”, and “bad communication between people in Formupgrade”. With regard to bad communication, Sophia stated that she made arrangements with her nutrition coach, however, these

arrangements were not communicated with the people who gave feedback on her nutrition list. She explains that this sometimes frustrated her:

Interviewer: *“What is your worst experience so far with X-Fittt GLI?”*

(3) Sophia: *“Well if I have to mention something then I would say uhh.. that I arranged things with my nutrition coach regarding uhh.. in relation to my depressions that I can drink Yakult [...] and uhh.. eat or not eat certain products. And that I get comments about that in my nutrition list, which you then send in. And then it is just looked at, I think.. by people to whom that belongs to their tasks that day, and they do not know about my arrangements, and that sometimes frustrated me.”*

Jade experienced a different stressor: she had difficulties to resist temptation. She had to try very hard to not eat unhealthy food, which made it a big challenge for her to lose weight. This was stressful for her, because she knew exactly what she should and should not eat, however, she was unable to comply with it.

(4) Jade: *“There is also a workshop, that is nice for uhh.. that would be nice for you if you have to lose three kilos.. that you have to get a kick in the ass like ‘come on girl’, and you know, ‘if you walk into the supermarket, then you should not take the nuts, but then you have to take the kiwi’, you know. I already know that. I think that I uhh.. there is no dietician who can still tell me anything. You know. I have seen it all, I have heard it all. I know it all. And somehow.. there is something in your head, and whether that is an addiction or whatever you call it, which nevertheless ensures that you have to fight every day to not do it [buying/eating unhealthy food], even though you know very well that it is not allowed.”*

Table 11: The amount of resources and stressors that were mentioned by each participant and the difference between the amount of resources and the amount of stressors

Pseudonym	Resources	Stressors	Difference
Anna	10	5	+5
Chris	14	10	+4
Erika	15	8	+7
Sophia	23	10	+13
Alex	12	12	0
Doris	19	11	+8
Ruby	14	5	+9
Jade	12	10	+2
Michelle	8	9	+1

#### 4.4.2.2 Sense of responsibility

The second difference between participants concerns their sense of responsibility: the extent to which the participants felt responsible for their life outcomes, or more specifically, for their health. By participating in X-Fittt GLI, all participants had a sense of responsibility for their health to some degree. Most participants stated that, except for getting a disease that could not have been

prevented (e.g. a heritable disease), they felt fully responsible for their health. Michelle was one of those participants:

Interviewer: *“Do you feel that you are completely responsible for your health yourself?”*

(5) Michelle: *“Absolutely. [...]. I really cannot blame anyone for that. At least, as far as it concerns these types of things. Yeah, I mean, a person can of course also get other things, but uhh if you are talking about overweight, stamina, then uhh.. Yeah someone may also have a predisposition for something, that uhh.. yeah you cannot do anything about that of course. But you can of course do something about how you deal with that.”*

However, there were also participants that did not feel completely responsible for their health. Jade, for example, thought that it was not entirely her fault that she is overweight, but that there was something going on in her body that made her unable to lose weight and to keep the weight off. She thought that her participation in X-Fittt GLI was not enough to achieve permanent weight loss.

(6) Jade: *“They [Formupgrade] also have a relapse prevention workshop that I have attended. [...]. What they are saying is that it is really all your own fault. And I believe that at some point it is no longer your own fault. [...]. I have been at the Dutch Obesity Clinic and they have a completely different vision on what is going on in your body when you are just.. for a very long time uhh.. very much overweight. And.. well maybe you choose the picture that suits you best, but I think that that indeed applies to me.”*

For Jade, her lower sense of responsibility for her health also translated into different behaviour. While most participants were able to adhere to the nutrition list, Jade had more difficulties with this and she therefore had more trouble losing weight (see quote 4). Thus, differences in participant's sense of responsibility may lead to differences in health outcomes.

#### **4.4.2.3 Sense Of Coherence**

Third, there were differences between individual participants regarding their sense of coherence (SOC). SOC refers to the extent to which their life is comprehensible, manageable, and meaningful. Some participants perceived their X-Fittt GLI-related activities (i.e. exercising, eating healthy) to be more comprehensible, manageable and meaningful than other participants. For example, Erika explained that she made good food choices and that she worked hard during the group lessons.

Interviewer: *“To what extent do you feel that you have made the most of the program?”*

(7) Erika: *“Uhh.. I think I did pretty well. Uhh.. I participate.. at my own level. I am trying my best. Uhh.. I really feel like I worked. Every time, two days after [the training] I still have muscle pain, that you feel like ‘I have been working’. And uhh.. with food.. yeah I think I make really good choices. Uhh.. I could perhaps get more out of it by also occasionally leaving out that piece of chocolate that I take, but that is uhh.. is a detail.”*

For Erika, X-Fittt GLI can be considered to be meaningful, because she participated in the program with the aim of improving her health. However, she may not have perceived the program as being

completely manageable, because she stated that she sometimes was unable to resist eating a piece of chocolate. Ruby, on the other hand, consciously chose to not fully adhere to the rules of X-Fittt GLI, in order to create a more gradual weight-loss process:

Interviewer: *“Which things have helped you to better keep up with the program?”*

- (8) Ruby: *“Well I have to say very honestly, that I uhh.. cheat with the program a little bit now and then. Uhh.. that keeps it, that makes me keep up with it. So maybe I could have gotten something more out of it as what I have now, but uhh.. let’s say I have lowered the target for myself. [...] The first time that I lost weight was very quickly, very much, uhh.. let’s say too strict, whereby I think I fall back too easily afterwards. And now I do it a little less strict and uhh.. let’s say it goes a bit more gradually, but in a way that I think: this suits me better. And that I also think: this will be easier to maintain later.”*

Ruby also perceived her participation in X-Fittt GLI as meaningful, because her aim was to lose weight and she knew that the program would help her to do that. Ruby was less strict for herself during the first three months of X-Fittt GLI in order to prevent regaining the weight after the program. Therefore, she was likely to perceive her participation in X-Fittt GLI as manageable. This may result in a stronger SOC for Ruby as compared to Erika.

Furthermore, Ruby described that the first time that she participated in a weight-loss program, she lost weight too fast, which made it difficult to keep the weight off after the program. This could indicate an imbalance between stressors and resources, where Ruby may have had too few resources to deal with the stressors that she experienced.

However, there seemed to be no relation between the balance between stressors and resources, and the ability of participants to deal with stressors. For example, Chris and Jade (see quote 1 and 4) both had a slightly higher amount of resources available as compared to the amount of stressors that they experienced (see table 11). Therefore, their balance between resources and stressors was relatively equal. However, differences were found in their ability to deal with stressors that are related to X-Fittt GLI (e.g. Chris was able to resist temptation, whereas Jade was unable to do so). On the other hand, there were also participants who strongly differed in their balance between stressors and resources, but who were equally able to deal with stressors. Thus, a participant’s ability to deal with stressors cannot be explained by their balance between stressors and resources. This showed that it may not be the number of available resources or the amount of stressors experienced that were important, but that it was rather about a person’s ability to identify these resources in a stressful situation and in turn use these resources in order to deal with stressors.

## 5. Discussion

### 5.1 Summary of findings

The first research question was: *“What is the difference between low-SES and high-SES participants with regard to the short-term health effects of X-Fittt GLI?”*. No significant difference was found in the physical health outcomes of X-Fittt GLI between low-SES and high-SES participants. Looking at the questionnaire data, there is an indication that low-SES and high-SES participants differ with regard to HRQoL, having illnesses, and using medicines. However, since no statistical tests could be done, it is uncertain whether these differences are significant. The second research question was: *“What are the causes of possible differences in health outcomes of X-Fittt GLI between low-SES and high-SES participants?”*. Similar to the physical measurements and the questionnaire, the interview data showed that there were no substantial differences in health effects of X-Fittt GLI between low-SES and high-SES participants. However, there were differences between individual participants, irrespective of their SES, with regard to (1) the amount of stressors and resources, (2) their sense of responsibility, and (3) the strength of their sense of coherence.

### 5.2 Interpretation of findings RQ1

#### *5.2.1 Interaction effects between SES and time: physical measurements*

It is surprising that no significant differences were found between low-SES and high-SES participants with regard to the physical health outcomes of X-Fittt GLI, because this was expected based on the salutogenic model (see chapter 2.2). Even though the effect size of systolic blood pressure can be classified as large (Rafieyan et al., 2014, table 1), the interaction effect between SES and time for systolic blood pressure was not significant. In existing literature, there are several studies that also did not find a significant difference between people with a different SES with regard to the health effects of a lifestyle program. For example, Govil, Weidner, Merritt-Worden, and Ornish (2009) found that at baseline, there were differences in lifestyle, quality of life, and CHD risk between the low-SES and the high-SES group. After participating in a three-month lifestyle intervention, both SES groups achieved similar improvements on these factors (Govil et al., 2009). Similarly, in a study by Wikström et al. (2009), it was found that the effect of a lifestyle intervention on health-related factors was independent of SES. The results of these studies are consistent with the results of the physical measurements of the current study. However, there are also studies that did find a significant interaction effect between SES and time for physical measures. For example, Gurka et al. (2006) found differences in weight and abdominal circumference between low-SES and high-SES people, where those in the low-SES group lost more weight and achieved a larger decrease in abdominal circumference. This is contrary to the outcomes of the current research.

Based on the pathways theory by Bartley (2016), it would also be expected that there are health differences between low-SES and high-SES participants of X-Fittt GLI. It has been proposed that low-SES people generally have higher stress levels, experience worse material circumstances and are more likely to engage in unhealthy behaviours (Bartley, 2016; UCL Institute of Health Equity, 2017). Through several intermediate processes, this can result in socioeconomic health inequality, as described in subchapter 2.1. However, socioeconomic health differences may be much more complex than the small part that was examined in the current research (i.e. whether participating in



a specific sports program leads to differences in health effects). Furthermore, the pathways leading to health (in)equality are much more complicated than what can be described within the size of a research report. There may be other explanations for the fact that this research did not find significant differences in physical health outcomes between low-SES and high-SES participants of X-Fittt GLI, which, at the present time, are not yet fully understood or examined.

There are a few possible reasons why, in the current research, no significant differences were found between low-SES and high-SES participants with regard to the health effects of X-Fittt GLI. One of these reasons is that a different definition of SES was used. People that were considered to have a low SES in this research, are generally considered to have a medium SES by most Dutch institutions (e.g. RIVM, 2018b), so that the SES difference may have been too small to find significant differences. Another reason could be that this was a short-term research (i.e. three months). The X-Fittt GLI program lasts two years and therefore it may be the case that significant differences in health effects between low-SES and high-SES participants will only occur after these two years. Research into other Dutch lifestyle intervention programs also showed long-term health effects (e.g. Duijzer et al., 2017) and therefore, it is important that future research will examine the long-term differences in health effects of X-Fittt GLI between low-SES and high-SES participants. A last possible reason why no significant difference was found is that X-Fittt GLI is specifically aimed at people with a low SES since (1) the program is partly funded by the basic insurance, which makes it more accessible for low-SES people, and (2) the program includes intensive guidance and contact with a lifestyle coach for a total of two years, which supports low-SES people. This could explain why both low-SES and high-SES participants achieved similar results during the first three months of X-Fittt GLI.

### ***5.2.2 Interpretation of questionnaire data***

The questionnaire results of the current research indicated that there may be a difference between low-SES and high-SES participants with regard to HRQoL, illnesses and medicine use. Only a few existing studies were found that compared HRQoL between low-SES and high-SES participants of a lifestyle intervention. One of these studies found that at baseline and 12 months after a coronary intervention, low-SES people on average had a lower HRQoL score than high-SES people, however, both groups made a similar improvement (Denvir et al., 2006). This is partly in line with the current research, where it was found that low-SES people had a lower HRQoL at baseline, but after three months, their HRQoL was almost equal to that of high-SES participants (whereas the HRQoL of high-SES participants remained relatively stable). A different study, namely the MetSLIM study, used a lifestyle intervention that targeted people with a low SES. After 12 months, the HRQoL of these participants had improved. This is in line with the results of the current research, since the low-SES group also improved their mean HRQoL score over time. The fact that the HRQoL score of high-SES participants remained relatively stable between baseline and t1, did not match with existing literature and therefore requires more investigation.

Furthermore, the current research found that there seemed to be much higher percentages of people who have illnesses and who use medicines in the low-SES than the high-SES group. Besides, the results showed a large decrease in the percentage of people who have illnesses and use medicines for low-SES participants, whereas there was a small increase for high-SES participants. To the researcher's knowledge, no previous research was done that compared low-SES and high-SES people with regard to the percentage of people who has illnesses or use medicines. There are,

however, studies that examined the difference between low-SES and high-SES people with regard to their risk of having a specific diseases. For example, multiple studies found that low-SES people are at a higher risk for cardiovascular disease than high-SES people (e.g. Clark, DesMeules, Luo, Duncan, & Wielgosz, 2009; Méjean et al., 2013). According to Méjean et al. (2013), this can be largely explained by differences in dietary and lifestyle factors between low-SES and high-SES people. This relates to arrow 3 in figure 1, which shows that health-related behaviours can lead to socioeconomic health inequalities. However, the findings of Méjean et al. (2013) cannot be compared to the current research, since the current research only examined the percentage of people with one or more illnesses and not the prevalence of specific illnesses.

Two things should be taken into account when interpreting the results regarding HRQoL, illnesses and medicine use. First, part of the differences between low-SES and high-SES participants in HRQoL, illnesses and medicines may be accounted for by the way in which this research was carried out. Since some participants did not fill in both questionnaire (i.e. at baseline and at t1), there were different participants included in the baseline low-SES group than in the t1 low-SES group (the same applies to the high-SES group). Secondly, since no statistical tests could be carried out with regard to HRQoL, illnesses and medicine use, it cannot be determined whether these differences are significant. Because the results did not significantly differ between participants with a different SES, it can be assumed that X-Fittt GLI is a successful program. Equal health outcomes between people with a low and a high SES are important because this contributes to socio-economic health equality. It is recommended that more research will be done into how to design a lifestyle program that leads to equal health outcomes for participants with a different SES.

### **5.2.3 Main effects of SES**

In the current research, a significant difference was found between low-SES and high-SES participants in diastolic blood pressure, but not systolic blood pressure. The results showed that low-SES participants of X-Fittt GLI have a significantly lower diastolic blood pressure than high-SES participants. However, existing literature on the relation between SES and blood pressure is inconclusive. For example, Bartley (2016) states that low-SES people are more likely to experience stress than high-SES people, which leads to a fight-or-flight reaction that includes an increase in blood pressure (Jacobs, 2001). Thus, based on the psycho-social pathway, it would be expected that low-SES participants of X-Fittt GLI have a higher diastolic and systolic blood pressure than high-SES participants. Other studies also found a negative relation between SES and blood pressure (e.g. Grotto, Huerta, & Sharabi, 2008), but on the other hand, there are also studies that did not find an association between SES and blood pressure (e.g. Sodjinou, Agueh, Fayomi, & Delisle, 2008). Thus, the relation between SES and blood pressure is unclear.

The current research also did not lead to conclusive results. Therefore, further research is needed in order to better examine the relation between SES and blood pressure, where a large and randomly selected sample should be used. Furthermore, when blood pressure is self-measured, it needs to be measured multiple times per day and at multiple consecutive days in order to be a reliable estimate of one's true blood pressure, since blood pressure fluctuates during the day (García-Vera & Sanz, 1999). It is important to examine this relationship, because if it turns out that people with a lower SES have a significantly lower or higher blood pressure than people with a higher SES, then measures are needed to reduce these socio-economic health differences.

### **5.3 Interpretation of findings RQ2**

Based on the interview data, three interesting findings can be mentioned, which are described in the following three sub-chapters.

#### ***5.3.1 Importance of the ability to identify and use resources***

First, it was found that there were large differences between individual participants in the amount of stressors and resources and in the balance between stressors and resources. However, this did not seem to be associated with people's ability to successfully deal with stressors. Results showed that participants with a lot more resources than stressors were not better able to deal with stressors than participants with a similar amount of resources and stressors. This indicates that it is not merely about the amount of stressors and resources or the balance between stressors and resources, but also about participant's ability to *identify* and *use* these resources. This is in line with previous research. For example, Super et al. (2015) stated that it is important that people understand the stressor, that they can pinpoint the specific resources that are useful to deal with the stressor, and that they find it meaningful to deal with the stressor. This reflects the different aspects of SOC, namely comprehensibility (understanding the stressor), manageability (pinpointing resources) and meaningfulness (finding it meaningful to deal with the stressor). Meaningfulness can be considered to be the most important aspect, because if people do not find it meaningful to deal with the stressor, this will negatively influence their understanding of the situation, and their ability to pinpoint resources that can be used to deal with the situation (Super et al., 2015). Higher perceived meaningfulness, comprehensibility and manageability indicate a stronger SOC (Lindstrom & Eriksson, 2005).

#### ***5.3.2 Differences in the strength of ones SOC***

Participants differed in the strength of their SOC, thus the extent to which they perceive their life to be comprehensible, manageable and meaningful. When a person has a strong SOC, that person is more able to use available resources in order to deal with stressors (Mittelmark & Bauer, 2017). Therefore, people with a strong SOC may benefit more from a program such as X-Fittt GLI than people with a low SOC. For example, when a person is tempted by unhealthy food, a strong SOC can help that person to pinpoint resources that can help to resist temptation (e.g. goal orientedness). It is important to increase people's SOC, because this may increase the benefits that they get from participating in a lifestyle program, which in turn will be beneficial for their health. However, this is difficult, because it is still unclear whether one's SOC remains flexible during their life time. Honkinen et al. (2008) proposed that SOC is relatively stabilized before the age of 15, whereas other research showed that SOC increases during adulthood, irrespective of age (Feldt et al., 2010). Before interventions can be created that aim to increase people's SOC, it needs to be clear to what extent SOC is flexible later in life. If it is true that a person's SOC is largely stabilized before the age of 15, then interventions that only allow adults to participate are not suitable for influencing the SOC of its participants. Since only people over the age of 18 can participate in X-Fittt GLI, this may have important consequences. Therefore, more research is needed into the extent to which SOC remains flexible during adulthood.

### ***5.3.3 Interrelations between concepts from salutogenic model***

Thirdly, it was noticed that the different concepts from the salutogenic model are very closely related to each other. It is difficult to treat them as separate concepts because they tend to have a large overlap with one or more other concepts. This can be noticed from the previous two paragraphs, which showed, for example, that resources (GRR's) are closely related to SOC, because resources provide people with life experiences, which in turn reinforce one's SOC (Mittelmark & Bauer, 2017). However, the relation between resources and SOC can also be the other way around, since a person with a strong SOC often has more resources available and is therefore more likely to mobilize these resources (Read, Aunola, Feldt, Leinonen, & Ruoppila, 2005). SOC, in turn, has a positive relation to health (Read et al., 2005). Interrelations were also found within a single concept. For example, there are interrelations between the three different components of SOC (Feldt & Rasku, 1998). Because of these interrelations between concepts and even within a single concept, it is very complicated to design an intervention based on the salutogenic model. It can be recommended that intervention designers take into account these interrelations between concepts when creating an intervention.

### **5.4 Strengths and limitations**

There are some limitations that should be kept in mind when interpreting the results. First, only a limited number of interviews were held because not many participants responded to the invitation to participate in the interview. One possible explanation for this could be that many participants have previously participated in another X-Fittt program, where they have also participated in a study. This may have negatively influenced their willingness to participate in the current research. Furthermore, since participants were recruited based on free will, participants with strong opinions about X-Fittt GLI may be more likely to sign up for the interview. This so-called self-selection bias will lead to biased data, since those who choose to participate in the interview may not represent the whole group of X-Fittt GLI participants (Heckman, 2010). For these reasons, the qualitative results must be interpreted with caution. They may not accurately reflect the X-Fittt GLI sample, because the people who participated in the interviews may differ in some way from the people who did not participate in the interview.

Secondly, there was a relatively large amount of missing data for the physical measurements. Both at baseline and t1, there were one or more missing values for at least 50% of the participants. This may reduce statistical power, however, since the missing data can be considered at random (as the most common causes were people being absent during measurements or having had the measures in another month), this did not affect the representativeness of the sample. Furthermore, the physical measurements were taken by different persons, because each X-Fittt GLI group had their own lifestyle coach. Different persons may use slightly different measurement approaches (e.g. rounding off to a different amount of decimals, different positioning of the cuff when measuring blood pressure). As a result, measurements may not be consistent, which negatively affects the reliability of the results regarding the physical measurements.

A third limitation is that this research did not use investigator triangulation. The interview data was coded by only one researcher. Even though every interview was coded twice, there may still be a bias because the researcher's personal interpretations could have influenced the way in which the interviews were coded. This can be prevented when multiple researchers code the data and compare their results, but due to time constraints this was not possible for the current research.

Lastly, SES was defined using only one indicator, namely education. Analyzing the data using more than one SES indicator would provide more insight because then it is possible to see whether results differ between different SES indicators. However, it was not possible in this research to define SES based on occupation or income, because the pre-made questionnaire only included household income (which does not say anything about personal income) and did not include a question about occupation. Furthermore, the educational categories that were chosen to represent the low-SES and high-SES group were different from the categories that are most commonly used. In this research, participants who have the highest diploma at MBO, HAVO or VWO level were considered to have a low SES, however, Dutch institutions generally classify people with these education levels as having a medium SES (e.g. RIVM, 2018b). This negatively impacts the comparability of this research to existing research and possibly also future research. Furthermore, this difference in definitions could be a reason why no significant interaction effects were found, since this research actually compared medium-SES people to high-SES people rather than low-SES people to high-SES people.

However, besides these limitations, this research also has several strengths. First, the sample for the quantitative part of the research (i.e. questionnaires and physical measurements) has a high representativeness for the whole group of X-Fittt GLI participants. Out of the 57 people who started the program in September 2019, 53 people participated in the quantitative part of this research, which is a relatively high share. Therefore, representativeness of the sample is high.

Secondly, this research used methodological triangulation since it combined quantitative and qualitative research methods. This leads to a more complete understanding of differences in health effects of X-Fittt GLI between low-SES and high-SES participants. Besides, combining quantitative and qualitative research enhances the validity and reliability of the results. Being able to compare quantitative and qualitative results to examine differences and similarities may lead to new insights.

A third strength of this research is that the analysis of the interviews was based on a combination of a bottom-up and a top-down approach. Creating theory-based codes in advance and also being able to create new codes during the coding process, allows the researcher to not only test whether a certain theory or model fits the data, but also to further explore the data. This way, other interesting information may be found, that can lead to new research questions. For example, in this research, it was found that the inductive code "sense of responsibility" may be associated with the salutogenic model. This may encourage future research into how sense of responsibility is related to the concepts from the salutogenic model.

## 6. Conclusion

There were no significant differences between low-SES and high-SES participants with regard to the short-term physical health outcomes of X-Fittt GLI. Further quantitative results showed that there is an indication that low-SES and high-SES participants of X-Fittt GLI have developed differently on HRQoL, having illnesses, and medicine use. However, since no statistical tests were done regarding these variables, it is unclear whether this difference is significant. The fact that low-SES participants made similar health improvements during the program than high-SES participants, may make X-Fittt GLI a successful program since it supports socio-economic health equality. Qualitative results showed that there were differences between individual participants, irrespective of their SES, regarding (1) the amount of stressors and resources, (2) their sense of responsibility, and (3) the strength of their SOC. In the future, a long-term study should be done in order to examine whether there would be significant differences between low-SES and high-SES participants of X-Fittt GLI in the long term.

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# Appendix I: Questionnaire

## Toestemmingsverklaring

voor deelname aan het wetenschappelijk onderzoek van Wageningen Universiteit  
*programma X-Fittt*

- Ik weet waar het onderzoek over gaat. Ik heb vragen mogen stellen over het onderzoek.
- Ik weet dat mijn naam en alles wat ik zeg **vertrouwelijk** behandeld wordt. Over mij wordt geschreven, maar mijn naam komt er niet bij te staan.
- Ik vind het goed om mee te doen met:
  1. Invullen vragenlijst aan het begin van X-Fittt
  2. Invullen vragenlijst na 12 weken X-Fittt
  3. Groepsgesprek na 12 weken X-Fittt (na de laatste les)
  4. Invullen vragenlijst na 1 jaar
  5. Individueel interview na 1 jaar
  6. Gebruik van gegevens van de fysiotherapeut voor onderzoeksdoeleinden, zoals lengte, gewicht en bloeddruk.
  7. Gebruik van gegevens van de leefstijlcoach voor onderzoeksdoeleinden, zoals over uw werk en hoe vaak u sport.
- Als ik niet meer mee wil doen, dan kan dat altijd. Ik kan dit zeggen aan de onderzoeker. Ik hoef niet te zeggen waarom ik niet meer mee wil doen.

Mijn naam: .....

Mijn handtekening: .....

Datum:.....

# Vragenlijst 1

## Vraag 1. Kunt u goed lopen?

- Ja, ik kan goed lopen
- Soms kan ik goed lopen en soms kan ik niet goed lopen
- Nee, ik kan niet goed lopen

## Vraag 2. Kunt u uzelf wassen of aankleden?

- Ja, ik kan mezelf goed wassen of aankleden
- Ik kan mezelf soms goed wassen of aankleden en soms niet zo goed
- Nee, ik kan mezelf (bijna) niet wassen of aankleden

## Vraag 3. Kunt u uw dagelijkse activiteiten (zoals werk, huishouden en gezin, vrije tijd) goed doen?

- Ja, ik kan mijn dagelijkse activiteiten goed doen
- Ik kan mijn dagelijkse activiteiten soms goed doen en soms niet
- Nee, ik kan mijn dagelijkse activiteiten (bijna) niet doen

## Vraag 4. Heeft u pijn aan uw lichaam of andere klachten?

- Nee, ik heb geen pijn of andere klachten
- Soms heb ik pijn of andere klachten en soms niet
- Ja, ik heb veel pijn of andere klachten

## Vraag 5. Bent u angstig of somber?

- Nee, ik ben niet angstig of somber
- Ik ben soms angstig of somber en soms niet
- Ja, ik ben vaak angstig of somber

## Vraag 6. Hoe gezond voelt u zich VANDAAG?



0

1

2

3

4

5

6

7

8

9

10

Heel erg  
ziek



Heel erg  
gezond

**Vraag 7. Welke ziektes had of heeft u?**

- Hoge bloeddruk
- Erge hoofdpijn of migraine
- Astma of COPD
- Duizeligheid
- Urineverlies
- Suikerziekte / Diabetes
- Hersenbloeding, beroerte of herseninfarct
- Problemen met bloedvaten van de buik of benen, zoals vernauwing
- Hartaanval
- Andere hartproblemen dan een hartaanval
- Kanker
- Pijn in de gewrichten van heupen of knieën (slijtage/ artrose)
- Reuma / Chronische gewrichtsontsteking
- Erge pijn in de nek of schouder
- Erge pijn in de elleboog, pols of hand
- Iets anders, namelijk \_\_\_\_\_
- Geen

**Vraag 8. Welke medicijnen gebruikt u? Vul ook paracetamol, ibuprofen en aspirine in.**

**Vul hieronder de naam van het medicijn in. Vul ook in hoeveel u van dat medicijn neemt.**

<u>Naam medicijn</u>	<u>Hoeveelheid per dag</u>
.....	.....
.....	.....
.....	.....
.....	.....
.....	.....
.....	.....
.....	.....
.....	.....
.....	.....
.....	.....

**Vraag 9. Hoeveel pillen slikt u in totaal per dag?**

*Tel ook paracetamol, ibuprofen en aspirine mee.*

\_\_\_\_\_ pil(len)

**Vraag 10. Komt u wel eens bij een praktijkondersteuner/ diabetesverpleegkundige?**

*Bijvoorbeeld voor controle van suikerziekte of hart- en vaatziekten.*

- Ja, daar kom ik wel eens
- Nee, daar kom ik niet → ga verder naar vraag 12

**Vraag 11. Wanneer was u voor het laatst voor uzelf bij een praktijkondersteuner/diabetesverpleegkundige?**

- Afgelopen 3 maanden → \_\_\_\_\_ keer
- 3 maanden tot 1 jaar geleden
- Meer dan 1 jaar geleden

**Vraag 12. Komt u wel eens bij de huisarts? Of belt u wel eens met de huisarts?**

**Het vragen van een herhaalrecept telt niet mee.**

- Ja, daar kom ik wel eens of bel ik wel eens mee.
- Nee, daar kom ik niet of bel ik niet mee → ga verder naar vraag 14

**Vraag 13. Wanneer was u voor de laatste keer bij de huisarts?**

- Afgelopen 3 maanden → \_\_\_\_\_ keer
- 3 maanden tot 1 jaar geleden
- Meer dan 1 jaar geleden

**Vraag 14. Komt u ook wel eens bij een andere zorgverleners (niet de huisarts of praktijkondersteuner)?**

*Bijvoorbeeld fysiotherapeut, diëtist, arts in het ziekenhuis.*

- Ja, daar kom ik wel eens
- Nee, daar kom ik niet → ga verder naar vraag 16

**Vraag 15. Bij welke zorgverlener komt u wel eens?**

*U kunt meer dan 1 antwoord kiezen.*

- Bedrijfsarts, dit is een arts via uw werk.
- Arts in het ziekenhuis
- Diëtist (**niet** de intake bij X-Fittt)
- Fysiotherapeut (**niet** de beginmeting van X-Fittt)
- Ergotherapeut
- Oefentherapeut Cesar / Mensendieck
- Thuiszorg (wijkverpleegkundige gezinsverzorging, Alfahulp)
- GGZ / Geestelijke gezondheidszorg, psycholoog, psychiater, POH GGZ
- Maatschappelijk werker / Ouderenadviseur
- Anders, namelijk \_\_\_\_\_



### Vraag 16. Houdt u bij of u genoeg beweegt?

- Nee, ik houd dat niet bij.
  - Ja, ik houd dat bij met...
- (Het aankruisen van meerdere antwoorden is mogelijk)

- Apps op mijn telefoon, namelijk \_\_\_\_\_
- Mijn stappenteller
- Mijn horloge
- Kilometer teller
- Mijn dagboek
- Mijn GPS
- Anders, namelijk \_\_\_\_\_

### Vraag 17. Er zijn verschillende dingen om te doen, zoals werk, school of huishouden.

Vul hieronder in wat u doet in de week en hoeveel uur.

#### Hoeveel uur doet u betaald werk?

	36 uur of meer	25-35 uur	17-24 uur	9-16 uur	1-8 uur	Ik werk niet
Hiermee bedoelen we werk waar u voor betaald wordt, ook werken in een eigen bedrijf						

#### Hoeveel uur doet u vrijwilligerswerk?

	36 uur of meer	25-35 uur	17-24 uur	9-16 uur	1-8 uur	Ik doe geen vrijwilligerswerk
Hiermee bedoelen we bijvoorbeeld helpen in een buurthuis, vereniging, moskee, op school en ander vrijwilligerswerk						

#### Hoeveel uur doet u een opleiding, school, cursus?

	36 uur of meer	25-35 uur	17-24 uur	9-16 uur	1-8 uur	Ik doe geen opleiding

#### Hoeveel uur doet u het huishouden?

	36 uur of meer	25-35 uur	17-24 uur	9-16 uur	1-8 uur	Ik doe niet het huishouden
Hiermee bedoelen we bijvoorbeeld koken, schoonmaken, boodschappen doen, voor kinderen zorgen of in de tuin werken						

### Vraag 18. Wat doet u nog meer in de week?

Vul hieronder in wat u doet in de week en hoe vaak.

#### Hoe vaak sport of beweegt u?

Bijvoorbeeld: voetbal, sportschool, een lang stuk wandelen, een rondje fietsen

Elke dag

Een paar keer per week

1 keer per week

Nooit

Let op: we bedoelen hier **niet** fietsen of lopen naar bijvoorbeeld werk of de supermarkt of hond uitlaten

#### Hoe vaak fietst of loopt u ergens naartoe?

Bijvoorbeeld: fietsen of lopen naar uw werk, de stad of de supermarkt of hond uitlaten

Elke dag

Een paar keer per week

1 keer per week

Nooit

#### Hoe vaak gaat u uit?

Bijvoorbeeld: naar het buurthuis, café, feest, uit eten, bioscoop

Elke dag

Een paar keer per week

1 keer per week

Nooit

#### Hoe vaak doet u ergens anders leuke dingen?

Bijvoorbeeld: winkelen, naar het strand gaan, kerk of moskee bezoeken, naar de speeltuin met (klein)kinderen

Elke dag

Een paar keer per week

1 keer per week

Nooit

#### Hoe vaak doet u thuis leuke dingen?

Bijvoorbeeld: lezen, puzzelen, computerspelletjes doen, knutselen, handwerken

Elke dag

Een paar keer per week

1 keer per week

Nooit

#### Hoe vaak gaat u langs bij familie of vrienden?

Elke dag

Een paar keer per week

1 keer per week

Nooit

#### Hoe vaak komen uw vrienden of familie bij u langs?

Elke dag

Een paar keer per week

1 keer per week

Nooit

#### Hoe praat u via de telefoon of computer met familie, vrienden of andere mensen?

Bijvoorbeeld: bellen, e-mailen, WhatsAppen, sms'en, chatten

Elke dag

Een paar keer per week

1 keer per week

Nooit

**Vraag 19. Rookt u?**

- Ja
- Nee → ga verder naar vraag 21

**Vraag 20. Hoeveel sigaretten rookt u per dag?**

\_\_\_\_\_ sigaretten per dag

**Vraag 21. Drinkt u wel eens alcohol?**

- Ja
- Nee → ga verder naar vraag 23

**Vraag 22. Hoeveel glazen alcohol drinkt u:**

\_\_\_\_\_ per dag

**OF**

\_\_\_\_\_ per week

**OF**

\_\_\_\_\_ per maand

**Vraag 23. Hoe oud bent u?**

\_\_\_\_\_ jaar

**Vraag 24. Wat is uw geslacht?**

- Man
- Vrouw
- Anders

**Vraag 25. In welk land bent u geboren?**

\_\_\_\_\_

**Vraag 26. Als u niet in Nederland bent geboren, hoeveel jaar woont u in Nederland?**

\_\_\_\_\_ jaar

**Vraag 27. Wat voor opleiding heeft u gedaan?**

**We bedoelen dat u de opleiding helemaal heeft afgemaakt met diploma of certificaat.**

- Geen opleiding (Lagere school niet afgemaakt)
- Lagere school (Basisschool, speciaal basisonderwijs)
- Middelbaar of voortgezet onderwijs (VMBO, HAVO, VWO, MBO)
- Hoger beroepsonderwijs (HBO)
- Universiteit
- Anders, namelijk \_\_\_\_\_

**Vraag 28. Met wie woont u?**

- Ik woon alleen
- Ik woon samen met mijn partner/man of vrouw
- Ik woon samen met mijn partner/echtgenoot en mijn kind(eren)
- Ik woon alleen met mijn kind(eren)
- Ik woon met andere familieleden (bijvoorbeeld vader, moeder, broer, zus)
- Ik woon in het huis van mijn kind en zijn/haar gezin
- Anders, namelijk \_\_\_\_\_

**Vraag 29. Wat is het belangrijkste dat u doet op een dag?**

- Vooral betaald werk
- Ik doe het huishouden / ik zorg voor mijn gezin
- Ik werk een paar dagen of paar uur in de week en ik doe het huishouden / ik zorg voor mijn gezin
- Vrijwilligerswerk
- Ik ben met pensioen
- Ik zit in de Ziektewet / WAO
- Ik heb een uitkering
- Anders, namelijk \_\_\_\_\_

**Vraag 30. Wat is het netto maandinkomen van uw huishouden?**

**Netto is het geld dat u elke maand op uw rekening krijgt.**

**Dit geld krijgt u omdat u bijvoorbeeld werkt of door pensioen, uitkeringen of alimentatie.**

- € 1.000,- of minder
- € 1.001,- tot en met € 1.350,-
- € 1.351,- tot en met € 1.800,-
- € 1.801,- of meer
- Wil ik niet zeggen
- Weet ik niet

**Vraag 31. Heeft u een Gelrepas?**

- Ja
- Nee
- Weet ik niet

---

**U bent klaar met de vragenlijst.**

**Bedankt voor uw hulp!**

## Appendix II: Interview guide

**Toestemmingsverklaring** voor deelname aan het wetenschappelijk onderzoek van Wageningen Universiteit. Het doel van het onderzoek is om inzicht te krijgen in de effecten van het programma X-Fittt.

- Ik weet waar het onderzoek over gaat. Ik heb vragen mogen stellen over het onderzoek.
- Ik weet dat het interview word opgenomen, maar dat mijn naam en alles wat ik zeg **vertrouwelijk** behandeld wordt. Over mij wordt geschreven, maar mijn naam komt er niet bij te staan.
- Als ik niet meer mee wil doen, dan kan dat altijd. Ik kan dit zeggen aan de onderzoeker. Ik hoef niet te zeggen waarom ik niet meer mee wil doen.

**Mijn naam:** .....

**Mijn handtekening:** .....

**Datum:**.....

## Benodigdheden

- Toestemmingsverklaring
- Interview guide
- Telefoon om het interview mee op te nemen
- Een powerbank of oplader voor telefoon

## Introductie

Heel erg bedankt dat u mee wilt doen aan het interview. Ik ben Moniek van de universiteit van Wageningen en ik doe onderzoek naar de gezondheidseffecten van X-Fittt GLI. Met uw input kan het programma in de toekomst mogelijk nog effectiever worden in het verbeteren van iemands gezondheid. Daarbij is de context van iemands leven van belang. Daarom ga ik beginnen met wat algemene vragen over uw leven rondom X-Fittt GLI en daarna zal ik vragen stellen met betrekking tot het programma. Het interview zal ongeveer een uur duren dus vertelt u gerust alles wat in u opkomt.

Zoals in de email werd aangegeven zal het gesprek worden opgenomen, maar zal u naam niet in het verslag worden genoemd of worden gedeeld met anderen. Ik heb een toestemmingsformulier meegenomen waarin dit beschreven staat en ik vraag u of u deze wilt doorlezen en ondertekenen.

\*Controleer of het formulier goed is ingevuld en start de opname

### **Thema 1: Algemene informatie**

Doel	Vragen	Concepten
Achtergrond informatie verzamelen	- Kunt u iets over uzelf vertellen? (leeftijd, gezinssamenstelling, werk, woonplaats) - Kunt u uzelf beschrijven als persoon? - Kunt u één sterk punt en één zwak punt van uzelf noemen?	Achtergrondkenmerken
Gezondheid achterhalen	- Hoe gaat het met u? - Hoe gezond voelt u zich? - Wat zou u aan uw gezondheid willen verbeteren? - Heeft u het gevoel dat u zelf verantwoordelijk bent voor uw gezondheid? / Heeft u het gevoel dat u controle heeft over hoe gezond of ongezond u bent?	Health-ease/dis-ease continuum  Life experiences / SOC

### **Thema 2: Stressors en resources in de context**

Doel	Vragen	Concepten
Resources en stressors achterhalen in de context van het leven (dus buiten X-Fittt GLI)	- Wat maakt u echt gelukkig? - Als u tijd voor uzelf heeft, wat doet u dan graag? - Als u iets aan u leven kon veranderen, wat zou dat dan zijn?	GRR's  Stressors / GRR's

Resources en stressors achterhalen in de context van het leven (dus buiten X-Fittt GLI)	<ul style="list-style-type: none"> <li>- Kunt u vertellen over een doel die u op dit moment in uw leven heeft? Dit mag van alles zijn.</li> <li>- Heeft u het gevoel dat u dit doel gaat behalen?</li> <li>- Welke dingen kunnen u helpen om dat doel te behalen?</li> <li>- Heeft u nog andere doelen in u leven op dit moment? (zo ja, herhaal vorige 2 vragen)</li> </ul>	GRR's / stressors / life experiences / SOC
	<ul style="list-style-type: none"> <li>- Kunt u vertellen over een doel dat u in het verleden had? Het maakt niet uit of u dat doel wel of niet heeft behaald.</li> <li>- Heeft u dit doel behaald?</li> <li>- Welke dingen hebben u geholpen om dit doel te behalen? / Waarom denkt u dat u het doel niet heeft behaald?</li> </ul>	GRR's / stressors / life experiences / SOC
	<ul style="list-style-type: none"> <li>- Heeft u wel eens een vervelende of moeilijke gebeurtenis / situatie meegemaakt in uw leven?</li> <li>- Hoe bent u hiermee om gegaan?</li> </ul>	Stressors / life experiences GRR's / SOC
	<ul style="list-style-type: none"> <li>- Ervaart u in het dagelijks leven stress?</li> <li>- Kunt u hier voorbeelden van geven?</li> <li>- Hoe bent u hier mee om gegaan?</li> <li>- Heeft u het gevoel dat u controle heeft over wat er gebeurt in uw leven?</li> </ul>	Stressors / life experiences GRR's / SOC Life experiences

### Thema 3: X-Fittt GLI

Doel	Vragen	Concepten
Sociale omgeving achterhalen	<ul style="list-style-type: none"> <li>- Waarom doet u mee aan X-Fittt GLI? / Hoe bent u terecht gekomen bij X-Fittt GLI?</li> <li>- Sporten uw vrienden en familie ook?</li> <li>- Heeft u het wel eens met hen over het sporten?</li> <li>- Gaat u wel eens samen met vrienden of familie sporten?</li> <li>- Waarom wel/niet?</li> </ul>	GRR's / stressors  Sociale context
Stressors (en resources) achterhalen gerelateerd aan X-Fittt GLI	<ul style="list-style-type: none"> <li>- Wat is uw slechtste ervaring tot nu toe met X-Fittt GLI? / Waar liep u tegen aan tijdens uw deelname aan X-Fittt GLI?</li> <li>- Hoe bent u daarmee om gegaan?</li> <li>- Zijn er nog andere dingen waar u tegen aan bent gelopen? (zo ja, herhaal vorige vraag)</li> </ul>	Stressors / life experiences  GRR's / SOC Stressors / life experiences



	<ul style="list-style-type: none"> <li>- Wat heeft u geholpen om het programma vol te houden?</li> <li>- Heeft u wel eens negatieve emoties ervaren tijdens het programma?</li> <li>- Waarom heeft u die emoties ervaren?</li> </ul>	<p>GRR's / SOC</p> <p>Stressors</p>
Resources achterhalen gerelateerd aan X-Fittt GLI	<ul style="list-style-type: none"> <li>- Wat is uw leukste ervaring tot nu toe met X-Fittt GLI?</li> <li>- Wat ging er goed tijdens het programma?</li> <li>- Heeft u wel eens positieve emoties ervaren tijdens het programma?</li> <li>- Waarom heeft u die emoties ervaren?</li> </ul>	<p>GRR's / life experiences / SOC</p>
Te weten komen in hoeverre de deelnemer alles uit het programma heeft gehaald	<ul style="list-style-type: none"> <li>- In hoeverre heeft u het gevoel dat u alles uit X-Fittt GLI heeft gehaald tot nu toe?</li> <li>- Op welk punt had u meer uit het programma kunnen halen?</li> <li>- Waarom heeft u er op dat punt niet alles uit kunnen halen?</li> <li>- Welke dingen heeft het programma u gebracht?</li> </ul>	<p>Life experiences / SOC</p> <p>Stressors / life experiences / SOC</p> <p>GRR's</p>

#### **Thema 4: Toekomst**

<b>Doel</b>	<b>Vragen</b>	<b>Concepten</b>
Toekomstplannen achterhalen en eventuele veranderingen in aanpak	<ul style="list-style-type: none"> <li>- Denkt u dat u in de toekomst nog een keer mee gaat doen met X-Fittt GLI?</li> <li>- Waarom? / Waarom niet?</li> <li>- Zou u dingen anders aanpakken als u nog een keer mee zou doen?</li> <li>- Welke dingen zou u anders aanpakken?</li> <li>- Waarom zou u deze dingen anders aanpakken?</li> <li>- Denkt u dat u in de toekomst zelf een gezonde leefstijl zou kunnen volhouden zonder hulp van het programma?</li> <li>- Waarom? / Waarom niet?</li> <li>- Hoe zou u ervoor kunnen zorgen dat u het makkelijker vol kan houden?</li> </ul>	<p>GRR's / stressors</p> <p>Life experiences / SOC</p> <p>Life experiences / SOC</p> <p>GRR's / stressors / SOC</p>

#### **Afsluiting**

Dat waren alle vragen. Nogmaals heel erg bedankt voor het interview. Ik kan hier zeker veel nuttige informatie uithalen voor mijn onderzoek.

\*Stop opname

## Appendix III: Final coding list

Table 12: Pre-made codes based on the salutogenic model (deductive codes)

Code	Description
<i>Health-ease / dis-ease continuum</i>	The state of health or disease that participants are in
<i>Individual GRR's</i>	Resources that participants have available in themselves and that they use to deal with stressors
<i>Environmental GRR's</i>	Resources that are available in the environment of participants and that they use to deal with stressors
<i>GRR's related to X-Fittt</i>	Resources that were provided by X-Fittt GLI and that participants use to deal with stressors
<i>Life experiences</i>	Whether participant's life experiences are perceived to be consistent and balanced, and whether they perceive to have high participation in decision making
<i>Sense Of Coherence (SOC)</i>	Whether life is understood as being more or less comprehensible, manageable and meaningful
<i>Individual/environmental stressors</i>	Stressors that are present in the participant him/herself or in the environment of the participant
<i>Stressors X-Fittt</i>	Stressors that participants experience in relation to their participation in X-Fittt GLI

Table 13: Codes that were added during the analysis (inductive codes)

Code	Description
<i>Demographics</i>	Demographics of participant such as age, household composition, job
<i>Leisure</i>	Activities that participants engage in in their free time
<i>Sense of responsibility</i>	To what extent participants feel responsible for their life outcomes
<i>Other programs</i>	Information about weight-loss programs that people have participated in or will participate in as well as previous weight-loss attempts

## Appendix IV: Resources and stressors

Table 14: The environmental, individual, and X-Fittt GLI-related resources that were mentioned by low-SES participant and high-SES participants, along with the number of participants who mentioned each resource

Resources low-SES participants	N	Resources high-SES participants	N
<b>Environmental resources</b>			
Support from family/friends	4	Support from family/friends	4
Support from health care providers	3	Support from health care providers	4
Her dogs (caring for her dogs)	1	Books (reading)	1
Adult coloring books (coloring)	1	Sauna/bath (relaxing)	1
Garden (gardening)	1	TV (watching series)	1
		Nature (going for a walk)	1
		Bike (cycling)	1
		“The Gabriel Method” (an approach to weight loss)	1
<b>Individual resources</b>			
Motivation/discipline	4	Motivation/discipline	4
Stress management (e.g. taking rest after activities)	2	Stress management (e.g. watching series, meditating, taking a bath)	3
Optimism	2	Optimism	1
Tolerance/empathy towards others	2	Tolerance/empathy towards others	1
Not buying unhealthy food	1	Not buying unhealthy food	1
Living for yourself (e.g. knowing your boundaries with regard to others)	1	Living for yourself (e.g. not doing things that you do not like, to impress others)	1
Organizational skills	1	Organizational skills	1
Creativity	2	Spontaneity/sociality	4
Self-confidence	2	Thoroughness (at work)	1
Honesty	1	Reliability	1
Humor	1	French and Spanish language skills	1
Creating structure in daily routine (e.g. exercising at fixed times)	1	Trusting your intuition	1
Openness to new ideas	1		
<b>Resources provided by X-Fittt GLI</b>			
Exercising in groups (e.g. coziness, bonding, everyone at same level)	4	Exercising in groups (e.g. coziness, bonding, everyone at same level)	5
Good guidance (e.g. helpful trainers, quick replies to emails)	4	Good guidance (e.g. helpful trainers, quick replies to emails)	4
Rules of the program (e.g. obligation to be weighed every week)	3	Rules of the program (e.g. obligation to be weighed every week)	5
Good results (e.g. better stamina, lower blood pressure)	3	Good results (e.g. better stamina, lower blood pressure)	5
Nutrition app	3	Nutrition app	2

Sports lessons (e.g. lots of variety, being challenged)	3	Sports lessons (e.g. lots of variety, being challenged)	4
More positive self-image	2	More positive self-image	1
Workshops	1	Workshops	1
Group chat on WhatsApp	1	Group chat on WhatsApp	2
Pride	1	Combination of nutrition and exercise	1
Not being hungry all the time	1	Starting with three months of intensive guidance	1
Relaxation	1		
New week structure/lifestyle	1		

N = number of participants who have mentioned the particular resource

*Table 15: The environmental/individual stressors and X-Fittt GLI-related stressors that were mentioned by low-SES participant and high-SES participants, along with the number of participants who mentioned each stressor*

<b>Stressors low-SES participants</b>	<b>N</b>	<b>Stressors high-SES participants</b>	<b>N</b>
<b>Environmental/individual stressors</b>			
Death of loved ones	2	Death of loved ones	2
Divorce	2	Divorce	1
Illness	3	Illness	2
Being tempted (by unhealthy food)	2	Being tempted (by unhealthy food)	5
Stress	2	Stress	5
Health complaints	3	Health complaints	4
Bad self-image (e.g. insecurity)	1	Bad self-image (e.g. insecurity)	1
Impatience	1	Impatience	1
Not having a job	1	Not having a job	1
Distance to Formupgrade	1	Hot summer	1
Wrong mindset	1	Hearing that other people regained the weight that they lost during X-Fittt	1
Laziness	1	Not dosing your energy properly	1
Too little space/money	1	Not accepting help	1
Time between end of work and beginning of sports lesson	1	Weighing yourself every day	1
		Setting unrealistic targets	1
		Finding it difficult to make contact	1
<b>Stressors related to X-Fittt GLI</b>			
Pain / injury	2	Pain / injury	2
Keeping track of nutrition is difficult (in the beginning)	1	Keeping track of nutrition is difficult (in the beginning)	2
Too little variation in nutrition	1	Too little variation in nutrition	2
Exercising is difficult (in the beginning)	1	Exercising is difficult (in the beginning)	1
Bad communication between people within Formupgrade	2	Bad communication between people within Formupgrade	1

Group members who lack motivation/discipline	2	Too many non-relevant messages in the group chat	1
Feedback on nutrition lists very curtly + unknown who gave feedback	2	Being obliged to participate in the five kilometer run	1
Workshops given during worktime	1	Length of workshops differs between different groups	1
Being the slowest of the group	1	Workshops do not add anything	1
Feeling vulnerable (because exercising brings up emotions)	1	Too little personal guidance	1
		Group chat can be confronting if you have a bad week	1
		Not feeling understood	1

N = number of participants who have mentioned the particular stressor