UNIVERSITÉ DE FRIBOURG
UNIVERSITÄT FREIBURG

University of Fribourg
Faculty of Management, Economics and Social Sciences
Department of Management Sciences
Studies: M.A. in Marketing

Master Thesis

Understanding sport participation among university students :

A fuzzy-set comparative analysis of barriers and motivators

Deposed by

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In fulfilment of the requirements for the degree of Master of Arts (M.A.)

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Period of processing

01.03.2025 – 27.08.2025

Place, Date of impression

Neuchâtel, August 27th 2025

Acknowledgements

Many people supported me throughout the writing of this thesis, and I couldn't have completed it without them.

First, I want to sincerely thank my supervisor, Professor Dr. Olivier Furrer, for his support, availability, and helpful advice during the entire process.

I'm also really grateful to Chloé Baillod for her help and for the many hours she spent assisting me with this work.

A big thank you as well to everyone who trusted me and took the time to answer my questionnaire.

Finally, I would like to thank my family, my girlfriend Laura, as well as Danielle and JJ for always being there, supporting me through this project, and helping with the proofreading.

Summary

This Master thesis explores the following research question: *What sets of motivators and barriers lead to high or low participation in sport among university students?*
While previous studies have mainly focused on individual factors taken separately, this work adopts a configurational approach to better understand how different conditions combine to influence sport participation.
To answer this question, the fuzzy-set Qualitative Comparative Analysis (fsQCA) method was applied to a sample of 249 university students from Switzerland and abroad. Both necessity and sufficiency analyses were used on the total sample, as well as by gender.

The results reveal that sport participation is primarily explained by the presence of intrapersonal motivators such as *staying physically fit*, *having fun*, *maintaining overall health*, *improving skills,* and *restoring mental energy* combined with the absence of structural and psychological barriers such as *lack of time*, *academic pressure*, and *lack of motivation*. On the other hand, non-participation is associated with the presence of barriers and the absence of specific key motivators, such as *enjoyment* or *skill development*.

Gender-based analysis reveals distinct patterns: for sport participation, female students require the absence of several barriers to engage in sport, particularly social pressures such as *fear of judgment* and *lack of confidence*. In contrast, male students are more driven by competence and enjoyment-related motivators and are not impacted by structural constraints.
For sport non-participation, configurations among female students highlight the combined effect of structural constraints (academic overload) and the absence of key motivators. Among male students, non-participation is mainly explained by the accumulation of structural barriers, while social factors like *lack of partners* appear less influential.

From a theoretical point of view, this work contributes to the literature in social marketing and behavior by applying the fsQCA method. The exploration of condition configurations offers a more nuanced understanding of the complexity behind individual decision-making processes.
In practical terms, the results provide useful insights for promoting sport in different settings, whether at universities or by public authorities. Simply removing barriers is not enough, it also requires better communication about what makes sport enjoyable, like having fun or improving skills. It is also important to consider gender differences to make actions more effective.

Table of contents

Table of Figures

Table of Tables

Introduction

Student life represents a period of major transition, marked by changes in both social relationships and personal responsibilities. When starting university, students find themselves in a completely new environment where they have to adjust to academic expectations while also getting to know new people and building new social connections (Boyer et al., 2001). This shift into university life often comes with an increased workload, which can disrupt existing routines, including those related to sport and physical activity.

Sport plays a central role in maintaining health and supporting a balanced lifestyle but it fulfills several other important functions due to its significant contribution to society (Pène et al., 2009). First, sport is obviously a factor of health by preventing diseases, illnesses and addictions but it also plays a role of social integration. The sporting environment contributes to promoting gender equality and the inclusion of people with disabilities, both into the world of sport and society, while also encouraging a spirit of solidarity. Moreover, sport carries strong cultural significance, often reflecting the values and identity of a region or country. It also plays an important integrative role for children and adolescents by teaching key values such as teamwork, discipline, and respect for others. Finally, sport supports the maintenance of physical fitness, helping to counteract the natural effects of aging on the body.

Currently, four out of five adolescents worldwide do not meet the recommended levels of physical activity (World Health Organization: WHO, 2019). Estimates suggest that 4 to 5 million deaths could be avoided each year simply by increasing levels of physical activity across the global population. This alarming situation reflects broader societal shifts, including increasingly sedentary lifestyles, greater reliance on technology in both professional and domestic settings, and evolving cultural values that may deprioritize physical activity. In an initiative to promote sport, Martinez et al. (2024) clearly highlight the importance of reaching the “Healthy People 2030 Youth Sports Participation Target.” According to their findings, achieving this goal would lead to a significant reduction in both physical and mental health issues among young people.

In this context, promoting sport has never been more essential. Social marketing plays a key role in this effort by encouraging individuals to reconnect with physical activity and adopt more active lifestyles.

Importance and Relevance of Study

The motivators and barriers to sport participation among university students have been widely studied, leading to the identification of various factors that influence their level of engagement in physical activity. However, these studies tend to examine motivators and barriers in isolation, focusing on individual factors rather than exploring how multiple elements interact to influence students' decisions. My study aims to address this gap by analyzing the combination of factors that shape sport participation, thereby offering a more comprehensive and realistic understanding of students' choices in this area.

Research Question and Objectives

In this Master thesis, the focus lies on identifying the configurations of factors that influence sport participation, with particular attention to the following research question:

"What configurations of motivators (levers) and barriers (brakes) lead to high or low participation in sport among university students?"

The analysis explores different groups of factors to determine which combinations are associated with variations in the outcome variable, namely the level of sport participation.

Academic and Managerial Contributions

From an academic perspective, this study is part of the research on consumer behavior and social marketing applied to sport. It should enhance the understanding of how different combinations of factors influence sports participation by applying an innovative qualitative comparative approach (fsQCA). This technique enables a more realistic understanding of the decision-making process involving multiple factors.

From a managerial view, the study and the results may be of interest to universities, sports departments or sports organizations to better understand the reasons for sport and to adapt their communication. They could help better align sports programs with students' true motivations, thereby encouraging greater participation.

Method Used

The method used in this study is the fuzzy-set Qualitative Comparative Analysis (fsQCA), firstly presented by Charles Ragin in 1987 in his book "The comparative Method" (Rihoux et

al., 2015). This approach makes it possible to identify and interpret the different configurations of conditions that lead to either participation or non-participation in sport. The items were collected using an online questionnaire, in which respondents rated various motivators and barriers to their participation in sport on a 7-point Likert scale. The data analysis is divided into two sections: one focusing on the total population and the other based on gender. In both cases, the same analytical procedures were applied, including descriptive statistics, analysis of necessary conditions, and sufficiency analysis.

Structure of the Document

This study is structured into six distinct sections. The introduction emphasizes the importance of sport on physical, mental, and social levels, outlines the relevance of this study and the gap it aims to address, presents the research question, and defines its academic and managerial contributions. Then, the literature review explores essential concepts from the fields of sport, marketing, and behavior, and provides an overview of the main motivators and barriers to sport participation as identified in the academic literature. Thirdly, the methodology section outlines the procedures used for data collection and analysis, and explains the technical aspects of the fsQCA method applied in this study. Immediately following this section is the analysis results section. They are presented through tables that display the necessary conditions and summarize the different configurations identified. Next, the discussion section offers an interpretation of the results and compares them with existing literature. It also highlights the academic and managerial contributions of the study. Finally, the conclusion provides a brief summary of the key findings, outlines the study's limitations, and suggests directions for future research in this field.

Sport Participation: Definitions and Impacts

Definition of Physical Activity and Sport

Researches tried to define physical activity and many definitions emerged over the years. One of the most common and cited is the definition by Caspersen et al. (1985, p.126), which is "any bodily movement produced by skeletal muscles that results in energy expenditure". According to the WHO (2024), physical activity encompasses all forms of mobility, whether performed at work, during leisure time, for transportation, or in a domestic setting. Sport is part of the field of physical activity, but is distinguished by its rules. My work specifically focuses on the practice of sport rather than on physical activity in general. Sport can be defined as "all forms

of physical activity which, through casual or organized participation, are aimed at maintaining or improving physical fitness and mental well-being, forming social relationships or obtaining results in competition at all levels" (Revised European Sports Charter, 2021, p.12).

Importance of Sport Participation

Sports participation and physical activity is a key component of a healthy life, and especially for students who are confronted with stress and a new environment. Engaging in sporting activities tends to be more deeply rooted in individuals who begin during their teenage years. However, it is important to note that this habit can also be developed later in life (Bailey et al., 2008). Since sport is a specific form of physical activity, it offers the same benefits associated with physical activity in general. However, because sport often involves greater intensity and physical effort, its positive effects on health, well-being, and performance are likely to be even more pronounced.

Physical and Mental Health

Sport plays an essential role in maintaining both fitness and overall health. According to the WHO (WHO, 2024, p.1), "physical activity contributes to the prevention and management of noncommunicable diseases such as cardiovascular disease, cancer, and diabetes, and reduces symptoms of depression and anxiety". This statement is supported by US Physical Activity Guidelines Advisory Committee, showing that moderate physical activity reduces the risk of coronary heart disease by approximately 20%, while more intense activity lowers the risk by over 30%. These effects appear to be even more pronounced in women compared to men (as cited in Jakovljevic & Djordjevic, 2017). With regard to bone mass, regular physical activity increases bone density, particularly during adolescence. Activities that involve repeated impact help strengthen bones and lower the risk of stress fractures (Le Goux, 2014).

The field of oncology also benefits from sport participation, as regular physical activity helps reduce the risk of developing cancer according to Luo et al. (2019). More specifically, the risk of breast cancer and gynecologic cancers can be reduced through regular and long-term sport participation. In addition, physical activity contributes to the improvement of respiratory muscle function and helps to maintain adequate bone mass to prevent fragility (Pène et al., 2009).

Mental health is a growing concern across various domains and is especially relevant for the student population in higher education. There are two approaches to analyzing the benefits of sport on mental health: one focuses on the short-term effects of a single sports session, without considering physical condition, while the other examines the long-term effects of regular physical activity, taking into account improvements in overall fitness (Poirel, 2017).
Short term benefits after one sport session include the reduction of anxiety working as a anxiolytic medication, and the effects on mood, depression symptoms, hope, guilt and self-efficacy. Albert Bandura defines self-efficacy as "people's judgements of their capabilities to organise and execute courses of action required to attain designated types of performances" (as cited in Waddington, 2023, p.237). He also adds that it also reflects the level of effort and perseverance an individual is willing to invest in order to reach a goal.

Sport also stimulates the release of endorphins, which are responsible for the sensation of well-being often experienced during physical activity (University of Fribourg). These natural chemicals promote relaxation and are effective in reducing anxiety. For students, engaging in sport can help alleviate stress during the semester, particularly during exam periods, and provides a valuable way to unwind and decompress.

Social Connection and Belonging

Sport participation plays a significant role in enhancing students' social dimension and overall university experience. It really fosters social cohesion between students in the university (Lower et al., 2013). Students tend to identify more with team sports, or at least those practiced in a club setting which can be partly attributed to the availability of sports equipment. In fact, equipment linked to a club or organization helps foster social bonds, group cohesion, and serves as a source of motivation. Chen et al. (2010) suggest that peer influence and friendships are not just a side effect of sport but may in fact be fundamental to the benefits that sport provides. The study also highlights the potential of sport to serve as a valuable context for the development of new interpersonal relationships.

Sport also acts as a safeguard against future social isolation and plays an important role in supporting social integration (Eime et al., 2013). More about the benefits of sport in childhood has been revealed, including the development of social skills such as cooperation, sportsmanship, and teamwork.

Academic Performance and Cognitive Benefits

Cognitive functions are positively affected by sport, a result partly explained by the increased blood flow to the brain (Coalter, 2005). Additionally, sport has been associated with a significant reduction in disruptive behaviors. Both short-term and long-term participation in sports have been linked to modest improvements in cognitive abilities, including memory, reaction time, perception, and reasoning.

Defining Social Marketing and its Role in Sport

Definition

Through the years, social marketing definitions have evolved and have been refined to be more precise and relevant. In the early 1990s, Andreasen (1994, p.110) offered a foundational definition of social marketing, describing it as "the adaptation of commercial marketing technologies to programs designed to influence the voluntary behavior of target audiences to improve their personal welfare and that of the society of which they are a part." This definition emphasizes the central role of behavioral change aimed at promoting both individual and collective well-being. Although Andreasen considered behavior change to be the primary goal or the "bottom line" of social marketing, he also emphasized that social marketing goes beyond simply modifying existing behaviors. It may also involve influencing behavior or preventing undesirable behaviors from emerging in the first place. Another important aspect of social marketing is that it focuses on voluntary behavior, meaning people are free to make their own choices and are not forced into change. Other definitions can be identify such as "Social marketing seeks to develop and integrate marketing concepts with other approaches to influence behaviors that benefits individuals and communities for the greater social good" (iSMA, 2013, as cited in Lee and Kotler, 2015, p.9) or "Social marketing is the activity and processes for understanding, creating, communicating, and delivering a unique and innovative solution to contribute to societal well-being" (Sharyn Rundle-Thiele, 2014, as cited in Lee and Kotler, 2015, p.10).

It can be observed that all of these definitions share a number of recurrent elements that support the idea of social marketing and define the structure of the discipline (Lee and Kotler, 2015). The goal is to influence behavior by applying marketing tools and theories through a structured plan, targeting a specific group in order to deliver meaningful value to both the target population and the society.

In order to set up a social marketing strategy, the "4Ps" with price, place, product and promotion can be used to implement a plan as in commercial marketing. More recently, people, physical evidence and process have been added to this theory and are also pertinent to social marketing (The 7Ps Of Marketing, 2023). According to Lee and Kotler, there are several ways to influence behavior, such as adopting a positive behavior, avoiding an unwanted one, adjusting an existing behavior, giving up a problematic habit, maintaining a targeted behavior, or replacing one behavior with another. Before putting any plan into action, it is crucial to clearly define the specific behavioral objective to be achieved.

Differences with Commercial Marketing

Commercial marketing primarily focuses on generating profit by promoting and selling products or services to meet consumer needs and wants (Lee and Kotler, 2015). In contrast, social marketing aims to influence behaviors that benefit individuals and society, prioritizing positive social outcomes over financial gain.

The selection of target audiences differs notably between commercial and social marketing. In commercial marketing, audiences are typically chosen based on their potential to generate revenue, focusing on consumer segments most likely to purchase products or services. In contrast, social marketing identifies target audiences according to predefined criteria aiming to promote well-being within these groups.

Relevance in Sport Promotion

As seen before, sport and physical activity are a key element of a healthy life but not only. States and all political bodies also have a selfish interest in promoting sport from a financial point of view. Indeed, the indirect effects of sport have a major influence on the healthcare system and related costs. The impacts extend beyond individual benefits to include positive effects at the societal level as well. In the USA, physical inactivity is estimated to account for 0.4% to 4.6% of total national health system costs, and if each time 1% more of the population follows the WHO's physical activity guidelines, it could lead to a saving of around 0.4% in healthcare costs. (Duijvestijn et al., 2023). Other studies have also highlighted a reduction in healthcare costs when previously inactive segments of the population became physically active. According to Martinez et al. (2024), increasing sport participation from 50.7% to 63.3% among young people by 2030 is a key priority, as this small difference brings considerable benefits in terms of both health outcomes and economic impact. If this goal is achieved, it could lead to direct positive outcomes, including a reduction of approximately 1.71 million cases of

overweight and obesity, 352’000 fewer cases of chronic illnesses related to overweight and obesity (e.g. type 2 diabetes, coronary heart disease, cancer) and direct positive effect on depression/anxiety symptoms. Achieving this goal would lead to a reduction of $22.55 billion in direct medical costs related to physical health and $3.61 billion in costs related to mental health. In addition, an estimated $53.81 billion in productivity losses could be avoided, half attributed to physical health and half to mental health. Martinez and his colleagues estimate that if the current youth population aged 6 to 17 meets this target, their generation could collectively save approximately $80 billion during their lifetime. Although improved health and living conditions may lead to higher costs over a longer lifetime, the overall net outcome remains positive and clearly advantageous.

Social marketing plays a key role in strengthening prevention programs by encouraging specific behaviors within target populations. It has demonstrated a tangible impact in various areas, including the promotion of healthy eating, increased physical activity, and the reduction of harmful product consumption, such as tobacco or alcohol (Raffin, 2013) (Gordon et al., 2006). Marketing tools are particularly well adapted to sport promotion, and among the different elements of the marketing mix, the “promotion” dimension is considered the most influential in this context (Ebrahimipour et al., 2021). Social marketing has demonstrated its effectiveness and relevance in promoting sport. Applying marketing techniques to enhance visibility is essential, as it can positively influence behavior for the benefit of both individuals and society (Kargün, 2015).

Related Behavioral Theories

Self-Determination Theory

The Self-Determination Theory (SDT), as developed by Ryan and Deci (2000a), provides a framework for understanding motivation and the psychological factors that influence sports participation. The study highlights that “Human beings can be proactive and engaged or, alternatively, passive and alienated, largely as a function of the social conditions in which they develop and function” (Ryan and Deci, 2000a, p.68). The SDT consists of six mini-theories that provide its foundation and explain how the three fundamental psychological needs, autonomy, competence and relatedness, are fulfilled (Ryan & Deci, 2017 as cited in Tenenbaum & Eklund, 2002).

First, autonomy is defined as “the need to experience activities as self-endorsed and purposefully enacted”, highlighting the importance of feeling free to make one's own choices (Ryan & Deci, 2017 as cited in Tenenbaum & Eklund, 2002, p.38). Competence is described as “the need to interact effectively within the environment” and relatedness as “the need to feel close, connected, and cared for by important others” (Ryan & Deci, 2017 as cited in Tenenbaum & Eklund, 2002, p.38).

Overall, individuals tend to be more effective when their motivation is autonomous rather than externally controlled. Motivation is typically classified into two distinct types: intrinsic motivation which is related to personal satisfaction and inherent interest in an activity, and extrinsic motivation which is influenced by external rewards or pressures such as incentives, or social expectations (Ryan & Deci, 2000b). Understanding these different types of motivation provides valuable insight into the underlying reasons that drive individuals to participate in sports, helping to distinguish between self-driven engagement and externally influenced involvement. The third state of the motivation world is the amotivation which refers to a lack of intention, motivation, or willingness to engage in an activity (Ryan and Deci, 2000a). These notions will be defined more precisely in an upcoming section. Finally, motivation is also significantly enhanced in the sports domain when these psychological needs are satisfied. Here are some key insights from mini-theories related to sport.

The Cognitive Evaluation Theory explains that individuals often begin sport initially due to intrinsic motivation, as they find enjoyment and a sense of fun from the activity. This motivation can be influenced by external factors such as the environment, coaches, and teammates, who can either boost it by meeting the needs for competence and autonomy or reduce it by creating situations that block or frustrate those needs. Positive feedback enhances motivation by reinforcing individuals’ sense of competence and making them feel that their efforts are effective and valued. In addition, giving individuals the opportunity to make choices supports their sense of autonomy and fosters a stronger feeling of ownership over their decisions. A controlled environment is perceived as a negative element in the satisfaction of the psychological needs.

The Goal Contents Theory strengthens that intrinsic motivations are more likely to satisfy the three needs than extrinsic motivations. In the context of sport, satisfying these needs results in optimal well-being, engagement that encourages sport participation, better performance, and

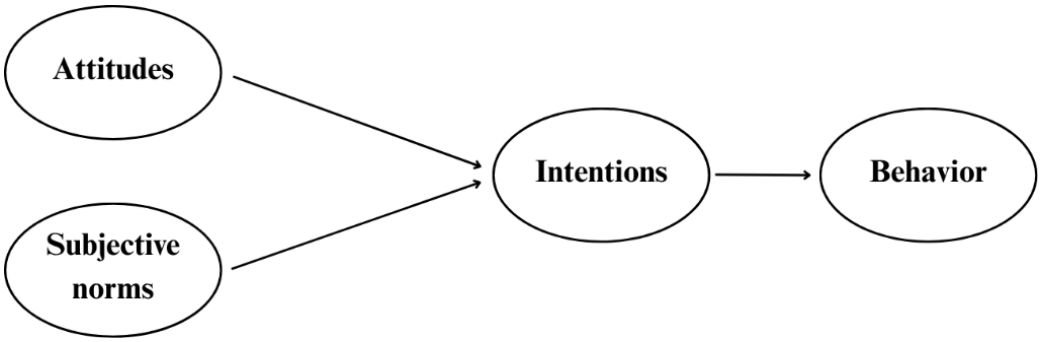
persistence. In contrast, when these psychological needs are not fulfilled, the risk of burnout and dropping out increases significantly.

Theory of Planned Behavior

The motivation to perform a behavior is critical in decision-making in general. The Theory of Planned Behavior (TPB), the extension of the Theory of the Reasoned Action (TRA), explains the determinant elements for a decision and includes one more factor. First, the TRA asserts that a behavior is conditioned by the intention of performing it (Worthington, 2021). The intention to adopt a behavior plays a crucial role in the actual adoption of that behavior. The model of this theory is composed of two predictors, attitudes and subjective norms, which influence intention. Attitude can be defined as "a feeling or opinion about something or someone, or a way of behaving that is caused by this" according to the Cambridge dictionary (2025).

Figure 1: Illustration of Ajzen & Fishbein's (1980) Theory of Reasoned Action cited in Worthington (2021)

Worthington, A. K. (2021, 30 mai). Theory of Planned Behavior. Pressbooks. https://ua.pressbooks.pub/persuasiontheoryinaction/chapter/theory-of-planned-behavior/

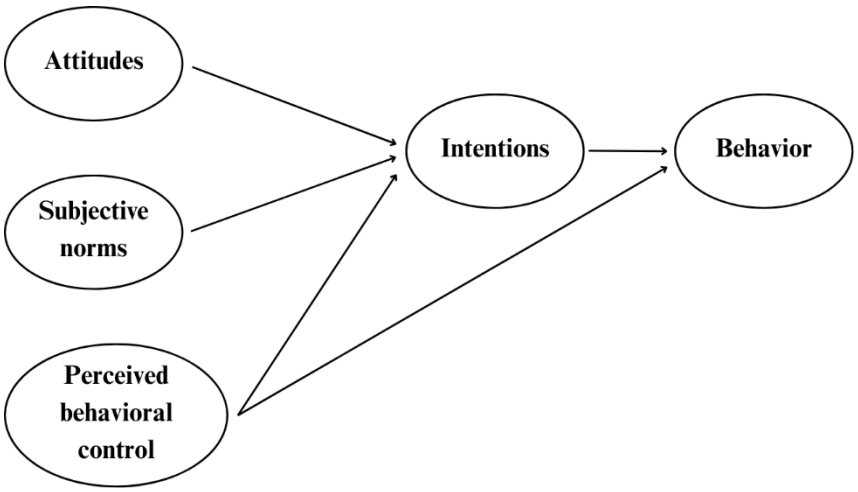


It can also be described as the mood of an individual toward the behavior. The more positive the attitude toward a behavior, the stronger the intention to engage in it. Subjective norms relate more closely to the social influence surrounding a behavior and the individual's belief in the significance of adopting that behavior. An individual's intention of performing a behavior is impacted by the social gaze and this intention increases when the subjective norms increase. Sport is widely recognized as a socially beneficial activity and is actively promoted by society, largely due to its well-established physical and mental health benefits, as previously discussed.

The TPB includes one more factor which is the perceived behavioral control. This factor reflects the belief that a person has complete power or ability to perform the behavior (Zheng et al., 2017). In the context of sport, perceived behavioral control reflects either the perceived inability to participate, such as when students lack time due to academic workload, or the perceived ability to do so, for example when the university offers a wide variety of sporting activities. Unlike the other two factors, perceived behavioral control directly affects both the intention to act and the behavior itself. The influence of each predictor can vary depending on the context, the type of behavior being targeted, and the characteristics of the individuals concerned.

Figure 2: Illustration of Ajzen's (1988, 1991) Theory of Planned Behavior as cited in Worthington (2021)

Worthington, A. K. (2021, 30 mai). Theory of Planned Behavior. Pressbooks. https://ua.pressbooks.pub/persuasiontheoryinaction/chapter/theory-of-planned-behavior/



Models and Key Concepts

Analyzing motivators and barriers is essential for understanding sport participation and for developing a questionnaire that is both relevant and realistic. The following sections will examine the classification models for motivators and barriers, identify the principal factors highlighted in existing literature, and provide a critical analysis of current research to uncover potential gaps.

Crawford & Godbey Classification Model

Numerous studies have attempted to identify barriers to physical activity using various methods. Crawford and Godbey proposed a relevant classification of 3 barrier types in their study (Crawford and Godbey, 1987). This classification system will also be applied to motivators, as it provides a coherent and robust framework for analyzing both barriers and motivators to sport participation. The first type, intrapersonal constraints, refers to psychological barriers related to an individual's personal attributes. These factors are considered variable and unstable, as they can change over time. They are highly personal in nature but can also be shaped by social influences such as peer interactions or targeted interventions. The second category is interpersonal constraints, which are associated with the social environment and interactions with others such as friends, partners and family members. In the context of sport participation, these factors can influence individuals' decision-making to engage consistently in sport sessions. The last category, structural constraints, includes environmental and geographical barriers (logistical factors) that hinder sports participation. These factors are beyond the control of the individual and depend on the external environment.

Intrinsic Motivation

As previously discussed, intrinsic motivation arises from internal incentives, including individual curiosity, enjoyment of the activity itself, and a natural inclination toward exploration. This type of motivation is defined by self-initiated engagement, independent of external influences, and centered on the enjoyment of the activity itself, which often fosters long-term and authentic participation (Benabou & Tirole, 2003). Intrinsic motivation has several implications on decision-making and behaviors, including behavioral and neurological effects (Morris et al., 2022). An intrinsic incentive manifests when a person opts to persist voluntarily in an activity for its own sake, even in the absence of any external reward. The decision to engage in a behavior or not can be explained by the explore-exploit model. Exploration involves actively seeking new experiences and possibilities, while exploitation refers to choosing known options that have previously provided satisfaction. This trade-off helps explain the balance between the desire to explore novelty and the tendency to engage in familiar activities that generate positive feelings, highlighting why intrinsically motivated behavior is essential for the development of competencies. Intrinsic motivation is associated with greater creativity, increased task persistence, enhanced psychological well-being, and deeper learning and engagement, all of which contribute to improved performance.

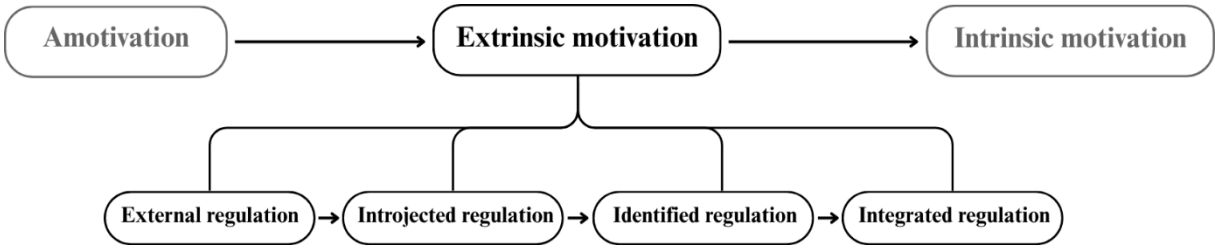
In the context of sport participation, intrinsic motivation can be divided into three distinct categories: the motivation to acquire new knowledge and skills, the motivation to accomplish tasks and experience a sense of satisfaction, and the motivation to seek stimulating experiences such as adrenaline and excitement (Vallerand & Losier, 1999). They defined these forms of intrinsic motivation as motivation "toward knowledge", "toward accomplishment", and "toward experiencing stimulation" (Vallerand & Losier, 1999, p.153). The willingness to learn also reflects an interest in gaining new abilities, refining techniques, and developing focused expertise. Task accomplishment also encompasses the effort and progression required to reach the desired outcome, such as successfully mastering a complex new skill. Engaging in the learning process provides an individual with a sense of satisfaction, as it aligns with the realization of a personal ambition. Finally, stimulation may be triggered by physical sensations like the feeling of speed during a race, and reflects the excitement and emotional intensity often associated with sport participation.

Extrinsic Motivation

In contrast to intrinsic motivation, which is fueled by internal satisfaction, extrinsic motivation refers to engaging in an activity to obtain external outcomes, such as rewards, recognition, or social validation (Ryan & Deci, 2000a; Pedersen, 2002). To gain a deeper understanding of how extrinsic motivation operates, the Organic Integration Theory proposes a framework that classifies it into four categories, each representing different levels of external influence and internal regulation. Within the broader motivational spectrum, extrinsic motivation lies between intrinsic motivation and amotivation. Together, these three forms represent a continuum reflecting varying degrees of self-determination and the overall quality of motivation. Amotivation refers to the absence of intention to engage in an activity, which may arise from a perceived absence of personal relevance, low self-efficacy, or the expectation that the activity will not lead to meaningful or rewarding outcomes. This continuum can be effectively visualized in a table progressing from left to right.

Figure 3: Illustration of Deci and Ryan's (2000a) Self-Determination Theory

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



The first type of regulation is the external regulation and is characterized by the willingness to "satisfy an external demand or reward contingency" (Ryan & Deci, 2000a, p.72). Behaviors or tasks are perceived as being externally controlled or imposed. This form of motivation corresponds to typical extrinsic motivation, where actions are primarily driven by the anticipation of rewards or the avoidance of punishment. Secondly, the introjected regulation remains relatively controlled but is driven by internal pressures such as the desire for self-approval, social recognition, or ego enhancement. The pressure associated with introjected regulation often stems from feelings of guilt or shame, which may lead individuals to act in order to protect their self-esteem. The third form of regulation, known as identified regulation, reflects a more autonomous type of motivation. In this case, individuals engage in a behavior because they recognize its personal significance and view its outcomes as meaningful and worthwhile. Moving along the self-determination continuum, integrated regulation emerges as the form closest to intrinsic motivation. At this stage, the source of motivation is closely tied to the individual's internal values, and the behavior is seen as part of their identity. Despite this strong internalization, it is still considered extrinsic motivation, as the activity is undertaken for its outcomes rather than for the inherent pleasure it provides.

Although extrinsic motivators can be effective in driving behavior, they may also have the unintended effect of diminishing intrinsic motivation. This effect is called the undermining effect or the overjustification effect depending on the literature. This is due to the fact that when individuals are subjected to external motivators like deadlines, rewards, pressure, or instructions, they often perceive these as controlling influences, which can undermine their autonomy. By its very nature, extrinsic motivation tends to produce less favorable outcomes, often leading to feelings such as anxiety or self-blame. In contrast, more autonomous forms of

motivation are associated with greater satisfaction and enjoyment in the activity (Deci et al., 1991).

Motivators for Sports Participation

As previously mentioned, motivation can be categorized into intrinsic and extrinsic types. According to Alexandris and co-authors, the most important levier for sport participation is intrinsic motivation. Extrinsic motivation such as health benefits, public validation, or achieving specified objectives also encourages participation, but to a lesser extent.

Intrapersonal

Intrapersonal motivators, such as personal satisfaction, enjoyment, or self-improvement, play a central role in sport participation, as they originate from within the individual. Diehl et al. (2018) identify key motivators such as the enjoyment and excitement associated with sport, the desire to maintain good health, and the sense of well-being it provides. The enjoyment gained from competition is also identified as a motivating factor. The study also highlights the importance of maintaining overall health and physical fitness, noting that regular physical activity can help prevent issues such as tension and back pain resulting from prolonged sitting. The desire to maintain good health contributes to improved physical self-perception, which includes enhancing body image, building self-confidence, and striving for a slim or athletic appearance. Certain motivators appear to be particularly relevant to university students, as they contribute to a better life balance, for example, reducing stress and anxiety, relieving academic pressure, and clearing their mind after the day. Experiencing physical and mental well-being after exercise, along with maintaining overall health, helps prevent long-term health issues.

Body image is also mentioned as a motivating factor, including the desire to stay slim, enhance physical appearance, and feel more confident about one's body. In line with these findings, Butt et al. (2011) also identified the enjoyment of sport, its importance for maintaining health and life balance, as well as several psychological benefits including reduced anxiety and stress, improved mood, and higher energy levels throughout the day. The research team revealed several motivators linked to body image concerns, including the desire to regulate weight, particularly among older female participants aged 16 to 17.

In general, Butt and his colleagues underline the fact that males were more attracted to physical activity for the challenge and competition, while women placed more importance on social acceptance and body image benefits among adolescents. The need for peer acceptance increases over time as said in the paper: “it appears that as girls get older, they become more self-aware of their body shape and their appearance” (Butt et al., 2011, p.1081). These gender-related characteristics also represent an interesting area of analysis.

Interpersonal

The social environment plays an important role in motivating people to take part in sport activities. A sense of belonging, opportunities to meet new people and socialize consistently emerge as key motivators (Diehl et al., 2018). Peer pressure can be highly effective, particularly when it takes the form of encouragement from friends to participate in an activity. The study also observed the pleasure of belonging to a team and getting back together with the team for training sessions, and underlined the social nature of sport as a way to share enjoyable experiences with friends, maintaining relationships, and expanding one’s social circle by meeting new people. Butt et al. (2011) also reported similar results, who pointed to the influence of peer acceptance and the importance of feeling socially connected and acknowledged. This feeling has been found to be more significant for girls than for boys. In other words, peer acceptance during sports and games appears to matter more to girls than to boys (Butt et al., 2011) (Rintaugu & Ngetich, 2012).

Structural

Although less frequently mentioned in the literature, this type of motivator includes factors such as low or no-cost activities and the broad range of sports offered by universities (Diehl et al., 2018). It has also been shown that academic programs incorporating sport sessions may enhance students’ motivation (Rintaugu & Ngetich, 2012).

Barriers to Sports Participation

Despite the well-documented benefits of sport participation, a range of barriers continue to prevent many individuals, particularly university students, from engaging regularly in sport-related activities. This section presents various barriers identified in literature.

Intrapersonal

First of all, the literature identifies a range of intrapersonal barriers that can negatively influence sport participation. The study of Ferreira Silva et al. (2022) shows that the main barriers for sport among high school and university students are the lack of motivation and willpower, low self-confidence, and stress from academic pressure. Relevant factors such as mental health difficulties, low self-esteem, and discomfort with body appearance have been identified, drawing attention to the broader social issues related to self-image, which appear to be particularly pronounced among students. Certain intrapersonal barriers arise simply from a lack of interest or awareness, such as a general disinterest in sport, perceived lack of competence, or uncertainty about where to engage in physical activity. These elements have a statistically significant predictive effect on amotivation, with lack of interest in particular shown to negatively impact intrinsic motivation.

In line with these findings, Thomas et al. (2019) also observes stress as main barriers but also mentions negative past experience. They highlight gender differences, noting that factors such as body image concerns and shyness particularly affect female students. Comparable results were reported by Alexandris et al (2002) such as the negative past experiences, lack of confidence, health issues, fear of injury, which significantly contribute to amotivation and diminish intrinsic motivation among adults.

Health issues are also identified in the study by Butt et al. (2011) as a significant barrier to sport participation, including factors such as illness or injuries that hinder engagement in physical activities. They also conclude that concerns related to body image can serve as an effective motivational filter influencing sport participation. This fact has been reported in another study. In addition to common barriers such as low self-confidence and lack of motivation, Young et al. (2003) identify further factors including fear of failure, the perception of sport as physically demanding, shyness, and the impression that sport is too competitive.

Interpersonal

Regarding interpersonal barriers, the most frequently cited factors in the literature include peer non-participation, lack of motivation, or unavailability of significant others such as friends, partners, or family members (Alexandris et al., 2002; Young et al., 2003; Halforty & Radder, 2015). Women seem to be more negatively impacted than men by the absence of support from

family and friends. Women seem to be particularly affected by social disapproval arising from cultural and familial expectations, as well as by gender stereotypes tied to certain sports. These sports are often viewed as being reserved for men, which can create barriers to women's participation and limit their willingness to engage.

Structural

Beyond intrapersonal and interpersonal barriers, structural constraints also play a crucial role in influencing participation in sport. Lack of time emerges as the most significant barrier in numerous studies, particularly in relation to academic responsibilities and the misalignment between sport schedules and students' routines or class timetables (Mirsafian, 2016; Halforty & Radder, 2015). Time constraints are also linked to family or social commitments, as well as engagement in other leisure activities. Another important aspect concerns the high costs associated with subscription, participation, and transportation fees, which, combined with students' often limited financial resources, can pose a significant barrier to sport participation. In addition, sport facilities are not always tailored to do sport properly as the facilities are overcrowded, not geographically well-placed and in poor condition (Alexandris et al., 2002; Thomas et al., 2019). This emphasizes the lack of possibility of participating in sport in nearby places, opportunities and equipment according to Silva et al. (2022) and Alexandris et al. (2002). Academic-related factors are also frequently cited, particularly the excessive university workload and the demands of homework (Thomas et al., 2019; Halforty & Radder, 2015). In addition to the previously mentioned barriers, Mirsafian also highlights other relevant explanations, such as the lack of information and inadequate promotion of available activities, which can result in lower participation rates and a general unawareness among students.
According to Halforty and Radder, structural constraints represent the most statistically significant category among the three types of constraints.

Configural Theory

The decision to engage in sport is rarely influenced by a single factor. Rather, it emerges from a combination of interrelated motivators and barriers acting together. Fiss (2011) provides valuable conceptual contributions that enhance the understanding of the foundational logic of fuzzy set Qualitative Comparative Analysis (fsQCA). The principle underlying this approach is causal complexity, which is characterized by the idea that an outcome emerges from multiple possible combinations of conditions, rather than from the isolated influence of individual

factors (Ragin, 2008). In addition, Fiss (2011) introduces the distinction between core and peripheral elements as a central concept for interpreting and explaining the structure of the model. Core elements are causally essential factors within a configuration, as they exhibit the strongest association with the outcome. In fsQCA analysis, these elements appear in both the parsimonious and the intermediate solutions, highlighting their central role in explaining the observed results. In contrast, peripheral elements function as supportive, context-dependent factors within a configuration. They appear solely in the intermediate solution of fsQCA and, while not essential to the outcome, they contribute to the overall coherence of the configuration. These elements add interpretive nuance but have a weaker causal influence compared to core elements. Understanding these two terms provides a foundation for introducing three key concepts central to this theoretical approach: causal asymmetry, equifinality, and neutral permutation.

First, the causal asymmetry explains that "causes leading to the presence of an outcome of interest may be quite different from those leading to the absence of the outcome" (Fiss, 2011, p.5). In other words, within the context of sport participation, peer influence may act as a strong motivator, encouraging individuals to engage in physical activity. However, its absence does not automatically constitute a significant barrier to participation.

Secondly, equifinality refers to the idea that "a system can reach the same final state from different initial conditions and by a variety of different paths" (Katz & Kahn, 1978, as cited in Fiss, 2011, p. 5). This concept adds complexity to the understanding of motivational mechanisms by highlighting that multiple distinct combinations of factors can produce the same outcome.

Finally, neutral permutation emphasizes that core elements are accompanied by various peripheral elements, and that changes or permutations among these peripheral elements do not alter the final outcome. This further reinforces the concept of equifinality, highlighting the multi-path nature of causal relationships, where different configurations of conditions can lead to the same outcome. These theoretical principles form the foundation of the methodological approach adopted in this study, which applies fuzzy set Qualitative Comparative Analysis (fsQCA) to investigate the multiple and diverse pathways that lead to high or low levels of sport participation among university students.

In previous studies, either case-oriented or variable-oriented techniques were used to understand the relations between factors (Ragin, 1999). These papers are based on conventional statistical methods such as regression, ANOVA, MANOVA, or systematic review (Butt et al., 2011) (Silva et al., 2022) (Alexandris et al., 2002) (Thomas et al., 2019). Motivation is a complex operation which may be influenced by several mix of variables and not only by individual motivators or constraints. These approaches often fail to address the issue of causal complexity arising from interactions between multiple factors, leading to varied outcomes.

Conceptual Framework

Categorization of Conditions

Following an extensive and methodical review of the existing literature, a range of motivators and barriers were identified for FsQCA anlyses. The selection was guided by their relevance in academic research in general, their specific significance in the context of sport participation, and their frequency in empirical studies. Table 1 presents the identified factors, offering a clearer and more structured visualization of the motivators and barriers considered in this study.

Table 1: Literature-based motivators and barriers to sport participation

Motivators	Barriers
Restoring mental energy	Lack of time
university sports variety	Lack of motivation
Enhancing body image	Lack of confidence
Managing stress	Health issues
Pleasure derived from competition	Negative past experiences
Enjoying time with friends	Lack of accessible places
Compensating for long periods of sitting	Stress due to class schedule
Maintaining overall health	High subscription/practice costs
Staying physically fit	Fear of injury
Improving skills	Lack of partners
Fun associated with sports	Excessive academic workload
Making new friends	Fear of social judgment

Reduction of Variables

These variables serve as the foundation of the questionnaire conducted to university students for this study and represent the items that respondents are asked to evaluate through their responses. However, fsQCA differs from other statistical methods in how it handles variables and presents results. As the number of variables increases, the number of possible configurations grows exponentially, which can complicate the analysis, interpretation, and overall understanding of the findings (Pappas & Woodside, 2021). Therefore, a careful selection of variables is necessary to ensure that the results remain interpretable and meaningful. The reduction of the number of conditions can be made with a necessary condition analysis through the FsQCA software. The objective is to limit the number of conditions to a total of 4 or 5 factors for both motivators and barriers, in line with the recommendations of Fiss (2011).

The necessity analysis is intended to identify the conditions that are essential for the outcome to occur, meaning that the outcome cannot be achieved in the absence of these conditions (Dul, 2015a). These variables act as constraints or walls that need to be overcome, as their presence is required for the outcome to occur (Dul, 2015b). The evaluation of necessity involves analyzing the consistency and coverage levels associated with each causal condition. These two indicators enable the identification of key conditions, allowing for a more focused selection and a reduction in the overall number of variables. According to Ragin (2008), consistency indicates the frequency with which a given outcome is accompanied by a specific causal condition. It functions similarly to the concept of statistical significance in quantitative methods, as it helps determine whether the observed association is robust enough to be taken seriously. In necessity analysis, a condition is only considered necessary if it meets or exceeds a consistency threshold of 0.90 (Pappas & Woodside, 2021). While a consistency score of 0.90 is generally required to identify a condition as truly necessary, the aim here is to reduce the number of conditions by retaining only those that demonstrate the strongest empirical support (Dul, 2015a). In contrast, coverage evaluates “the degree to which a cause or causal combination accounts for instances of the outcome” (Ragin, 2008, p.44). This measure reflects the empirical relevance of a condition by indicating how many cases demonstrate the association between the condition and the outcome.

Following the necessity analyses (Figures 4 and 5), it is possible to narrow down the set of conditions by retaining only those with the highest empirical relevance. Regarding motivators,

the table identifies five variables that appear to be more prominent than the others. The selected conditions are *staying physically fit*, *fun associated with sports*, *maintaining overall health*, *improving skill*, and *restoring mental energy*. With regard to barriers, *lack of time*, *lack of motivation*, *excessive academic workload*, and *stress due to class schedule* emerge as the most prominent conditions.

Table 2: Selected motivators after necessity analysis

Conditions	Consistency	Coverage
Staying physically fit	**0.954093**	**0.540582**
Fun associated with sports	**0.933233**	**0.587875**
Maintaining overall health	**0.927386**	**0.536426**
Improving skills	**0.910951**	**0.630241**
Restoring mental energy	**0.880610**	**0.563961**
Enhancing body image	0.809656	0.583044
Managing stress	0.745417	0.579662
Enjoying time with friends	0.729778	0.633123
Pleasure derived from competition	0.658818	0.762018
Compensating for long periods of sitting	0.657001	0.550626
Making new friends	0.401864	0.742265
University sports variety	0.395148	0.559020

Outcome variable: sport participation

Table 3: Selected barriers after necessity analysis

Conditions	Consistency	Coverage
Lack of time	**0.823179**	**0.604909**
Lack of motivation	**0.785201**	**0.725147**
Excessive academic workload	**0.763966**	**0.638368**
Stress due to class schedule	**0.736687**	**0.637817**
High subscription/practice costs	0.449118	0.650076
Lack of partners	0.418245	0.659412
Fear of social judgment	0.409588	0.748508
Lack of confidence	0.392029	0.730371
Lack of accessible places	0.276462	0.575975
Health issues	0.234156	0.685394
Negative past experiences	0.194463	0.708842
Fear of injury	0.166204	0.610744

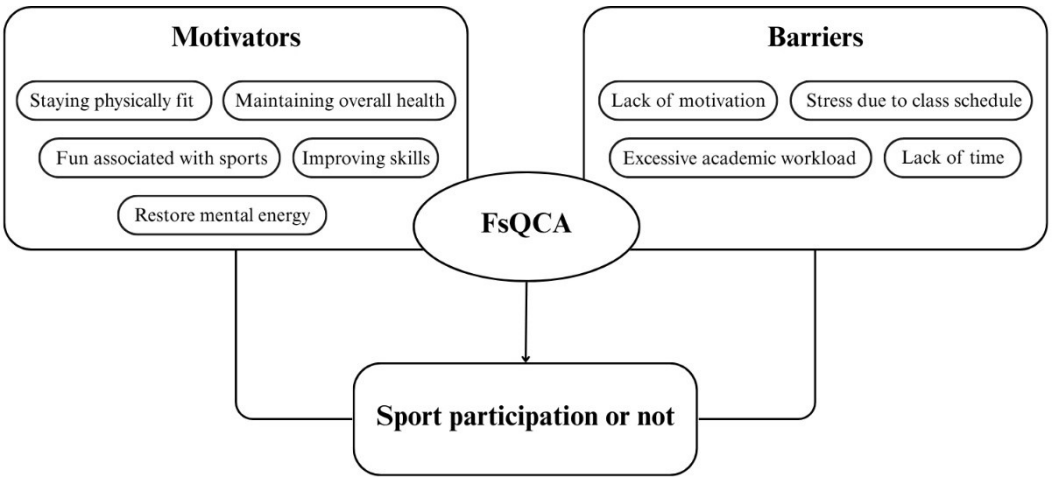
Outcome variable: ~ sport participation (non-participation)

Outcome Definition

The outcome variable reflects what the study aims to explain or predict, and constitutes the primary focus of the analysis. In this study, the outcome variable is sport participation or non-participation among university students. It is measured in hours and reflects the total number of hours dedicated to sport per week. In line with fsQCA conventions, sport non-participation, as well as other negatively formulated conditions is denoted by placing a tilde (~) before the variable.

The fsQCA approach is represented by the model below and is designed to uncover the different configurations of conditions that lead to either sport participation or its absence.

Figure 4: FsQCA model



Methodology

Research Design

Fuzzy-set Qualitative Comparative Analysis (fsQCA) is a methodological approach that combines elements of qualitative and quantitative analysis to explore how different combinations of conditions lead to a particular outcome (Pappas & Woodside, 2021). This method integrates the qualitative richness and precision of configurational analysis with the breadth of quantitative data from a large sample, with the aim of ensuring robust results and enabling a degree of generalization of the study's findings. The term refers to the combination of the Qualitative Comparative Analysis (QCA) method and the fuzzy-set technique, which together form the fsQCA approach.

The QCA combines strengths of both approaches by using Boolean algebra to analyze sets of conditions that lead to outcomes. Instead of analyzing individual variables, QCA explores how combinations of conditions contribute to different social phenomena (Ragin, 1998). Data can be transformed into various formats, including crisp sets, multi-value sets, and fuzzy sets, each offering different levels of nuance (Ragin, 2008). Crisp sets are defined by their binary nature, where each case is assigned a value of either 0 or 1, indicating full non-membership or full membership in a given condition, respectively. The introduction of fuzzy sets enables partial membership, adding precision to the analysis. Unlike crisp sets, fuzzy sets allow cases to have degrees of membership ranging between 0 (fully out) and 1 (fully in) with a crossover point or intermediate membership at 0.5 (Elliott, 2018; Ragin, 2008). For example, a case with a value of 0.8 is considered more in than out of the set, reflecting a nuanced position. This method prevents oversimplification and allows for more refined results and interpretations. Finally, the multi-value Qualitative Comparative Analysis (MvQCA) extends the crisp-set approach by allowing conditions to take on more than two values. For example, a variable like living situation can include categories such as living alone, with roommates, or with family.

Sample

The selection of the target population is a crucial step in research, and particularly in marketing, as it enables a focused examination of the specific needs and characteristics of a defined audience. University students, representing a relatively young segment of the population, were chosen for this study not only due to their relevance to the research objectives but also because I belong to this group, which allows for a deeper understanding of their context and experiences. Students appear to be confronted with more health and social issues than the general population, including poorer mental health and living conditions (Paz & Evans, 2023).

The sampling method used in this study is a non-probability convenience sampling (Rahi, 2017). The first distribution was a visually appealing Instagram post containing the survey link, aimed at capturing initial interest. This was followed by the sharing of the questionnaire in WhatsApp groups from various faculties to increase reach and participation. Additionally, with the support of the University of Fribourg, I gained access to a large number of student email addresses across all faculties. These sampling methods resulted in the collection of 250 responses, providing a solid basis for the subsequent analysis.

To ensure diversity in the responses, the email addresses provided by the university were selected to achieve a balanced distribution between male and female students and included individuals from various educations and faculties.

Due to the extremely small number of non-binary respondents in the dataset (3 responses), it was not possible to include this group in the analyses. This decision was based solely on methodological and statistical considerations and does not reflect a lesser relevance of this population.

Data Collection

Data was collected using a structured questionnaire in French designed with the online platform and software Tally. The first section provided respondents with information about the study, including confidentiality conditions, consent terms and the overall objective of the research. The second section focused on the outcome variable, namely student participation in sport. This variable was divided into two components: one question addressed the number of hours dedicated to team sports, while the other focused on hours spent on individual sports. The questionnaire then includes a section dedicated to collecting information on the motivators as evaluated by the students, followed by a separate section focusing on the barriers that may hinder their participation in sport. The two sections follow an identical structure, each beginning with a statement-formulated question, followed by the evaluation of several factors using a 7-point Likert scale to assess the degree of agreement or relevance as perceived by the respondents. The final section of the questionnaire includes a series of demographic questions, covering aspects such as age, gender, university, field of study, and living situation.

Necessity Analysis

This section presents the main analyses and essential elements of the fsQCA method to enhance understanding of its logic and relevance to the study's objectives. The fsQCA method initially focuses on two fundamental types of analysis: the analysis of necessary conditions and the analysis of sufficient conditions.

As previously mentioned, necessity analysis is used to determine which conditions are essential for the occurrence of the outcome variable (Dul, 2015a). As a first step, this analysis seeks to identify potential necessary conditions for sport participation and non-participation, acknowledging the principle of causal asymmetry central to the fsQCA approach. The different

steps for this analysis are the calibration of motivators and barriers into fuzzy sets, the selection of the outcome variable that is the sport participation and the sport non-participation, to evaluate conditions with the consistency and coverage value, and interpret the results (Fiss, 2011). The integration of both analyses is essential, as it allows us to identify which motivators and absences of barriers are necessary for sport participation to occur, as well as which barriers and absences of motivators are necessary for sport non-participation. For a condition to be considered necessary, its consistency score must exceed 0.90 (Dul, 2016; Pappas & Woodside, 2021). In other words, consistency shows how often the presence of a condition is associated with the presence of the outcome. The evaluation of the coverage is less important but shows how important or relevant a condition is in explaining the outcome (Ragin, 2008). It tells us what proportion of the outcome cases are captured by a condition or configuration. While there is no established minimum for coverage, Pappas and Woodside (2017) emphasize that higher values are desirable, as they reflect stronger empirical support and greater robustness.

Sufficiency Analysis

The sufficiency analysis involves several key steps: calibrating the variables, constructing the truth table, setting consistency and frequency thresholds to reduce the truth table, and applying logical minimization using Boolean algebra. In the final step, the option to indicate conditions as "present or absent" is selected for the intermediate solution, allowing the software to determine this parameter. A condition is considered sufficient if it is present in a configuration that leads to the outcome. However, it is not the only path, as other alternative configurations may also produce the same outcome (Fiss, 2011).

To explore the parameter settings in more detail, the frequency threshold was set to 3. This decision is based on recommendations stating that "for samples larger than 150 cases, the frequency threshold may be set at 3 (or higher), while for smaller samples the threshold may be set at 2" (Fiss, 2011; Ragin, 2008, as cited in Pappas and Woodside, 2017, p.10). Setting the frequency threshold to 3 ensures that only combinations occurring in at least three cases are considered during minimization. This approach excludes infrequent configurations with one or two cases, which contributes to greater robustness and empirical significance of the results (Papas and Woodside, 2017). A higher frequency threshold reduces coverage, as rare configurations are excluded from the analysis.

In this study, the consistency threshold was set at 0.80, in line with Fiss's (2011) recommendation for the minimum acceptable value. This choice also aligns with Ragin's (2008) suggestion of a threshold at 0.75. This threshold implies that any solution with a consistency score below 0.80 will be excluded from the minimization process, thereby reducing the number of configurations retained in the final solution.

Three different solutions are shown in a sufficiency analysis: complex solution, parsimonious solution and intermediate solution. The complex solution aims to present the full set of possible configurations identified by the software. However, this solution is often dense and difficult to interpret due to the large number of configurations it includes. The second type of solution is the parsimonious solution, which simplifies the complex solution by identifying the core conditions across all variables. This solution not only includes configurations found in the data but also integrates counterfactual cases, logical combinations that could theoretically occur, even though they are not empirically observed. Finally, the intermediate solution builds upon the parsimonious solution by incorporating not only the core conditions but also the peripheral ones. When it comes to counterfactual cases, this solution retains only the most theoretically plausible scenarios. This solution not only includes configurations found in the data but also integrates counterfactual cases, logical combinations that could theoretically occur, even though they are not empirically observed. In other words, the intermediate solution keeps only those simplifications that make sense based on theory, and leaves out the others used by the parsimonious solution.

Calibration

This step is crucial in an fsQCA analysis, as it involves setting the thresholds for calibrating the variables. The data were collected through a questionnaire focusing on sport participation, as well as the associated motivators and barriers. While both sections require calibration, they consist of different types of data, which necessitates distinct calibration approaches. The outcome variable is defined as continuous, as the responses can include decimal values (Mishra et al., 2018). With regard to this variable, the literature does not present a clear consensus on the appropriate calibration method. However, it tends to favor the use of the 80th, 50th, and 20th percentiles for full membership, intermediate membership, and full non-membership, respectively (Papas and Woodside, 2017). Given that the authors suggest calibrating in relation to the sample's response distribution, the decision was also based on the observed distribution of sport participation.

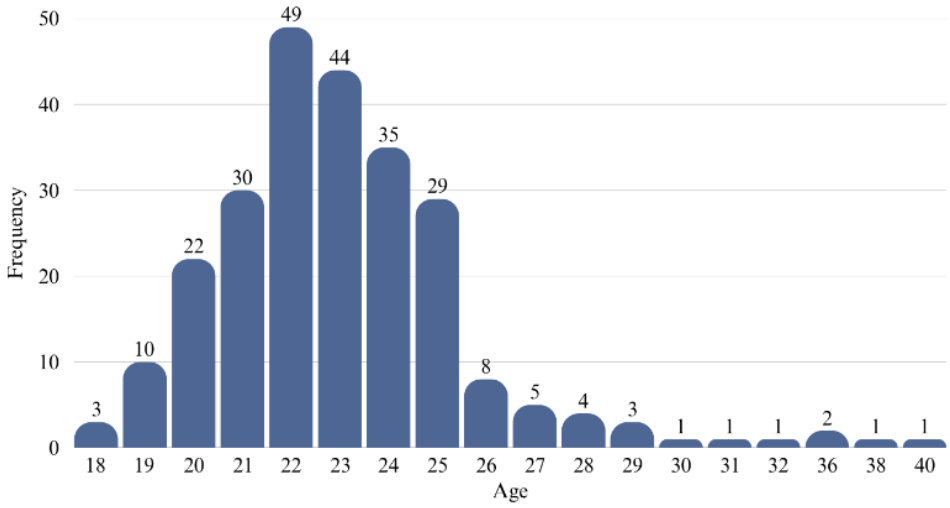
Motivators and barriers were assessed using a 7-point Likert scale in the questionnaire. Following the recommendations of Pappas and Woodside (2017) and Ordanini et al. (2013), the calibration thresholds were set at 6 for full membership, 4 for crossover point, and 2 for full non-membership. These thresholds are widely accepted and commonly applied when calibrating Likert-scale data in fsQCA studies.

Results

Sample Description

The target population consisted of university students both in Switzerland and abroad. The use of the French language does not seem to affect participation, as the interviewed students who studied abroad are either from Switzerland or already speak French. In total, 249 students participated in the study, with 59.4% identifying as female and 40.6% as male. Regarding the universities represented, the sample is relatively diverse: 59.4% of participants are from the University of Fribourg, 18.9% from the University of Neuchâtel, and 7.2% from the University of Lausanne. The remaining 14.5% are distributed among other universities in French-speaking Switzerland, as well as UMF Cluj-Napoca in Romania and various universities of applied sciences. The age distribution of participants spans from 18 to 40 years, with a mean age of 23.11 and a median age of 23.

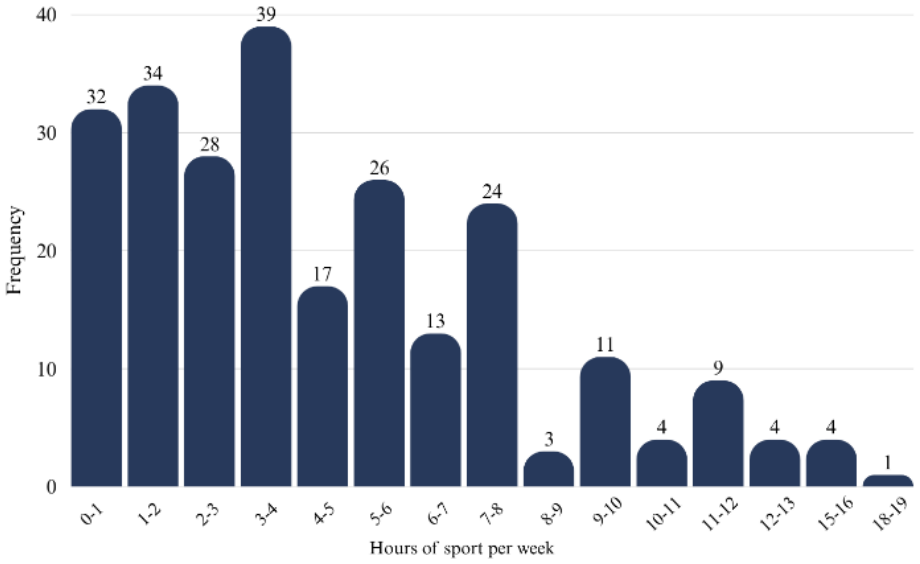
Figure 5: Age distribution of participants



Sport Participation Overview

Sport participation, expressed in hours per week, has a mean value of 5.03 and a median of 4, suggesting a higher proportion of participants with lower levels of sport activity. The standard deviation of about 3.6, relative to a mean of around 5, suggests considerable variability in the responses. Interpreting the standard deviation requires considering the mean to properly assess the spread of the data (Government of Canada, Statistics Canada, 2021).

Figure 6: Sport participation distribution



Analyzing these statistics by gender also offers meaningful perspectives on how participation patterns differ between male and female students. Female students report a mean value of 4.46,

a median of 4, and a standard deviation of 3.98. In comparison, male students show a higher mean of 6.15, a median of 6, and a standard deviation of 3.85.

Necessity Analysis

To identify necessary conditions that consistently appear in combinations when the outcome is present, two distinct analyses were computed. The first analysis focused on sport participation, incorporating motivators and the absence of barriers, whereas the second addressed sport non-participation, based on the absence of motivators and the presence of barriers.

Table 4 highlights four conditions that are necessary when the outcome variable occurs: *staying physically fit*, *fun associated with sport*, *maintaining overall health*, and *improving skills*. All coverage values exceed the 0.50 threshold recommended by Pappas and Woodside (2017), indicating robustness in the results. The remaining conditions cannot be considered necessary, as their consistency scores fall below the 0.90 threshold.

Table 4: Necessity analysis for sport participation

Conditions	Consistency	Coverage
Staying physically fit	0.954093	0.540582
Fun associated with sports	0.933233	0.587875
Maintaining overall health	0.927386	0.536426
Improving skills	0.910951	0.630241
Restoring mental energy	0.880610	0.563961
~ Lack of motivation	0.712074	0.774094
~ Stress due to class schedule	0.595291	0.700316
~ Excessive academic workload	0.581305	0.717965
~ Lack of time	0.479851	0.737192

Outcome variable: sport participation

In the second analysis, Table 5 reveals that no condition, whether related to the absence of motivation or the presence of barriers, meets the criteria to be classified as necessary. The findings from both tables indicate that motivators such as *staying physically fit* and *improving skill* are strongly endorsed by participants with high sport participation. Yet, their absence does not constitute a necessary condition for low sport participation, highlighting the principle of causal asymmetry.

Table 5: Necessity analysis for ~ sport participation

Conditions	Consistency	Coverage
Lack of time	0.823179	0.604909
Lack of motivation	0.785201	0.725147
Excessive academic workload	0.763966	0.638368
Stress due to class schedule	0.736687	0.637817
~ Improving skills	0.447566	0.829423
~ Fun associated with sports	0.323750	0.824288
~ Restoring mental energy	0.296227	0.705917
~ Maintaining overall health	0.171594	0.695696
~ Staying physically fit	0.161875	0.773313

Outcome variable: ~ sport participation (non-participation)

Sufficiency Analysis

Firstly, the results of the parsimonious solution for sport participation identify three core conditions: the absence of *lack of time*, *excessive academic workload*, and *stress due to class schedule* (Table 6). These conditions are associated with higher levels of sport engagement among university students. Their raw coverage values range from 0.48 to 0.59, meaning they often appear in cases where students engage in sport. The consistency scores, between 0.70 and 0.74, show that these conditions are moderately sufficient on their own. Overall, the solution has a coverage of 0.7094 and a consistency of 0.6723, which means these three conditions together explain a good part of the cases, even if they are not perfectly reliable.

Table 6: Parsimonious solution for sport participation

Combinations	Raw coverage	Unique coverage	Consistency
~ Lack of time	0.479851	0.0340551	0.737192
~ Excessive academic workload	0.581305	0.065819	0.717965
~ Stress due to class schedule	0.595291	0.0541246	0.700316
Overall solution coverage	0.709387		
Overall solution consistency	0.672258		

The results of the solutions table for sport participation highlight two configurations that lead to high levels of sport participation among university students (Table 7).

Configuration 1 shows that participation is driven by the presence of all five motivators; *improving skill*, *fun*, *restoring mental energy*, *maintaining overall health*, and *staying physically fit*, combined with the absence of *time constraints* and *lack of motivation*, along with the presence of *stress due to class schedules* and *heavy academic workload*. This configuration demonstrates strong sufficiency, with a high consistency score (0.9338), although it accounts for a relatively small portion of the sample (raw coverage of 0.1226).

Configuration 2 also includes all five motivators and is defined by the absence of *excessive academic workload*, *stress due to class schedules* and *lack of motivation*. This configuration has slightly lower consistency (0.9109), but significantly higher raw and unique coverage (0.3815 and 0.2920, respectively).

The overall solution has a consistency of 0.4147 and a coverage of 0.9135, indicating that, together, these two configurations explain a substantial proportion of cases with high sport participation, despite differences in their consistency scores. Configuration 1 demonstrates a stronger relationship between the combination of factors and the occurrence of the outcome than Configuration 2. However, it appears less frequently within the dataset than Configuration 2.

Table 7: Solutions table for sport participation

Configurations	1	2
MOTIVATORS		
Improving skills	●	●
Fun associated with sports	●	●
Restoring mental energy	●	●
Maintaining overall health	●	●
Staying physically fit	●	●
BARRIERS		
Lack of time	⊗	
Lack of motivation	⊗	⊗
Excessive academic workload	●	⊗
Stress due to class schedule	●	⊗
Consistency	0.933815	0.910944
Raw coverage	0.122630	0.381479
Unique coverage	0.0331857	0.292034
Overall solution consistency	0.414664	
Overall solution coverage	0.913490	

Outcome variable: sport participation

The presence of a condition is represented by a black circle ●, while its absence is indicated by a crossed-out circle ⊗.
Blank spaces signify that the condition is not included in the solution. Core and peripheral conditions are differentiated by the size of the circles: larger circles represent core conditions, whereas smaller circles indicate peripheral ones.

The results of the parsimonious solution for sport non-participation also identify three core conditions: the absence of *improving skill*, *fun associated with sports*, and *restoring mental energy* (Table 8). The absence of *improving skill* stands out with the highest raw coverage (0.4476) and consistency (0.8294), suggesting it plays a key role in explaining non-participation. The absence of *fun and restoring mental energy* also contributes, though with slightly lower values. Their consistency scores are 0.8243 and 0.7059 respectively, showing that fun is still quite relevant, while restoring mental energy is slightly weaker. The overall solution coverage is 0.6165, and the consistency is 0.7239.

Table 8: Parsimonious solution for ~ sport participation

Combinations	Raw coverage	Unique coverage	Consistency
~ Improving skills	0.447566	0.157220	0.829423
~ Fun associated with sports	0.32375	0.0672168	0.824288
~ Restoring mental energy	0.296227	0.0733422	0.705917
Overall solution coverage	0.616465		
Overall solution consistency	0.723890		

The results highlight three configurations leading to low levels of sport participation among university students (Table 9).

Configuration 1 shows that non-participation is associated with the absence of *improving skill* as a core condition, combined with the presence of other motivators such as *fun associated with sports*, *restoring mental energy*, *maintaining overall health* and *staying physically fit*. Additionally, all four barriers, *lack of time*, *lack of motivation*, *excessive academic workload*, and *stress due to class schedules* are also present. This configuration demonstrates strong sufficiency, with a high consistency score (0.9069), a raw coverage of 0.2004 and unique coverage of 0.0924.

Configuration 2 is characterized by the absence of *fun associated with sports* as a core condition, while the remaining motivators and all four barriers are once again present. Its consistency remains high (0.8964), with a raw coverage of 0.1624 and unique coverage of 0.0507.

Configuration 3 is defined by the absence of *restoring mental energy*, combined with the same four barriers and the presence of the remaining motivators. Although its consistency is lower (0.8012), it still meets the threshold for sufficiency, with a raw coverage of 0.1205 and a unique contribution of 0.0415 (Papas and Woodside, 2017)

The overall solution presents a consistency of 0.8439 and a coverage of 0.3038, indicating that these three configurations together explain a considerable share of non-participation cases, although each configuration captures a relatively modest portion of the sample.

Table 9: Solutions table for ~ sport participation

Configurations	1	2	3
MOTIVATORS			
Improving skills	⊗	●	●
Fun associated with sports	●	⊗	●
Restoring mental energy	●	●	⊗
Maintaining overall health	●	●	●
Staying physically fit	●	●	●
BARRIERS			
Lack of time	●	●	●
Lack of motivation	●	●	●
Excessive academic workload	●	●	●
Stress due to class schedule	●	●	●
Consistency	0.906874	0.896350	0.801196
Raw coverage	0.200425	0.162447	0.120467
Unique coverage	0.0923716	0.0507185	0.0414895
Overall solution consistency	0.843920		
Overall solution coverage	0.303822		

Outcome variable: ~ sport participation (non-participation)

Gender-Focused fsQCA Analysis

Another perspective explored in this study is the role of gender in shaping the different conditions that influence sport participation. The literature frequently reports that men and women experience different motivators and barriers when it comes to engaging in sport. The sample was divided into two groups based on gender, and the same analyses conducted on the overall sample were replicated for each gender-specific subgroup.

Calibration

A different calibration was applied for female and male subgroups, as well as in comparison to the full sample analysis. The same calibration thresholds (20th, 50th, and 80th percentiles) were applied for both genders, allowing the thresholds to reflect the specific distribution of each subgroup. In the sufficiency analysis, the cutoff frequency was set at 2, due to the smaller sample size when disaggregated by gender. For the intermediate solution, assumptions were specified for each condition: in the case of sport participation, motivators were considered

present, and barriers absent; for non-participation, these assumptions were reversed, with motivators defined as absent and barriers as present.

Reduction of Variables

Conditions were selected based on the results of the necessary conditions analysis, with particular attention given to those demonstrating high consistency and coverage scores. Additionally, some conditions, despite not showing the highest scores, were chosen for their specific relevance to each gender group.

For the female, the selected motivators are *staying physically fit*, *maintaining overall health*, *fun associated with sports*, *restoring mental energy* and *enhancing body image*, and the barriers are *fear of social judgement*, *lack of confidence*, *lack of motivation*, *excessive academic workload* and *lack of time* (Tables A1 and A2). All conditions were selected based on their consistency scores, except for *body image concerns* and *lack of confidence,* which were included due to their relevance to this population as previously highlighted in the literature. Both conditions showed consistency scores slightly lower than those of other conditions; however, they exhibited relatively high coverage scores, with 0.8406 for *enhancing body image* and 0.8080 for *lack of confidence*.

The selected motivators for male are *staying physically fit*, *maintaining overall health*, *fun associated with sport*, *improving skill* and *enjoying time with friends*, and the barriers are, *excessive academic workload*, *stress due to class schedule*, *lack of partners* and *lack of time* (Tables A3 and A4). The condition *lack of partners* hadn't the highest consistency score but showed the highest coverage score (0.7695), highlighting that this condition accounts for a large portion of the population.

Necessity Analysis

A necessary conditions analysis was first conducted, and for both genders, necessary conditions emerged only in relation to sport participation. The analysis for female students indicates that four conditions are necessary for the occurrence of the outcome variable (Table A5). The motivators *staying physically fit*, *maintaining overall health*, and *fun associated with sports* are identified as necessary conditions. Interestingly, the absence of *fear of social judgment* also appears as a necessary condition among respondents who report a high level of sport

participation. For male students, the table reveals that *staying physically fit*, *improving skills* and *engaging in sport because of the fun* are necessary in this case (Annex A7).

Sufficiency Analysis

The results of the parsimonious solution for sport participation among female students identify one core condition: the absence of *excessive academic workload* (Table A9). This condition alone accounts for a raw and unique coverage of 0.5717, with a consistency score of 0.7169.

The solutions table reveals two distinct configurations that lead to high sport participation among female students (Table 10). Configuration 1 is characterized by the presence of all five motivators: *enhancing body image*, *fun associated with sports*, *restoring mental energy*, *maintaining overall health*, and *staying physically fit*, combined with the absence of *lack of time*, *excessive academic workload*, *lack of confidence*, and *fear of social judgment*. It reaches a high consistency (0.9192), with a raw coverage of 0.3251 and a unique contribution of 0.0344. Configuration 2 presents a similar profile; however, instead of the absence of *lack of time*, it features the absence of *lack of motivation*. This configuration achieves a consistency score of 0.9033, a raw coverage of 0.3763, and a unique contribution of 0.0856. The overall solution consistency is 0.8987 and the solution coverage is 0.4107, showing that these two combinations explain sport participation cases among female students with high reliability.

Table 10: Solutions table for sport participation – Female Students

Configurations	1	2
MOTIVATORS		
Enhancing body image	●	●
Fun associated with sports	●	●
Restoring mental energy	●	●
Maintaining overall health	●	●
Staying physically fit	●	●
BARRIERS		
Lack of time	⊗	
Lack of motivation		⊗
Excessive academic workload	⊗	⊗
Lack of confidence	⊗	⊗
Fear of social judgment	⊗	⊗
Consistency	0.919225	0.903292
Raw coverage	0.325143	0.376286
Unique coverage	0.0344284	0.0855713
Overall solution consistency	0.898718	
Overall solution coverage	0.410714	

Outcome variable: sport participation

The parsimonious solution for non-participation identifies three core conditions (Table A10). These include the absence of *fun associated with sports*, and two combinations involving the presence of barriers. While *body image concerns* and *lack of time* are present in both configurations, the first pathway is further characterized by an *excessive academic workload*, while the second includes a *lack of motivation*. The most impactful configuration includes the presence of *enhancing body image*, *lack of time* and *excessive academic workload,* with a raw coverage of 0.5115 and a consistency of 0.8119. The absence of *fun*, in contrast, displays a lower coverage (0.3404), with a consistency of 0.7953. The third configuration involving the *body image concerns*, *deficit of motivation* and *academic workload* has a raw coverage of 0.5252 and a consistency of 0.7915. Together, the three paths achieve a solution coverage of 0.6515 and a consistency of 0.7687.

The solutions table confirms these trends by identifying two high-consistency combinations (Table 11).

Configuration 1 highlights the absence of *fun*, combined with the presence of barriers such as *lack of time* and *excessive workload*. This path is sufficient for explaining sport non-participation, with a raw coverage of 0.2901, a unique coverage of 0.0684, and a consistency of 0.8433.

Configuration 2 includes the presence of *body image concerns* combined with the presence of *lack of time*, *lack of motivation*, and *academic workload*, reaching a raw coverage of 0.4937, a unique coverage of 0.2719, and a consistency of 0.8086. The overall solution presents a consistency of 0.7993 and a coverage of 0.5620.

Table 11: Solutions table for ~ sport participation – Female Students

Configurations	1	2
MOTIVATORS		
Enhancing body image		●
Fun associated with sports	⊗	
Restoring mental energy		
Maintaining overall health		
Staying physically fit		
BARRIERS		
Lack of time	•	•
Lack of motivation		●
Excessive academic workload	•	●
Lack of confidence		
Fear of social judgment		
Consistency	0.843267	0.808626
Raw coverage	0.290127	0.493671
Unique coverage	0.0683544	0.271899
Overall solution consistency	0.799280	
Overall solution coverage	0.562025	

Outcome variable: ~ sport participation (non-participation)

For the male population, the parsimonious solution for sport participation reveals a single configuration composed of core conditions. This configuration includes the *enjoyment of spending time with friends* and the absence of *lack of motivation* (Table A11). It achieved a consistency score of 0.7718, with a raw and unique coverage of 0.6805.

Table 12 identifies a single combination of factors leading to the outcome. This configuration includes all four motivators, with *enjoying time with friends* as a core condition. On the barrier side, *lack of motivation* appears as a core condition, while *lack of partners* is a peripherical condition. A consistency score of 0.8424 was observed, along with both raw coverage and unique coverage values of 0.5364.

Table 12: Solutions table for sport participation – Male Students

Configurations	1
MOTIVATORS	
Enjoying time with friends	●
Fun associated with sports	•
Improving skills	•
Maintaining overall health	•
Staying physically fit	•
BARRIERS	
Lack of time	
Lack of motivation	⊗
Excessive academic workload	
Stress due to class schedule	
Lack of partners	⊗
Consistency	0.842436
Raw coverage	0.536354
Unique coverage	0.536354
Overall solution consistency	0.842436
Overall solution coverage	0.536354

Outcome variable: sport participation

The same procedure was applied to analyze non-participation in sport among male students. The identified core configuration consists of the presence of *lack of motivation* combined with the absence of *lack of partners* (Table A12). This combination produced a consistency score of 0.7519 and a raw and unique coverage of 0.4924.

The configuration presented in the solution tables includes only the five barriers identified for this population, suggesting that the absence of motivators does not play a significant role in explaining sport non-participation among male students (Table 13). The absence of *lack of partners* is also emphasized in this table.

Table 13: Solutions table for ~ sport participation – Male Students

Configurations	1
MOTIVATORS	
Enjoying time with friends	
Fun associated with sports	
Improving skills	
Maintaining overall health	
Staying physically fit	
BARRIERS	
Lack of time	●
Lack of motivation	⬤
Excessive academic workload	●
Stress due to class schedule	●
Lack of partners	⊗
Consistency	0.845519
Raw coverage	0.267787
Unique coverage	0.267787
Overall solution consistency	0.845519
Overall solution coverage	0.267787

Outcome variable: ~ sport participation (non-participation)

Discussion

This discussion seeks to interpret the main findings of the fsQCA analyses by comparing them with existing literature. The analysis was conducted on the overall sample and further explored through a gender-based perspective. The objective is to reflect on how these findings contribute to both academic research and practical applications. Main findings of this study can be organized according to the different parts of the thesis (whole sample/gender-based sample).

Overall Population

On the full population, necessity analyses report 4 conditions that are necessary for sport participation including *staying physically fit*, *fun associated with sports*, *maintaining overall health* and *improving skills* and none for non-participation in sport (Table 4). These necessary conditions show importance of intrapersonal motivators and are consistent with the findings of Diehl et al. (2018). Additionally,

For the sport participation, all five motivators are present for both configurations and show that motivators are important in the decision of playing sports. However, the absence of barriers appears as core conditions in two configurations. Interestingly, the presence of *excessive academic workload* and *stress due to class schedule* play a role in sport participation. The first configuration highlights that, despite the stress and heavy academic workload imposed by school, a high level of sport participation can still be observed when key motivators are present, and students have sufficient available time (Table 7). This result indicates that when students are highly motivated, particularly through intrapersonal motivators, they may be able to manage structural stress more effectively and still find time for sport, even during academically intense periods. This interpretation fits with SDT, which says that when people feel competent, autonomous, and connected to others, they are more likely to stay motivated and maintain their behavior, even when facing stress. (Ryan & Deci, 2000a). It also reflects previous findings showing that sport can act as a way for students to deal with stress, particularly during exams (Diehl et al., 2018). This first configuration shows high consistency but low coverage, suggesting that while the conditions reliably lead to the outcome when present, this specific combination is relatively uncommon among the cases. The second configuration seems to be even more realistic and present with a 0.91 consistency and a 0.38 coverage.

For sport non-participation, three configurations are identified, each characterized by the presence of all barriers and four motivators, along with the absence of one specific motivator (table 9). While the set of barriers remains consistent, the absence of the motivator slightly varies across the configurations. Together, these configurations highlight that non-participation is not only driven by barriers, but by their interaction with the absence of key motivators. This reflects the fsQCA principle of configurational sufficiency, where inactivity results from specific combinations of conditions rather than single factors. Moreover, the findings indicate that not all motivators have the same impact. While many motivators contribute positively, certain ones such as *skill development*, *enjoyment*, and *mental well-being* play a crucial role in the decision not to engage in sport when they are absent (table 8). The first configuration seems to be more important and realistic with a consistency value of 0.91 and a raw overage of 0.20. The three paths effectively illustrate the concept of equifinality, revealing three distinct, although relatively similar combinations observed among students with low levels of sport participation (Fiss, 2011).

Overall, while the findings of this study are largely consistent with Self-Determination Theory (Deci & Ryan, 2000), they do not fully align with its core proposition that intrinsic motivation is the most powerful and lasting influence on behavior. In this research, intrinsic motivators such as enjoyment and competence were indeed present, but they did not appear to outweigh extrinsic motivators in importance. In fact, health and physical fitness, typically considered more extrinsic forms of motivation, emerged as necessary conditions for sport participation across the full sample. This suggests that, for university students, extrinsic motivations such as maintaining health or improving physical condition are just as influential as intrinsic ones.
Rather than a clear dominance of intrinsic motivation, the results indicate a more balanced dynamic, where both intrinsic and internalized extrinsic factors play an equally important role. This implies that, in this specific context, Self-Determination Theory may require some adaptation, as the distinction between intrinsic and extrinsic motivation appears less pronounced in practice than the theory originally proposes.

Gender-focused Populations

Analyses conducted by gender help to identify key differences and provide a better understanding of the decision-making processes involved.

Firstly, descriptive statistics reveal a clear gender gap in sport participation. Male students report higher weekly engagement in sport activities (M = 6.15, SD = 3.85) compared to female students (M = 4.46, SD = 3.98), with a difference of approximately one hour and forty-five minutes per week. These results suggest that not only is sport participation lower among female students, but it is also more heterogeneous. The slightly higher standard deviation among women indicates greater variability in their sport behavior, suggesting a wider disparity in participation levels within this group.

Then, gender-based necessity analyses yield results exclusively for sport participation. Among female students, the necessary conditions identified reflect a stronger influence of psychological and social factors, notably including the absence of *fear of judgment*. Butt et al. (2011) argue that girls are particularly affected by concerns about their appearance and how they are perceived by society. This is supported by the identification of the absence of *fear of judgment* as a necessary condition among female students in the present analysis (Table A5).

In contrast, among male students, the necessary conditions are more performance-oriented, such as *staying physically fit*, *improving skills*, and *fun associated with sports* (Table A7). These results are partly in line with the findings of Butt et al. (2011), who noted that men often engage in sports for competition and challenge. The motivation to improve one's skills may reflect the idea of personal challenge; however, the competitive aspect does not clearly emerge as a key motivator in this study.

The sufficiency analyses for sport participation reveal that, for both female and male students, the presence of all five motivators plays a central role in encouraging engagement in sport. However, the influence of barriers differs across genders. Among female students, two configurations lead to participation, both including all five motivators but differing in the absence of multiple barriers (table 10). The first configuration includes the absence of *heavy academic workload*, *lack of confidence*, *fear of social judgment*, and *lack of time*. In the second configuration, the barriers are similar, with *lack of time* replaced by *lack of motivation*. The two configurations indicate that female students who engage in sport frequently require the removal of barriers, particularly those related to *excessive university work.*

In comparison, male students show a single configuration in which all five motivators must be present, along with the absence of both *lack of motivation* and *lack of partners* (table 12). This indicates that, for male students, overcoming specific barriers is less essential than for female to ensure participation. In the configuration, male students seem to place importance on social interaction as a contributing factor to sport participation.

The sufficiency analyses for sport non-participation reveal that, for both female and male students, the accumulation of barriers plays a central role in discouraging engagement. Among women, two configurations emerge, combining *time constraints*, *academic workload*, and the absence of *enjoyment or internal motivation* (table 11). This suggests that non-participation results from both external pressures and a lack of perceived benefits. Moreover, literature supported that females are more affected by social barriers such as the opinions of others and the environment in which they live (Alexandris et al., 2002; Young et al., 2003; Halforty & Radder, 2015). The results of this analysis do not support this claim, as fear of judgment does not appear to be a contributing factor to non-participation. These results are particularly interesting when compared to the analyses of female sport participation, where *lack of confidence* appears in both configurations and the *absence of fear of judgment* emerges as a

necessary condition. In contrast, these two factors do not play any role in the current analysis, clearly illustrating the principle of causal asymmetry (Fiss, 2011). The presence of enhancing body image in the second configuration is somewhat surprising, but it may be explained by the fact that female students do care about their body image, but other constraints seem to take precedence. According to SDT (Ryan & Deci, 2000a), sustained behavior is unlikely when basic psychological needs such as autonomy, competence, or relatedness are not sufficiently fulfilled. This second configuration clearly reflects this idea, as the presence of a motivator like *enhancing body image* is not enough to compensate for strong barriers.

The second configuration clearly illustrates the principles of the TPB. For example, a female student may feel strongly motivated to engage in physical activity due to the positive impact it could have on her body image (attitude), and may also perceive a supportive environment free from pressure or judgment (subjective norm). However, if she believes she cannot manage it due to a lack of time and a demanding academic workload (perceived behavioral control), this perception directly hinders the behavior from occurring. These findings indicate that a lack of time and high academic demands significantly undermine perceived behavioral control, thereby reducing the chances of participating in sport.

For male students, a single configuration highlights the presence of multiple barriers, with social factors like *lack of partners* being less relevant (table 13). Overall, these results underline that non-participation is not the absence of motivation, but rather the presence of strong constraints that outweigh potential motivators, with gender-specific nuances in how these are experienced. In this case, structural barriers are predominant, and the absence of *lack of partners* is noted. Interestingly, when male students report a low level of weekly sport participation, social aspects do not appear to be a limiting factor. This finding is consistent with the study by Halforty and Radder (2015), which suggests that females are more affected than males by the lack of support from friends or family.

Overall, lack of time did not appear as the most significant barrier to sport participation, contrasting with the findings of Mirsafian (2016) and Halforty and Radder (2015). However, the present study supports the findings of Halforty and Radder (2015), as structural barriers also emerged as significant factors contributing to non-participation in sport, particularly constraints such as academic pressure and schedule-related stress. This study offers valuable insights and proposes a more targeted and realistic approach by identifying condition configurations, as

opposed to relying solely on linear models. Furthermore, the use of this method allows for greater precision in capturing gender differences, while also complementing and refining the findings of Butt (2011) and Rintaugu & Ngetich (2012).

Academic Contributions

This study contributes to the academic literature on marketing, and more specifically on social marketing. By applying the fuzzy-set Qualitative Comparative Analysis (fsQCA) method, it highlights the configurational nature of sport participation and non-participation among university students. Unlike traditional techniques that consider variables in isolation, fsQCA captures how combinations of multiple conditions interact to produce an outcome.

Moreover, this research confirms the asymmetric logic between participation and non-participation in sport. This highlights that the absence of a motivator does not necessarily produce the opposite effect of its presence, as seen with *fear of judgment*. This study offers additional empirical support for causal asymmetry in the context of sport participation.

Furthermore, the gender-based analysis provides valuable insights into motivational differences in sport participation among students. This study identifies various combinations of factors that lead to either participation or non-participation. For female students, participation appears to depend on the removal of social barriers, whereas for male students, the presence of key motivators, particularly *enjoyment*, *physical appearance*, and *skill development* is more influential. In terms of non-participation, women tend to experience a combination of barriers along with the absence of important motivators, such as the *enjoyment of sport*. In contrast, for men, the presence of barriers alone was often sufficient to explain low levels of sport participation.

Finally, the use of fsQCA in a sport participation context is still relatively rare in social marketing and behavioral research in the field of sport.

Managerial Implications

This study also offers practical insights for management, supporting the adaptation of sport programs to better meet student needs. The objective is to encourage sport participation among students who currently engage in little physical activity. As a result, the analysis gives particular attention to the configurations related to non-participation, while still considering the others, in

line with the principle of causal asymmetry. The barriers identified as significant are not necessarily within the direct control of institutions or authorities. A possible strategy would be to focus on reinforcing the presence of motivators that students feel are missing in their past sport experiences. This involves better communicating the *enjoyment of sport participation*, without placing too much emphasis on competition, and the *skills development*.

Universities play a central role in organizing and promoting student sports. The findings of this study offer valuable insights into the combinations of conditions that lead to low levels of sport participation. These insights can support more targeted communication strategies, such as offering guidance on how to overcome common barriers like *lack of time*, *academic workload*, or *schedule-related stress*. universities could implement an ambassador program on the website and on social media involving students who engage in regular and intensive sport practice. The aim is to show how they successfully balance their academic responsibilities with their sportive commitments. Promoting time management strategies or highlighting how sport can help reduce stress during exams and coursework may be particularly beneficial (Poirel, 2017).

Considering gender differences, universities could also tailor their offerings and communication to better address the specific challenges faced by female students, such as *low motivation* and *academic pressure*. Similarly, as male students also appear to struggle with motivation, strategies that enhance the appeal and accessibility of sport for both groups could be explored.

Conclusion

This study offers a deeper understanding of the decision-making processes that influence students' participation in sport. Overall, it highlights that sport participation among university students is not driven by single factors, but by specific combinations of motivators and the absence of key barriers. In the full sample, high participation is associated with strong intrapersonal motivators such as health, physical fitness, enjoyment, and skill development. In contrast, non-participation tends to occur when several structural barriers such as academic overload and lack of time are combined with the absence of essential motivators.

Gender-based analyses show that female students' participation in sport is strongly influenced by social factors and self-confidence, while male students are more motivated by enjoyment

and the opportunity to develop technical skills. When it comes to non-participation in sport, female students are strongly influenced by significant constraints and a lack of enjoyment. In contrast, for male students, low participation is explained solely by the presence of multiple barriers.

Limitations

Although the findings of this study are both satisfactory and insightful, several limitations were encountered during the research process. Indeed, the variables used in this study represent only a small portion of the factors that influence participation in sports. A list of motivators and barriers is presented at the beginning of the methodology section and reflects a significant portion of the factors commonly identified in the existing literature. This relatively limited number of motivators and barriers was deliberately chosen to align with the methodological requirements of fsQCA, which is sensitive to the number of conditions included due to the complexity of the resulting configurations. Consequently, the findings are shaped by the specific selection of conditions considered.

It is also possible that students who are more interested in sports or who are more physically active were more inclined to complete the questionnaire, which may have influenced the overall profile of the respondents. This may lead to an underrepresentation of individuals who engage in little or no physical activity.

Another limitation concerns the estimation of the number of hours spent on sport each week. Students were asked to indicate their weekly practice time, which may have been overestimated in order to align with perceived social norms or expectations. Additionally, differences across fields of study may have influenced the results. For instance, students enrolled in sport-related academic programs often have mandatory physical activity as part of their cursus. The amount of sport increases considerably for these students compared to those in other programs.

Future Research:

The FsQCA method is a statistical method that is still rarely used, despite its strong potential for advancing research in social marketing, particularly within the field of sport. Exploring additional motivators and barriers using this approach could lead to the identification of new configurations that more accurately reflect the complexity of choices. Furthermore, distinguishing between individual and team sports would be a valuable direction for future

research, as the conditions influencing participation may differ depending on the type of activity. At the demographic level, factors such as living situation and geographic context (rural versus urban) should also be considered in future studies, as they may significantly influence the constraints individuals face when engaging in sport.

To improve the accuracy and relevance of future research, incorporating qualitative methods when selecting factors could be a valuable approach. This would help to better understand how students experience and perceive the factors that influence their participation in sport.
Future research should also aim to include a larger and more representative sample of non-binary individuals to better understand their specific experiences and barriers related to sport participation.

Lastly, replicating this study with a different population than university students could provide valuable insights, given the fundamental role of sport in promoting health and well-being.

Closing Remark

In my view, sport represents both good health and a balanced lifestyle. It provides an opportunity of self-expression through the body and to explore movement. Promoting sport should therefore remain a priority for schools and public authorities, particularly in the face of sedentary habits and technologies that encourage individuals to remain seated and isolated.

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Annexes

Use of AI Tools

I used ChatGPT as a writing support tool to help improve the quality of my thesis. It mainly helped me with improving the formulation, finding synonyms, and getting some help for organizing the structure of my work.

Results Tables

Table A1: Necessity analysis for motivators reduction - Female students

Conditions	Consistency	Coverage
Staying physically fit	**0.962571**	**0.506655**
Maintaining overall health	**0.958714**	**0.506988**
Fun associated with sports	**0.901143**	**0.547617**
Restoring mental energy	**0.899714**	**0.522829**
Improving skills	0.867000	0.589739
Enhancing body image	**0.813000**	**0.546896**
Managing stress	0.771143	0.538293
Compensating for long periods of sitting	0.722857	0.534771
Enjoying time with friends	0.627428	0.562428
Pleasure derived from competition	0.568000	0.713312
University sports variety	0.407286	0.491976
Making new friends	0.371000	0.662162

Outcome variable: sport participation

Table A2: Necessity analysis for barriers reduction - Female students

Conditions	Consistency	Coverage
Lack of time	**0.846709**	**0.640280**
Excessive academic workload	**0.800000**	**0.678257**
Lack of motivation	**0.788481**	**0.753842**
Stress due to class schedule	0.776582	0.660174
Fear of social judgment	**0.449747**	**0.840550**
Lack of confidence	**0.422025**	**0.808047**
High subscription/practice costs	0.407975	0.703559
Lack of partners	0.404171	0.662724
Lack of accessible places	0.282532	0.627495
Health issues	0.268228	0.700264
Negative past experiences	0.237342	0.788478
Fear of injury	0.178355	0.666194

Outcome variable: ~ sport participation (non-participation)

Table A3: Necessity analysis for motivators reduction - Male students

Conditions	Consistency	Coverage
Fun associated with sports	**0.973235**	**0.532580**
Improving skills	**0.961855**	**0.566816**
Staying physically fit	**0.942677**	**0.489763**
Maintaining overall health	**0.877134**	**0.477020**
Enjoying time with friends	**0.853951**	**0.593352**
Restoring mental energy	0.842782	0.512824
Enhancing body image	0.815806	0.533857
Pleasure derived from competition	0.795363	0.696567
Managing stress	0.679452	0.509401
Compensating for long periods of sitting	0.543098	0.455542
Making new friends	0.493994	0.795116
University sports variety	0.399790	0.586762

Outcome variable: sport participation

Table A4: Necessity analysis for barriers reduction - Male students

Conditions	Consistency	Coverage
Lack of time	**0.741363**	**0.630459**
Lack of motivation	**0.714659**	**0.765400**
Excessive academic workload	**0.660317**	**0.656639**
Stress due to class schedule	**0.626330**	**0.680187**
High subscription/practice costs	0.487582	0.672418
Lack of partners	**0.430812**	**0.769513**
Fear of social judgment	0.327731	0.708233
Lack of confidence	0.325864	0.711955
Lack of accessible places	0.242577	0.558710
Fear of injury	0.141737	0.621113
Health issues	0.139869	0.644578
Negative past experiences	0.106256	0.577079

Outcome variable: ~ sport participation (non-participation)

Table A5: Necessity analysis for sport participation – Female students

Conditions	Consistency	Coverage
Staying physically fit	0.962571	0.506655
Maintaining overall health	0.958714	0.506988
~ Fear of social judgment	0.903714	0.592711
Fun associated with sports	0.901143	0.547617
Restoring mental energy	0.899714	0.522829
~ Lack of confidence	0.886857	0.576202
Enhancing body image	0.813000	0.546896
~ Lack of motivation	0.709429	0.748230
~ Excessive academic workload	0.571714	0.716947
~ Lack of time	0.463143	0.728049

Outcome variable: sport participation

Table A6: Necessity analysis for ~ sport participation – Female students

Conditions	Consistency	Coverage
Lack of time	0.846709	0.640280
Excessive academic workload	0.800000	0.678257
Lack of motivation	0.788481	0.753842
Fear of social judgment	0.449747	0.840550
Lack of confidence	0.422025	0.808047
~ Enhancing body image	0.403165	0.708723
~ Fun associated with sports	0.340380	0.795327
~ Restoring mental energy	0.272405	0.754030
~ Maintaining overall health	0.173924	0.826218
~ Staying physically fit	0.169494	0.836352

Outcome variable: ~ sport participation (non-participation)

Table A7: Necessity analysis for sport participation – Male students

Conditions	Consistency	Coverage
Fun associated with sports	0.973235	0.532580
Improving skills	0.961854	0.566816
Staying physically fit	0.942676	0.489763
Maintaining overall health	0.877133	0.477020
~ Lack of partners	0.854373	0.570825
Enjoying time with friends	0.853951	0.593352
~ Lack of motivation	0.752792	0.700392
~ Stress due to class schedule	0.667650	0.612885
~ Excessive academic workload	0.610327	0.614210
~ Lack of time	0.509589	0.635814

Outcome variable: sport participation

Table A8: Necessity analysis for ~ sport participation – Male students

Conditions	Consistency	Coverage
Lack of time	0.741363	0.630459
Lack of motivation	0.714659	0.765400
Excessive academic workload	0.660317	0.656639
Stress due to class schedule	0.626331	0.680187
~ Enjoying time with friends	0.481419	0.788138
Lack of partners	0.430813	0.769513
~ Improving skills	0.348646	0.911621
~ Fun associated with sports	0.243137	0.911127
~ Maintaining overall health	0.147899	0.576000
~ Staying physically fit	0.129785	0.718718

Outcome variable: ~ sport participation (non-participation)

Table A9: Parsimonious solution for sport participation – Female Students

Combinations	Raw coverage	Unique coverage	Consistency
~ Excessive academic workload	0.571714	0.571714	0.716947
Overall solution coverage	0.571714		
Overall solution consistency	0.716947		

Table A10: Parsimonious solution for ~ sport participation – Female Students

Combinations	Raw coverage	Unique coverage	Consistency
Enhancing body image * Lack of time * Excessive academic workload	0.511519	0.0137975	0.811935
~ Fun associated with sports	0.340380	0.108481	0.795327
Enhancing body image * Lack of motivation * Lack of time	0.525190	0.025443	0.791492
Overall solution coverage	0.651519		
Overall solution consistency	0.768668		

Table A11: Parsimonious solution for sport participation – Male Students

Combinations	Raw coverage	Unique coverage	Consistency
Enjoying time with friends * ~ Lack of motivation	0.680506	0.680506	0.771750
Overall solution coverage	0.680506		
Overall solution consistency	0.771750		

Table A12: Parsimonious solution for ~ sport participation – Male Students

Combinations	Raw coverage	Unique coverage	Consistency
Lack of motivation * ~ Lack of partners	0.492437	0.492437	0.751925
Overall solution coverage	0.492437		
Overall solution consistency	0.751925		

Comprendre la pratique du sport chez les étudiant·e·s universitaires

Hello, je m'appelle Noé Frutiger et je suis actuellement étudiant à l'Université de Fribourg. Dans le cadre de mon travail de Master en marketing, je cherche à **comprendre ce qui motive et/ou freine les étudiant·e·s universitaires à faire du sport.**

À ce stade de mon travail, j'ai besoin de votre aide ! En prenant quelques minutes pour répondre à ce questionnaire, vous m'aidez à récolter des informations précieuses pour la suite de mon analyse.

Si vous êtes partant·e·s, je vous invite à répondre le plus honnêtement et complètement possible aux questions. Vos réponses sont essentielles pour la qualité de cette étude. Elles resteront strictement confidentielles et seront utilisées uniquement pour l'analyse statistique de mon mémoire. En participant, vous contribuez à une recherche qui vise à encourager la santé et le bien-être des étudiants universitaires.

Merci d'avance pour votre temps et votre participation !

Suivant →

Pratique du sport

En moyenne, combien d'heures par semaine consacrez-vous habituellement aux sports d'équipe ou collectifs ?

(Pensez à une semaine type au cours du mois dernier (**30 minutes = 0.5 heures**)) *

En moyenne, combien d'heures par semaine consacrez-vous habituellement à des sports individuels ?

(Pensez à une semaine type au cours du mois dernier (**30 minutes = 0.5 heures**)) *

Suivant →

Motivations pour le sport

"Les raisons suivantes me motivent à pratiquer un sport"

(Échelle : 1 = pas du tout d'accord, 7 = tout à fait d'accord)

Pour rester en bonne forme physique *

1 2 3 4 5 6 7

Pas du tout d'accord Tout à fait d'accord

Pour le plaisir et le côté ludique du sport *

1 2 3 4 5 6 7

Pas du tout d'accord Tout à fait d'accord

Pour recharger mon énergie mentale *

1 2 3 4 5 6 7

Pas du tout d'accord Tout à fait d'accord

Pour gérer le stress *

1 2 3 4 5 6 7

Pas du tout d'accord Tout à fait d'accord

Pour passer du temps avec des amis *

1 2 3 4 5 6 7

Pas du tout d'accord Tout à fait d'accord

Pour le plaisir que procure la compétition *

1 2 3 4 5 6 7

Pas du tout d'accord Tout à fait d'accord

Pour compenser les longues périodes passées en position assise *

1 2 3 4 5 6 7

Pas du tout d'accord Tout à fait d'accord

Pour maintenir ma santé général *

1 2 3 4 5 6 7

Pas du tout d'accord Tout à fait d'accord

Pour améliorer mes compétences sportives *

1 2 3 4 5 6 7

Pas du tout d'accord Tout à fait d'accord

Pour améliorer l'image de mon corps *

1 2 3 4 5 6 7

Pas du tout d'accord Tout à fait d'accord

Pour se faire de nouveaux amis *

1 2 3 4 5 6 7

Pas du tout d'accord Tout à fait d'accord

Parce que j'ai accès à un large choix de sports à l'université *

1 2 3 4 5 6 7

Pas du tout d'accord Tout à fait d'accord

Suivant → Continue anyway

Barrières au sport

"Les raisons suivantes constituent des obstacles à ma pratique du sport"

(Échelle : 1 = pas du tout d'accord, 7 = tout à fait d'accord)

Le manque de temps *

1 2 3 4 5 6 7

Pas du tout d'accord Tout à fait d'accord

Le manque de motivation *

1 2 3 4 5 6 7

Pas du tout d'accord Tout à fait d'accord

Le manque d'installations sportives accessibles *

1 2 3 4 5 6 7

Pas du tout d'accord Tout à fait d'accord

Le manque de confiance en soi *

1 2 3 4 5 6 7

Pas du tout d'accord Tout à fait d'accord

La peur des blessures *

1 2 3 4 5 6 7

Pas du tout d'accord Tout à fait d'accord

Les mauvaises expériences sportives dans le passé *

1 2 3 4 5 6 7

Pas du tout d'accord Tout à fait d'accord


Les problèmes de santé *
1 2 3 4 5 6 7
Pas du tout d'accord
Tout à fait d'accord
La charge de travail trop importante *
1 2 3 4 5 6 7
Pas du tout d'accord
Tout à fait d'accord
Le prix trop élevé pour faire du sport *
1 2 3 4 5 6 7
Pas du tout d'accord
Tout à fait d'accord


Le stress dû à l'emploi du temps *
1 2 3 4 5 6 7
Pas du tout d'accord
Tout à fait d'accord
La peur d'être jugé·e par les autres *
1 2 3 4 5 6 7
Pas du tout d'accord
Tout à fait d'accord
La difficulté à trouver des personnes avec qui faire du sport *
1 2 3 4 5 6 7
Pas du tout d'accord
Tout à fait d'accord
Suivant →
Continue anyway

Questions démographiques

Quel est votre genre ? *

- Femme
- Homme
- Non-binaire
- Je préfère ne pas répondre

Quel âge avez-vous ? *

Dans quelle université étudiez-vous actuellement ? *

Quel est le domaine académique de votre programme actuel ?

(Si votre programme combine deux disciplines de manière égale — vous pouvez choisir les deux. Sinon, choisissez celle qui représente la majorité de vos cours). *

- Arts, lettres, sciences sociales et humaines (par exemple, communication, journalisme, histoire, philosophie, linguistique, psychologie, sciences politiques, ...)
- Économie et gestion (par exemple, management, business, finance, marketing, ...)
- Droit (par exemple, droit, justice pénale, science forensique, ...)
- Sciences et technologies (par exemple, physique, chimie, mathématiques, informatique, géosciences, ...)
- Biologie, médecine et sciences de la santé (par exemple, biologie, médecine, pharmacie, sciences biomédicales, ...)
- Éducation et science du sport (par exemple, pédagogie, sciences de l'éducation, sciences du sport, ...)
- Autres

Comment vivez-vous actuellement pendant vos études ? *

Seul·e

Avec ma famille

Avec mon/mes colocataire(s)

Si vous souhaitez avoir accès aux résultats de ma recherche, vous pouvez indiquer votre email ci-dessous !

Terminer → Continue anyway

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UNIVERSITÉ DE FRIBOURG
UNIVERSITÄT FREIBURG

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DECLARATION

Par ma signature, j'atteste avoir rédigé personnellement ce travail écrit et n'avoir utilisé que les sources et moyens autorisés, et mentionné comme telles les citations et paraphrases.

J'ai pris connaissance de la décision du Conseil de Faculté du 09.11.2004 l'autorisant à me retirer le titre conféré sur la base du présent travail dans le cas où ma déclaration ne correspondrait pas à la vérité.

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