# MASTERARBEIT / MASTER'S THESIS

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„Autonomous motivation and attendance at fitness center:

A longitudinal prospective study““

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**Abstract Englisch**

The aim of this master's thesis was to compare self-reported gym attendance and actual gym attendance among new fitness center members, compare differences in motivation, explore the effect of motivation on self reported and actual gym attendance and to explore the effect of the evolution of motivation on self reported and actual gym attendance over a 12 week period. Different forms of motivation (autonomous and controlled motivation) were measured using the Exercise Self-Regulation Questionnaire (SRQ-E) (Ryan & Connell, 1989). Since motivation can change over time (Ryan and Deci, 2000), two measurements were taken at specific time points, one at 4 weeks after membership and the other at 12 weeks after membership. The study was conducted over a 6-month period in a newly reopened fitness center in Lower Austria and the participants consisted of members who joined the fitness center within the first 2 months after its reopening. 48 participants completed both questionnaires. Data analysis involved paired t-tests for differences in actual and self reported gym attendance after week 4 and week 12 and differences in motivation from week 4 and week 12, as well as regression analyses to determine the predictive effect of motivation types on actual gym attendance and to determine the effect of the evolution of motivation on self reported and actual gym attendance. Actual check-in data showed a significant difference in self reported gym attendance ($p = <0.001$ Week 4/$p = <0.001$ Week 12) compared to actual gym attendance. Participants overestimated their self reported gym attendance (3.4 (±1.4) Week 4/ 3.1 (±1.5) Week 12) compared to the acutal gym attendance (2.4 (±1.4) Week 4/ 2.3 (±1.5) Week 12). The overall gap between self-reported and actual attendance was 38%. Differences were also found between introjected motivation between week 4 and week 12 ($p = 0.015$) and external motivation ($p= 0.005$) between week 4 and week 12. The analyses found that intrinsic motivation has a significant effect on both, actual and self reported gym attendance in week 4 ($p = <0.001$(self reported), $p = 0.006$ (actual)) and week 12 ($p = <0.001$ (self reported), $p = 0.017$ (actual)). External motivation, introjected motivation and identified motivation did not have a significant influence on self reported or actual gym attendance at week 4 and week 12. The evolution of motivation did not have any significant effect on self reported gym attendance and actual gym attendance at week 12.

**Abstract Deutsch**

Das Ziel dieser Masterarbeit bestand darin, die selbstberichtete Anwesenheit im Fitnessstudio und die tatsächliche Anwesenheit im Fitnessstudio unter neuen Mitgliedern eines Fitnesscenters zu vergleichen, Unterschiede in der Motivation zu vergleichen, den Effekt der Motivation auf die selbstberichtete und tatsächliche Anwesenheit im Fitnessstudio zu untersuchen und den Effekt der Entwicklung der Motivation auf die selbstberichtete und tatsächliche Anwesenheit im Fitnessstudio über einen Zeitraum von 12 Wochen zu erforschen. Verschiedene Formen der Motivation (autonome und kontrollierte Motivation) wurden mithilfe des Fragebogens „Self-Regulation Questionnaire“ (SRQ-E) (Ryan & Connell, 1989) gemessen. Da die Motivation im Laufe der Zeit variieren kann (Ryan und Deci, 2000), wurden zwei Messungen zu spezifischen Zeitpunkten durchgeführt, eine nach 4 Wochen nach der Mitgliedschaft und die Andere nach 12 Wochen nach der Mitgliedschaft. Die Studie wurde über einen Zeitraum von 6 Monaten in einem neuen wiedereröffneten Fitnessstudio in Niederösterreich durchgeführt und die Teilnehmer*innen bestanden aus Mitgliedern, die dem Fitnessstudio innerhalb der ersten 2 Monate nach der Wiedereröffnung beigetreten waren. 48 Teilnehmer*innen haben beide Fragebögen ausgefüllt. Die Datenanalyse umfasste gepaarte t-Tests zur Untersuchung von Unterschieden in der tatsächlichen und selbstberichteten Anwesenheit im Fitnessstudio nach der 4. und 12. Woche sowie Unterschieden in der Motivation von der 4. zur 12. Woche. Außerdem wurden Regressionsanalysen durchgeführt, um den Effekt der Motivationsarten auf die tatsächliche Anwesenheit im Fitnessstudio zu bestimmen und den Effekt der Entwicklung der Motivation auf die selbstberichtete und tatsächliche Anwesenheit im Fitnessstudio festzustellen. Die tatsächlichen Check-In Daten zeigten einen signifikanten Unterschied in der selbstberichteten Anwesenheit im Fitnessstudio ($p = <0.001$ Woche 4/$p = <0.001$ Woche 12) im Vergleich zur tatsächlichen Anwesenheit im Fitnessstudio. Die Teilnehmer*innen haben ihre selbstberichtete Anwesenheit im Fitnessstudio überschätzt (3.4 (±1,4) Woche 4/ 3.1 (±1,5) Woche 12) im Vergleich zur tatsächlichen Anwesenheit im Fitnessstudio (2.4 (±1.4) Woche 4/ 2.3 (±1,5) Woche 12). Die Differenz zwischen selbstberichteter und tatsächlicher Anwesenheit betrug 38%. Unterschiede wurden auch zwischen introjizierter Motivation zwischen Woche 4 und Woche 12 ($p = 0.015$) und externaler Motivation in Woche 4 und Woche 12 ($p= 0.005$) gefunden. Die Analysen ergaben, dass intrinsische Motivation einen signifikanten Effekt auf die tatsächliche und selbstberichtete Anwesenheit im Fitnessstudio in der 4. Woche ($p = <0.001$ (selbstberichtet), $p = 0.006$ (tatsächlich)) und der 12. Woche ($p = <0.001$ (selbstberichtet), $p = 0.017$ (tatsächlich)) hatte. Externale Motivation, internalisierte Motivation und identifizierte Motivation hatten keinen signifikanten Einfluss auf die selbstberichtete oder tatsächliche Anwesenheit im Fitnessstudio in der 4. und 12. Woche. Die Entwicklung der Motivation hatte keinen signifikanten Effekt

auf die selbstberichtete Anwesenheit im Fitnessstudio und die tatsächliche Anwesenheit im Fitnessstudio in der 12. Woche.

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# Foreword

The present master's thesis on the topic 'Autonomous motivation and attendance at a fitness center' was developed based on the idea provided by Dr. Peter Gröpel. I have always been interested in the field of sports psychology, so I reached out to him to start my thesis. I want to thank Dr. Peter Gröpel for the support he provided me in finding my master's thesis topic and during the whole process of writing the thesis. I also want to thank Roman Schweiger, the owner of Fitnesscenter California, where this study took place. Without his help and openness, this thesis would not have been possible. Another expression of gratitude belongs to all the members of Fitnesscenter California who supported me during the process of data collection and offered their help to reach as many participants as possible.

# Statement of Plagiarism

I declare that I have independently authored this paper and have used only the resources identified. This work has not been submitted elsewhere (e.g., for other courses) nor has it been presented by other individuals (e.g., works from other people on the internet.

Ich erkläre, dass ich die vorliegende Arbeit selbstständig verfasst habe und nur die ausgewiesenen Hilfsmittel verwendet habe. Diese Arbeit wurde weder an einer anderen Stelle eingereicht (z. B. für andere Lehrveranstaltungen) noch von anderen Personen (z. B. Arbeiten von anderen Personen aus dem Internet) vorgelegt.

# Introduction

Physical activity promotes health, not only in the physical field but also in the psychological area. To benefit from physical activity in the long run, it is important to practice physical activity on a regular basis. The WHO (2022) repots that more than a quarter of the world's adult population are insufficiently active (1,4 billion adults). This splits up into around 32% of women and around 23% of men who do not do enough physical activity to stay healthy.

Even though the market size of the fitness industry grew over 40% in the last deacde (Statista, 2020), there has been no improvement in global levels of physical activity since 2001 (WHO, 2022). Also, evidence shows that only 55% of participants who start an exercise program still stick to it after 6 months (Dishman & Buckworth, 1996; FIA, 2001; James et al., 2008). This means that 45% of participants drop out after 6 months, with the highest dropout rate in the first three months (FIA, 2001). This indicates, that people have trouble adhering to an exercise program, rather than starting.

According to Eurobarometer (2022), the main reasons for not attending physical activity regularly are "not having enough time" (41%) and "lack of motivation" (23%). So it is important to understand why some people adhere to an exercise program and some do not.

This study is a partial replication of the study by Kopp, Senner, Kehr & Gröpel (2020). More information on this study is in the section "Current Research". The aim of this study is to explore the predictive effect of motivation on actual gym attendance from new fitness center members. Exercising means that through planned, systematic, and organized interventions, increased physical and motoric development are aimed for (Schnabel, Harre & Krug, 2008). Another aim of this study is to compare perceived gym attendance and actual attendance from new gym members.

This study is based on the self-determination theory (Ryan & Deci, 1985, 2000) which is the theoretical basis for measuring participants' forms of motivation. Self-Determination Theory (SDT) distinguishes itself among various motivation theories as it places its focus on individual personality factors, the surrounding environment, and the underlying reasons and outcomes of self-directed actions.

„This conceptual framework has been applied in several contexts, namely in education (Grangeia et al., 2016), physical education (Standage, Duda, & Ntoumanis, 2005), sports (Rocchi & Pelletier, 2018) and also in the exercise context (Phillips & Johnson, 2017; Teixeira, Silva, Mata, Palmeira, & Markland, 2012)." (as cited in Rodrigues, 2018, p.4).

SDT is the most popular approach to explaining human motivation applied in recent years in the context of sports and exercise (Cid et al., 2019). Intrinsically motivated participants are more likely to participate in a long-term manner, which means higher adherence (Ryan & Deci, 1985, 2000).

**Self Determent Theory**

Self-Determination Theory (SDT) has some basic assumptions that are important to understand the context of the theory. SDT aims to consider both the activity and passivity, responsibility and inactivity of individuals. SDT posits that people have a propensity for activity and integration, but are also susceptible to passivity. The focus of SDT is to specify the conditions that support natural human activity but also trigger or exploit their vulnerability.

Ryan & Deci (1989) emphasize that conditions that support autonomy and competence foster intrinsic motivation, which is referred to as the natural activity and curiosity of humans. On the other hand, conditions that control behavior and hinder perceived effectiveness undermine the expression of this intrinsic motivation. Ryan and Deci (1985, 2000) assume that people naturally strive to unfold their abilities and self-actualize. The development and behavior of an individual are the result of a constant interaction between inner (innate) drives and external (social) influences, such as social support. These interactions can either promote self-determination and growth or give rise to defense mechanisms. SDT is a meta-theory that contains various sub-theories. The most popular and relevant theory for this study is the Basic Psychological Needs Theory (BPN). The theory postulates that there are three psychological needs that are crucial for intrinsic motivation and well-being (Ryan & Deci, 1985, 2000):

- Need for Autonomy: This refers to the need for self-determination and control over one's actions and decisions. People want to feel that they can carry out their actions driven by their own choice, without being influenced by external constraints or controls.

- Need for Competence: This relates to the need for self-efficacy and the feeling of being able to successfully handle tasks and challenges. People want to feel competent and capable of achieving their goals.

- Need for Relatedness: This relates to the need for social connection, belonging, and relationships with others. People want to feel connected and supported by others.

In the context of sports, Ryan & Deci hypothesize that participating in sports provides an excellent opportunity for individuals to experience self-determination, receive feedback on their competence, and engage in social interactions. Sports are typically chosen freely, and they offer individuals the chance to expand their capabilities and develop skills. (Ryan & Deci, 1985, page 313). So, physical activity appears to be a highly effective means of fulfilling intrinsic needs. The results of De Francisco et. al. (2020) support this since the study showed that the satisfaction of basic psychological needs leads to lower athlete burnout and higher engagement in sport activities.

**Autonomy**

Autonomy, in the context of SDT (Ryan & Deci, 1985), refers to the innate human desire for independence, choice, and volition in one's actions and decisions. Autonomy is an important factor in social and personality psychology and perceptions of variables that determine behavior are crucial to understanding autonomy. It is important to understand autonomy not only as a contrast to external causes, but also as intrapersonal pressures, fears or standards that can influence motivation and behavior (Ryan & Deci, 2000).

Individuals, that are able to freely choose their sporting activities and decide for themselfes when and how they do sports is curcial for perceived autonomy. Perceived autonomy allows athletes to experience a sense of self-determination and control over their sporting decisions, which in turn increases their intrinsic motivation. On the other hand, limiting autonomy such as external rewards or extrinsic pressures can reduce intrinsic motivation. Serrano et. al. (2021) found that autonomy support from coaches positively predicted BPN satisfaction in young soccer players which, in turn, positively explained sport commitment, while intimidation behaviours positively predicted BPN frustration, which, in turn, negatively explained sport commitment. This means that it is important to not only support autonomy, but also to avoid the use of controlling behaviours. Autonomy in sport helps athletes enjoy their activities, achieve a sense of achievement and feel empowered in their sporting commitment.

Beside of methods for enhancing autonomy on a personal level institutions can for example letting sport students choose between several physical activities, sport clubs can involve their members in decision-making processes or implementing feedback methods. This

strengthens the feeling of self-determination and motivation of the people. Implementing a positive failure management helps to see mistakes as a part of the learining process rather than as failures may also promote self-confidence and personal responsibility. Gyms for example can improve the feeling of autonomy for their members in decision-making processes, such as selecting equipment, designing the place or vote for lessons that the gym offers. In general it is to say that autonomy is an important factor in the well-being of individuals and helps to promote an active, assimilative and integrated nature. However, in contexts of excessive control and lack of connection This can lead to a lack of initiative, irresponsibility as well as emotional stress and psychological disorder (Ryan & Deci, 1989).

**Competence**

Ryan and Deci (1985) define competence as the need for individuals to experience a sense of efficacy, mastery, and skill in their actions and endeavors. It encompasses the feeling that one is capable of effectively engaging in activities, learning, and achieving desired outcomes.

The conditions that foster the feelings of competence and efficacy contribute to supporting people's natural activity and curiosity. In contrast, conditions that control behavior and hinder perceived effectiveness undermine the expression of intrinsic motivation. This means that the sense of competence plays a crucial role in whether people feel actively engaged in their actions.

Positive feedback and success experiences that indicate perceived competence enhance intrinsic motivation. This means that athletes who feel competent and receive positive feedback about their performance are more intrinsically motivated to succeed in their sports activities (Ryan & Deci, 1985)

People can be motivated, by simply informing them, which impact physical activity can have on them on a personal and physical level and why the task important (Vasconcellos, 2019). When people get more and constantly information about the positive impact of physical activity on their personal and physical well-being and they see and feel improvements, it helps them develop a sense of competence. They begin to understand and more importantly feel how engaging in physical activity can lead to physical improvements. This knowledge can boost their confidence in their ability to engage in such activities.

The majority of people are now aware that physical activity promotes health, with positive effects on both physical and mental well-being (Bernstein & MacNally, 2018; Lubans et al., 2016; Liu et al., 2019, Saillis et al., 2000, Hallal et al., 2006).

Beside physical adaptations human experiences and behavior are influenced in many ways by physical activity. Emotions and mental health also receive positive boosts from regular exercise, there is even evidence for short term effects (Hallal, 2006). If people have already experienced how sports have helped them cope with stressful situations or have had a positive impact on their emotional well-being, it also strengthens the feeling of competence. These experiences are going to encourage them to reflect on their own behavior and can acquire valuable knowledge for their personal goals.

The feeling of competence is also related to the feeling of self-efficacy. Physical activity enhance self-efficacy, but self-efficacy also emerges as one of the strongest predictors when it comes to sustained physical activity (Samson & Solomon, 2011). Edmunds & French (2010) also recommend physical activity to enhance self-efficacy, particularly when the focus is not solely on goal achievement and when feedback is provided by those implementing interventions to boost self-efficacy.

"According to Bandura, self-efficacy beliefs refer to the belief and confidence in one's ability to organize and execute a course of action using the skills at one's disposal in order to pursue a specific goal" (Schulz et al., 2011, p. 59). Engaging in activities such as sports programs provides the experience of being able to make a positive impact oneself.

One's perception of self-efficacy, as described by Samson & Solomon (2011), is influenced by four main sources:

- Past achievements
- Social/verbal persuasion
- Vicarious experience
- Modeling and interpretation of physical/emotional states.

Through cognitive processing, the perception of one's own self-efficacy is formed from these four factors. Past achievements have the strongest impact on self-efficacy perception, as they represent precisely what self-efficacy entails (Samson & Solomon, 2011). Reflecting on past achievements can lead to an assessment that promotes self-efficacy. Essentially, a learning process takes place here, as positive experiences increase self-efficacy, while negative experiences diminish it.

Physical activity thus provides the potential to accumulate such positive experiences. Samson & Solomon (2011) conclude from their review that the evidence regarding the relationship and interaction between physical activity and self-efficacy is highly stable and that the sense of self-efficacy positively influences engagement, effort, and enjoyment in sports.

**Relatedness**

Relatedness is the last one of the three fundamental psychological needs, alongside autonomy and competence, that are essential for fostering self-determined motivation. In the SDT framework, relatedness is defined as the need for emotional support and the demonstration of connection and belongingness in social interactions (Ryan & Deci, 1985). Human motivation across various aspects of life is significantly influenced by social interactions. Relatedness, or the need for social connectedness, is considered one of the fundamental psychological needs. Conditions that support this social connectedness promote the internalization and integration of external social values and responsibilities. This means that the quality of interpersonal relationships and social interactions plays a significant role in people's motivation and well-being (Deci & Ryan, 2000). Relatedness also plays a significant role in the study and understanding of prosocial behavior and is associated with other psychological aspects related to prosocial behavior (Deci & Ryan, 1989).

Rodrigues (2018) suggests that when individuals perceive supportive interpersonal behaviors related to relatedness, they are more likely to engage in self-determined actions. In other words, feeling emotionally supported and connected to others can enhance one's intrinsic motivation and self-determined behavior.To support relatedness in school sport settings or in sport clubs, it is very important to create a welcoming atmosphere, where everyone feels respected. A way to support relatedness between people is to organize team-building exercises and activities that encourage persons to work together and build relationships. It is also helpful to provide positive feedback and encouragement, highlighting the strengths and efforts rather than solely focusing on weaknesses.

Rodrigues (2018) found that when individuals experience behaviors that thwart relatedness, such as behaviors of rejection or a lack of emotional support, they are more likely to manifest less self-determined actions. This implies that hindering relatedness can lead to a decrease in intrinsic motivation and self-determined behavior. Individuals who perceive relatedness support from exercise professionals or coaches are more likely to maintain exercise practice in the long term (Rodrigues, 2018).

„When it comes to the exercise context, BPN satisfaction turns out to be a strong predictor of intrinsic motivation (Ryan & Deci, 2000a), being ultimately related with long-term exercise adherence (Teixeira et al., 2012). On the contrary, BPN’s frustration predicts amotivation (Bartholomew et al., 2011a; Vansteenkiste & Ryan, 2013), leading to low adherence and high dropout rates (Bartholomew et al., 2011b; Ntoumanis, Thogersen-Ntoumani, Stott, &

Hindle, 2013)“ (as cited in Rodrigues, 2018, p.5). Frustration of BPN’s can lead to a simple change in behavior or even sickness (Deci & Ryan, 1985). Among the three fundamental needs, the satisfaction of competence appears to be the most influential in driving self-determined motivation, highlighting the importance of feeling competent, as it is associated with the will to participate (Vasconcellos et al., 2019).

Despite the complexity of the theory, the implementation of physical activity is relatively straightforward. Simple activities like taking leisurely walks or short runs can have a positive effect and require little to no cost. This makes sports and self-determination relevant and achievable for people of all societal backgrounds.

### Forms of Motivation

During these days, becoming more physically active seems to be a trend as the number of gym memberships increases, and the market size of the fitness industry also grows (Statista, 2020). Especially with attending a gym, extrinsic factors can come more into play, as people pay money for it and it also offers the main tools to change physical appearance. So, people are more likely to attend a gym to get in shape or to be forced to be physically active because they pay for it. This may also be a reason for the high drop out rates from new gym members because controlled forms of regulations tend to lead to boredom, disinterest and drop-out (Teixeira et al., 2018).

Commonly well known from the SDT are the terms extrinsic and intrinsic motivation. Extrinsic motivation includes all forms of motivation that are not purely intrinsic. This means that external motivation, introjected motivation, identified motivation and integrated motivation are described as a part of extrinsic motivation.

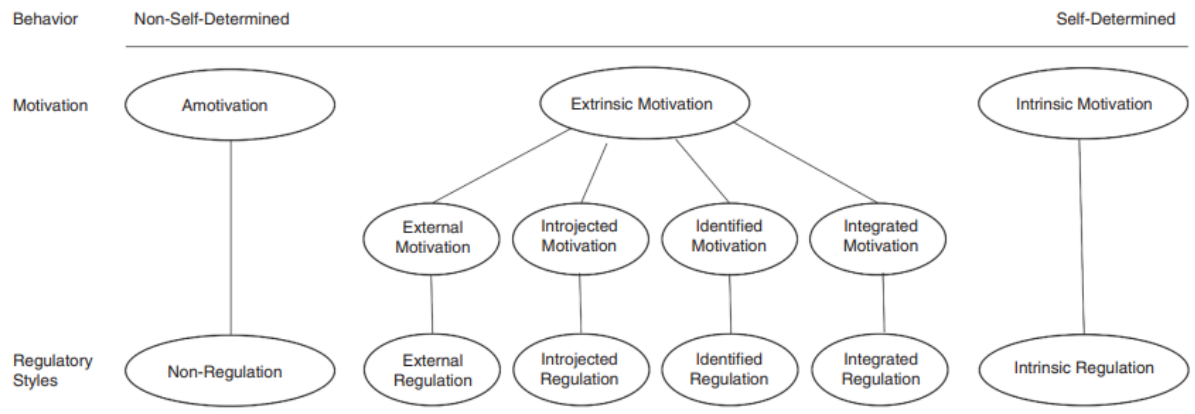


Figure 1: Self-determination continuum showing types of motivation and their regulatory styles. Source: Tang, Wang & Guerrien (2019).

The SDT Theory focuses on the quality of motivation to participate in physical activity and exercise. The two main types of motivation that come into play in this theory are intrinsic motivation and extrinsic motivation (in contrast to amotivation). Intrinsic motivation focuses on actions that brings joy and pleasure to a person by simply accomplishing the task. For example, if someone is going to the gym because they like to lift more weight each session and feel pleasrue and proud after it, the person is very intrinsic motivated. Intrinsic motivation has shown to enhance performance, persistance, creativity, vitality, self worth and well being (Ryan & Deci, 1985, 2000, Tang, Wang & Guerrien, 2019).

On the other hand, extrinsic forms of motivation includes actions to reach a goal that is outside of a person (identified motivation), actions that avoid certain feelings (introjected motivation) or to get rewarded for an action (external motivation). For example, if a person is going to the gym to avoid the feeling of guilt after eating a cake (introjected regulation) or is lifting weights in the gym to impress the social environment (external regulation).

Autonomous forms of motivation (including intrinsic motivation, integrated motivation and identified motivation) are linked to the fulfillness of basics psychological needs like competence and autonomy. Autonomous forms of motivation play an important role in physical activity (Vasconcellos, 2019). Controlled forms of motivation (External motivation and introjected motivation) are linked to the psychological basic need for social inclusion and amotivation is defined as a lack of intention to act. It is also important that SDT not only describes different forms of motivation but also the mechanism leading to the transition from externally imposed regulations to more internally motivated behaviors (Ryan & Deci, 1985, 2000).

| Controlled Motivation | Autonomous Motivation |
|---|---|
| (Amotivation) | Identified Motivation |
| External Motivation | Integrated Motivation |
| Introjected Motivation | Intrinsic Motivation |

Table 1: Distinction of controlled and autonomous forms of motivation

This table serves as an orientation to different forms of motivation. Motivation appears as a continuum between controlled forms of motivation and autonomous forms of motivation respectively intrinsic and extrinsic motivation.

External Motivation: External motivation is a form of motivation that is driven by external rewards. It is a type of motivation where individuals engage in a particular activity or behavior

because they are influenced by external rewards or avoid negative consequences. In other words, people are externally motivated when they perform an action to gain a tangible reward, such as money or to prevent punishment, criticism, or negative outcomes. This type of motivation often involves doing something because one feels they have to, rather than because they want to. In sports context it shows when people do sports because they think others like them more if they are physically active or look fit.

Introjected Motivation: Introjected motivation is defined as a type of motivation where individuals engage in an activity or behavior because they feel a sense of pressure or obligation, often coming from internal sources such as guilt, anxiety, or a desire to maintain self-esteem. People are driven by introjected motivation when they pursue a task or goal not because they genuinely want to do it, but because they believe they should do it to avoid negative emotions, gain approval, or maintain a certain self-image. In this thesis, this means going to the gym because people would feel guilty if they would not go the gym or feel pressured to be physically active.

Identified Motivation: Identified motivation is a form of motivation that is more self-determined than external forms of motivation but less self-determined than intrinsic motivation. It is characterized by engaging in a behavior or activity because the individual has personally identified with its value and importance. While identified motivation starts with external influences, individuals gradually internalize these influences to the point where they genuinely endorse and value the behavior. This can lead to greater persistence, effort, and well-being compared to more externally regulated forms of motivation (Ryan & Deci, 1985,2000, Tang, Wang & Guerrien, 2019). With physical active persons, this could manifest when they internalize that physical activity is important and beneficial for their health and they feel better in their day to day lifes.

Integrated Motivation: Integrated motivation goes beyond merely identifying with a behavior's value. It involves aligning the behavior with one's core identity and values. Integrated motivation is considered one of the most self-determined forms of motivation, as it reflects a deep internalization of the behavior. People with integrated motivation do not just see the behavior as valuable, they see it as an integral part of who they are and what they stand for. They engage in physical activity because it aligns with their personal values and beliefs and is an integral part of who they are. This form of motivation is not measured with SRQ-E in this thesis.

Intrinsic Motivation: Intrinsic motivation is defined as engaging in an activity for the inherent satisfaction and enjoyment it provides, rather than for external rewards or pressures. When a

person is intrinsically motivated, they find personal fulfillment, pleasure, or interest in the task itself, and their behavior is driven by their own internal desires and curiosity. In the context of this thesis it means that participants simply enjoy being physically active or find pleasure in mastering new training methods.

Important to know is that the quality of people's motivation can change over time on the spectrum from amotivation to intrinsic motivation (Ryan & Deci, 1985). So autonomous motivation can move towards controlled motivation or amotivation, and amotivation can reach the state of autonomous motivation. Satisfying the basic psychological needs is a strong predictor of intrinsic motivation, while the frustration of basic psychological needs is linked to amotivation, which leads to dropouts and low adherence (Bartholomew et al., 2011)

**Current research**

As mentioned at the beginning, this study is a partial replication of the study by Kopp, Senner, Kehr & Gröpel (2020). The aim of their study was to investigate the influence of motivation on exercise adherence. They utilized the Achievement Motive Theory (McClelland, 1987) and the Self-Determination Theory (Deci & Ryan, 1985a) to predict individuals' gym attendance. The procedure was slightly different from that in this thesis. A link to an online questionnaire measuring demographic and psychological variables was emailed during the first week following the initiation of gym membership (week 1). Subsequent questionnaires were distributed at four (week 4), fifteen (week 15), and thirty weeks (week 30) thereafter.

They used the same instrument (Self-Regulation-Questionnaire) to measure autonomous and controlled forms of motivation (SRQ-E, Ryan & Connell, 1989).

They found out a variety of informations that are important for this thesis. First of all, they found out that self-reported and actual gym attendances declined over time. Secondly, the results showed that the overall gap between self-reported gym attendance and actual gym attendance was 39%, so participants overestimated their actual gym attendance. Thirdly, in terms of autonomous and controlled motivation, only intrinsic motivation, as measured at week 4, was found to predict self-reported gym attendance over the 30-week period. Participants who were more intrinsically motivated reported visiting the gym more frequently.

Actual gym attendance was not predicted by any of the SRQ-E constructs. They found that changes in identified motivation were positively associated with both self-reported and actual gym attendance over the 30-week period. So the evolution of identified motivation predicted more frequent attendance. Changes in intrinsic motivation, introjected motivation, and exter-

nal motivation showed no significant relationship with actual gym attendance (Kopp, 2020). It seems that the evolution of motivation, especially identified motivation is more important for the actual gym attendance, than different forms of motivation at the start.

As research from Cid et al. (2019) among school kids showed, satisfying basic psychological needs, especially the need for competence, is linked to higher autonomous motivation and intrinsic motivation. Identified regulation, like the feeling of identifying with the task itself, was also higher among students who satisfied the need for competence. The fulfillment of this need also had a positive correlation with practicing sports outside of school in the future. This shows the importance of fulfilling the basic psychological needs for long-term sport participation.

Also, a review by Teixeira et al. (2012) shows consistent support for the relationship between the basic psychological need for competence and exercising frequently. The study also shows clear evidence that SDT provides valuable information in understanding exercise behavior. All forms of autonomous regulation predicted exercise participation in various samples and settings (Teixeira et al., 2012). Older studies show that SDT could predict physical activity after 1 month (Duncan et al., 2010).

In contrast to that, a newer study showed that SDT is not capable of predicting physical activity over a 8 week period, only predicting physical activity at baseline (Chu et al., 2021). Regarding the relationship between self-determined motivation and physical activity, the study found that only intrinsic motivation was significantly correlated with physical activity behavior. Intrinsic motivation was consistently positively associated with moderate-to-vigorous physical activity (MVPA) energy expenditure at baseline and follow-up, but the positive and significant correlation between intrinsic motivation and MVPA duration was only found at baseline (Chu, 2021). These results may be, because the study was only over a 8 week period and had a limited sample size. Kopp (2020) showed, that the evolution of identified motivation over a 30 weeks period using SDT shows effects on predicting self reported and actual gym attendance.

The results suggest that physical activity promotion programs should target aspects of intrinsic motivation and scheduling self-efficacy to increase the likelihood of participation in physical activity within the population.

Seymour et. a. (2022) found that more self-determined motivation was associated with meeting physical activity guidelines among people with mental illness. Adults receiving mental health services participated in an 8-week program, choosing between exercise instruction in a gym (GYM) and behavioral counseling (MOT) delivered by an exercise physiologist. The

study assessed self-determined motivation, physical health indicators, and mental health in 95 participants, with the majority selecting the exercise instruction program (GYM = 60; MOT = 35). The study concluded that exercise instruction can enhance self-determined motivation. However, individuals with mental illness may require more intensive behavioral counseling to boost self-determined motivation then healthy individuals (Seymour, 2022).

Lev, Blatt, & Gutman (2022) implemented a 14-week intervention program aimed at promoting physical activity among sedentary (have not engaged in exercise for at least 1 year prior to the beginning of the study) students through a combination of Self-Determination Theory (SDT) and Acceptance and Commitment Therapy (ACT). The research focused on enhancing participants' motivation and exercise behavior. The participants were devided into three groups. The SDT and ACT-based intervention group, the traditional intervention group (PA intervention by Napolitano et al. (2003), via weekly e-mails over a 14-week period) and the non-treatment group. Lev et. al. (2022) found that there was an increase in exercise motivation in the group that received SDT and ACT intervention. But this has not resulted in a higher training frequency, compared to the other interventions. However it was observed that the physical activity score after the interventions was higher in all groups. Another analysis, focusing on activity intensity measured in MET revealed a significant effect, showing that the experimental group had increased their activity intensity compared to the control groups (Lev et. al., 2022). The study provides valuable insights into the potential of integrating SDT and ACT to boost exercise motivation and intensity. It seems that the combination of SDT and ACT interventions may promote physical activity in physical inactive people.

**The present research**

The following study uses SDT and SRQ-E to explore the effect of motivation on self reported and actual gym attendance. The goal of the master thesis leads to 3 hypotheses:

First Hypothesis (Comparison of self-reported and actual attendance): It is expected that there will be a significant difference between self-reported and actual attendance at the gym among new members. Specifically, it is anticipated that self-reported attendance, on average, will be higher than actual attendance, as people tend to have a tendency to overestimate their physical activity.

Second Hypothesis (Effect of motivation on attendance): It is hypothesized that motivation will have a significant impact on both self-reported and actual gym attendance. In particular, it is assumed that members who are intrinsically motivated (i.e., acting out of personal inte-

rest and enjoyment of the activity) will exhibit higher attendance compared to those who are extrinsically or externally motivated.

Third Hypothesis (Comparison of motivational change): It is expected that there will be a significant difference in motivation between week 4 and week 12, since motivation is unstable.

Fourth Hypothesis (Effect of motivation development): It is assumed that the development of autonomous forms of motivation over a 12-week period will have a significant influence on both self-reported and actual gym attendance. This implies that changes in motivation levels over time will affect changes in attendance. For example, members who increase their intrinsic motivation over time are expected to show an increase in attendance.

These hypotheses provide the foundation for investigating the relationship between motivation and gym attendance and will be examined in this master thesis.

# Method

### Participants and design

The study took place over a period of 6 months in a newly reopened fitness center in Lower Austria. The fitness center already had around 600 members and expanded with a goal of reaching over 1000 members. Participants were only new members who applied to the fitness center in the first 2 months after the opening. In total, there were 2 measurements at specific times. One measurement took place 4 weeks after the subscription, and the other measurement took place 12 weeks after the subscription. A total of 76 individuals were approached, with an average age of 28 years. Sixty-nine of them (38 women (55%), 31 men (45%)) completed the first questionnaire. In the follow-up questionnaire, 48 participants completed the study. Twenty-four (50%) of them were women, and 24 (50%) were men. The dropout rate from the first to the second follow-up was 21 participants, which equals 30.4%. In total, 48 participants (63.2%) completed the two measurements. Baseline and follow-up measurements took place from April to September 2023.

**Procedure**

There were three ways of finding participants for the study. The first method involved individuals who had just signed a contract at the fitness center. They were approached by the informed receptionist working at the studio at that time, who informed potential participants about the study. If they were interested, they left their name at the receptionist, and after 4 weeks of gym membership, they automatically received an email. The email contained a link to the survey and an individual code, which was generated by the author to couple the data with the gym members, to control the self-reported and actual gym attendance. Participants had to enter the code before they could access the survey.

Another questionnaire was automatically sent 12 weeks after the beginning of the gym membership with the same code. To ensure that people didn't forget about the study during the time period, an email was sent three days before each questionnaire to keep their attention on it. Another reminder was sent to participants who did not complete the questionnaire after 1 week.

The second way to approach potential participants was through the fitness center's Instagram channel. Stories were posted to find people who had just signed up at the fitness center. Interested individuals messaged that they wanted to participate and received a link to the survey and an individual code after 4 weeks. After 12 weeks, another message with the link to the second survey and the individual code was sent.

The third way to find participants was through the gym's email newsletter. This study was promoted in the newsletter. People contacted the email address if they were interested and received the link to the survey and the individual code, also after 4 weeks. After 12 weeks, they received the second survey and the individual code by email. Actual gym attendance was registered through a membership card at the entry of the fitness center.

The questionnaire was programmed in SurveyMonkey, and the system to send the emails and track the check-ins was called Magic Line. During debriefing, the participants were informed that they could withdraw their data if they did not want their data to be analyzed anymore. No participant withdrew their data. Participants were compensated for their participation in the study. After the data collection, a drawing was held where participants could win one free month of gym membership.

## Measures

### Demographic variables

Participants indicated their age, gender, and occupation during the sign-up process. In the questionnaire, they were asked if they were a member of a fitness center before or had participated in a sports club before. These questions were only asked at week 4.

### Exercise Motivation

The different forms of motivation (autonomous and controlled motivation) were measured with a questionnaire. Ryan & Connell (1989) developed the format of the questionnaire, and there are several Self-Regulation Questionnaires (SRQ). In this study, the focus is on the Exercise Self-Regulation Questionnaire (SRQ-E). The questionnaire explores the motivation behind individuals who participate in physical activities, such as working out and gymnastics. The SRQ-E contains the subscales of external regulation, introjected regulation, identified regulation, and intrinsic regulation.

The reliability and validity of the questionnaire are confirmed (Ryan & Connell, 1989). The aim of this study is to understand the reasons why a person is working out, so the version of the SRQ-E is focused on working out. Initially, participants were asked, 'Why do you work out?' followed by 12 items that measure forms of regulation. For example intrinsic regulation ('Because I simply enjoy working out'), identified regulation ('Because it is personally important to me to work out'), introjected regulation ('Because I'd be afraid of falling too far out of shape'), and external regulation ('Because others like me better when I am in shape'). As the participants had already signed up for a gym membership, amotivation was not included in the questionnaire.

The participants could respond on a 7-point Likert scale ranging from 1 (not true at all) to 7 (very true). Amotivation was not measured because the participants had already demonstrated sufficient motivation by signing a contract with the fitness center.

| Form of Regulation | Statement |
|---|---|
| Intrinsic Regulation | Because I simply enjoy being physically active.<br>Because it's fun and interesting to me.<br>For the pleasure of mastering new training methods. |
| Identified Regulation | Because physical activity is important and beneficial for my health and lifestyle.<br>Because it is personally important for me to be physically active.<br>Because I place great value on being actively healthy. |
| Introjected Regulation | Because I would have a guilty conscience if I didn't do it.<br>Because I would otherwise fear getting out of shape too much.<br>Because I feel pressured to be physically active. |
| Extrinsic Regulation | Because others prefer me when I am in shape.<br>Because it strengthens my image.<br>Because I want others to perceive me as physically fit. |

Table 2: SRQ-E and the distinction of the questions in different forms of motivation

**Gym attendance**

Gym attendance was asked in the questionnaire in week 4 and week 12. Participants were asked how often they went to the gym ('Please indicate how many days per week you have worked out at the gym in the past weeks') in the past weeks. They had to fill in the mean number of days per week they actually went to the gym. Actual gym attendance was measured by the check-in system of the fitness center using a magnetic membership card. The check-in data was available for the whole period of the study.

**Data analysis**

As the participants were asked to complete the questionnaire two times, regression analyses were used to determine if a difference in motivation has an effect on self reported and actual gym attendance in week 4 and week 12. In total there were four regression analyses to com-

pare motivation and gym attendance: motivation at week 4 on self-reported gym attendance at week 4, motivation at week 4 on actual gym attendance at week 4, motivation at week 4 on self-reported gym attendance at week 12, motivation at week 4 on actual gym attendance at week 12.

To identifiy the effect of the evolution of motivation on self reported and actual gym attendance at week 12, difference scores were calculated for each type of motivation (e.g., intrinsic motivation score week 12 minus intrinsic motivation score week 4) and two additional regression analyses were conducted.

To figure out differences in motivation between week 4 and week 12,  paired t-tests were conducted.

In order to identify differences between self-reported gym attendance and actual gym attendance, two t-tests were conducted. One to identify differences in week 4 and another one to identify differences in week 12. The alpha value was set to 0.05.

# Results

The question 'Have you ever been a member of a fitness center?' was answered quite clearly. Forty two individuals (87.5%) answered yes to this question, while six individuals (12.5%) responded no. Thirty out of forty eight participants (62.5%) have been a member of a sports club, such as a football, tennis, or basketball club while eighteen (37.5%) have not been a member in such organisations.

**Acutal versus self-reported gym attendance**

The first question that was researched was comparing self-reported gym attendance and actual gym attendance. The participants reported that in the first 4 weeks, they went to the gym an average of 3.4 (±1.4) times per week. The acutal gym attendance was 2.4 (±1.4). After 12 weeks, they reported that they went 3.1(±1.5) times per week on average, while actually going to the gym 2.3 (±1.5) times.

The aim of this t-tests was to determine if there is a significant difference between self-reported gym attendance and actual gym attendance. The t-tests revealed that there was a

statistically significant difference (p = <0.001) at week 4 and a significant difference (p = <0.001) at Week 12. So there is a statistically significant difference between self-reported gym attendance and actual gym attendance at both, week 4 and week 12. The mean difference between self reported gym attendance and actual gym attendance is 38%.

| Gym Attendance (days/week) | Self Reported (n=48) | Actual (n=48) | T-Test | Significance |
|---|---|---|---|---|
| Week 4 | 3.4 (±1.4) | 2.4 (±1.4) | 8.15 | <0.001 |
| Week 12 | 3.1 (±1.5) | 2.3 (±1.5) | 5.95 | <0.001 |

Table 3: Paired t-tests between acutal gym attendance and self-reported gym attendance

Kopp (2020) found that the overall gap between self-reported gym attendance and actual gym attendance was 39%, which is consistent with the results of this study.

**Motivational variables and gym attendance**

Since the data was measured at two measurement times, regression analyses were applied. The aim of this analysis was to determine if different forms of motivation have an impact on self reported and actual gym attendance.

The regression analyses revealed that there was a statistically significant effect of intrinsic motivation and self reported gym attendance at week 4 (p = <0.001) as well as a significant effect of intrinsic motivation and actual gym attendance at week 4 (p = 0.006).

| Variables | Coefficient Beta | Std. Error | T-Value | Significance |
|---|---|---|---|---|
| Constant | - | 1.181 | 0.116 | 0.908 |
| Intrinsic Motivation | 0.682 | 0.149 | 4.959 | <.001 |
| Identified Motivation | -0.107 | 0.196 | -0.805 | 0.425 |
| External Motivation | -0.022 | 0.146 | -0.158 | 0.875 |
| Introjected Motivation | 0.054 | 0.140 | 0.393 | 0.696 |
| R-Square | 0.421 | | | |
| F-Statistic | 7.831 | | | |
| Significant | <.001 | | | |

Table 4: Regression analysis of motivation on self reported gym attendance at week 4

| Variables | Coefficient Beta | Std. Error | T-Value | Significance |
|---|---|---|---|---|
| Constant | - | 1.310 | -0.760 | 0.451 |
| Intrinsic Motivation | 0.447 | 0.165 | 2.921 | 0.006 |
| Identified Motivation | -0.004 | 0.217 | -0.025 | 0.980 |
| External Motivation | -0.005 | 0.162 | -0.031 | 0.975 |
| Introjected Motivation | 0.207 | 0.155 | 1.358 | 0.182 |
| R-Square | 0.216 | | | |
| F-Statistic | 4.241 | | | |
| Significant | 0.006 | | | |

Table 5: Regression analysis of motivation on actual gym attendance at week 4

The other regression analyses revealed that there was a statistically significant effect of intrinsic motivation and self reported gym attendance at week 12 ($p = <0.001$) as well as a significant effect of intrinsic motivation and actual gym attendance at week 12 ($p = 0.017$).

| Variables | Coefficient Beta | Std. Error | T-Value | Significance |
|---|---|---|---|---|
| Constant | - | 1.367 | 0.178 | 0.860 |
| Intrinsic Motivation | 0.565 | 0.172 | 3.786 | <0.001 |
| Identified Motivation | -0.130 | 0.226 | -0.902 | 0.372 |
| External Motivation | 0.086 | 0.169 | 0.567 | 0.574 |
| Introjected Motivation | 0.049 | 0.161 | 0.331 | 0.742 |
| R-Square | 0.321 | | | |
| F-Statistic | 5.072 | | | |
| Significant | 0.002 | | | |

Table 6: Regression analysis of motivation on self reported gym attendance at week 12

| Variables | Coefficient Beta | Std. Error | T-Value | Significance |
|---|---|---|---|---|
| Constant | - | 1.533 | 0.279 | 0.781 |
| Intrinsic Motivation | 0.407 | 0.193 | 2.482 | 0.017 |
| Identified Motivation | -0.128 | 0.254 | -0.809 | 0.423 |
| External Motivation | -0.121 | 0.189 | -0.727 | 0.471 |
| Introjected Motivation | 0.181 | 0.181 | 1.266 | 0.212 |
| R-Square | 0.177 | | | |
| F-Statistic | 2.315 | | | |
| Significant | 0.073 | | | |

Table 7: Regression analysis of motivation on actual gym attendance at week 12

Regression analyses showed that intrinsic motivation had an effect on actual gym attendance both at week 4 and week 12. This does not align with the results of Kopp (2020), where intrinsic motivation had no effect on actual gym attendance. Identified motivation, introjected motivation and extrinsic motivation had no significant effect on self reported and actual gym attendance, both at week 4 and week 12.

**Differences in motivation**

Introjected and external motivation increased. It was found that there was a significant difference between introjected motivation in week 4 and introjected motivation in week 12 as well as a significant difference between external motivation in week 4 and external motivation in week 12.

| Motivation Difference (Week4/Week12) | Week 4 (n=48) | Week 12 (n=48) |
|---|---|---|
| Intrinsic | 5.64 (±1.28) | 5.47 (±1.31) |
| Identified | 6.25 (±0.93) | 6.11 (±1.06) |
| Introjected | 3.62 (±1.35) | 4.00 (±1.17) |
| External | 3.14 (±1.32) | 3.56 (±1.33) |

Table 8: Mean difference in motivation between week 4 and week 12

| Motivation Difference (Week4/Week12) | Mean | T-Test | Significance |
|---|---|---|---|
| Intrinsic | -0.17 (±0.8) | 1.61 | 0.114 |
| Identified | -0.14 (±0.7) | 1.41 | 0.166 |
| Introjected | 0.38 (±1.1) | -0.78 | 0.015 |
| External | 0.41 (±1.0) | -0.13 | 0.005 |

Table 9: Difference in motivation between week 4 and week 12

**Evolution of motivation and gym attendance**

The regression analysis of the evolution of motivation on self reported gym attendance at week 12 showed no effect. The same results showed on the evolution of motivation and actual gym attendance at week 12. This does not align with the results of Kopp (2020), where the evolution of identified motivation was predictive for both self reported and actual gym attendance.

| Variables | Coefficient Beta | Std. Error | T-Value | Significance |
|---|---|---|---|---|
| Constant | - | 2.251 | 13.154 | <0.001 |
| Intrinsic Evolution | -0.010 | 0.297 | -0.066 | 0.947 |
| Identified Evolution | 0.236 | 0.319 | 1.596 | 0.118 |
| External Evolution | -0.077 | 0.238 | -0.491 | 0.626 |
| Introjected Evolution | -0.288 | 0.218 | -0.570 | 0.571 |

Table 10: Regression analysis of the evolution of motivation on self reported gym attendance at week 12

| Variables | Coefficient Beta | Std. Error | T-Value | Significance |
|---|---|---|---|---|
| Constant | - | 0.257 | 9.560 | <0.001 |
| Intrinsic Evolution | 0.151 | 0.304 | 0.997 | 0.324 |
| Identified Evolution | 0.121 | 0.327 | 0.810 | 0.423 |
| External Evolution | -0.017 | 0.244 | -0.105 | 0.917 |
| Introjected Evolution | -0.201 | 0.223 | -1.292 | 0.203 |
| R-Square | 0.075 | | | |
| F-Statistic | 0.872 | | | |
| Significant | 0.489 | | | |

Table 11: Regression analysis of the evolution of motivation on actual gym attendance at week 12

# Discussion

The aim of this study was to test if different forms of motivation had an effect on self reported and actual gym attendance and if so, which types of motivation had an effect on self reported and actual gym attendance. As different forms of motivation can change over time (Ryan and Deci, 2000), motivation was measured at week 4 and week 12.

This analysis found that intrinsic motivation has a significant effect on actual gym attendance ($p = 0.006$/week4, $p = 0.017$/week12) and as well a significant effect on self reported gym attendance ($p = <0.001$/week4/week12). Identified motivation, extrinsic motivation and introjected motivation did not have a significant effect on actual gym attendance.

Kopp (2020) found that intrinsic motivation seems to be a good predictor of gym attendance at the start of the gym membership. People with high intrinsic motivation genuinely enjoy the activities and find personal satisfaction in exercising, making them more likely to attend the gym consistently during the early stages of their membership. Also Teixeira (2012) reported continued participation in an exercise program is more likely when individuals enjoy the activities. This is also in line with more recent studies, where intrinsically motivated participants who engage in fitness activities are more likely meeting physical activity guidelines and report to go to the gym more often (Seymour, 2022, Caudwell & Keatley,2016).

As participants in this thesis were only observed for 12 weeks may be a reason for explaining the positive correlation between intrinsic motivation and self reported and actual gym attendance. This effect might get weaker over a longer period of time since Kopp (2020) did not find a significant positive correlation between intrinsic motivation and actual gym attendance over a 30 week period. The effect of time and the evolution of different forms of motivation play also an important role when it comes to gym attendance. For example, in the study from Kopp (2020), the evolution of identified regulation predicted both, self reported and actual gym attendance. So if identified regulation increased over time, so did self reported and actual gym attendance. In this thesis, the evolution of motivation did not have a significant effect on self reported or actual gym attendance. Looking at the bigger picture, the motivation to exercise regularly is developed along a continuum from childhood to adulthood (Thompson & McAdoo, 2016). This shows the importance of a longitudinal approach when it comes to motivation.

It was also found that there was a significant difference between introjected motivation in week 4 and introjected motivation in week 12 ($p = 0.015$) as well as a significant difference between external motivation in week 4 and external motivation in week 12 ($p = 0.005$). Both of them increased.

In the SRQ-E there were specific answers to measure introjected and external motivation. The statements "Because others prefer me when I am in shape" and "Because I want others to perceive me as physically fit" suggest that participants may be subject to social expectations and pressure. They might have felt these expectations more strongly in Week 4, leading to an increase in introjected motivation in Week 12. The statements "Because others prefer me when I am in shape" and "Because it strengthens my image" imply that perception and group image may play a role. If participants felt that other members of their fitness studio were in better shape in Week 4, they may have been more motivated in Week 12 to meet these social comparisons. The statements "Because I would have a guilty conscience if I didn't do it" and "Because I would otherwise fear getting out of shape too much" point to feelings of guilt and fear of losing fitness. Participants may have had more significant fears of falling out of shape in Week 4, motivating them more strongly in Week 12. It is possible that participants received increased social support in Week 12. This support could come from friends, family, or training partners who encouraged and assisted them. This social support could have strengthened both introjected and external motivation.

Another aim of this thesis was to compare self-reported gym attendance and actual gym attendance, since gym members systematically overestimate their attendance (Garon, Masse & Michaud, 2015). This study revealed a significant difference between self reported gym attendance and actual gym attendance ($p = <0.001$) at week 4 and week 12, with an overall gap of 38% between self-reported attendance and actual gym attendance. This goes in line with the results of Kopp (2020), where the difference between self-reported gym attendance and actual gym attendance was 39%.

The actual gym attendance was measured with a chip card in this thesis. If participants forgot their gym membership card, the receptionist at the fitnesscenter was still able to let them in the gym and exercise. This could falsify the data of actual gym attendance to a certain degree. Unfortunately there is no data to how often this accrued.

Anyway, a lot of information we have about physical activity of the world's population was measured by simply asking the participants (WHO, 2020). Considering the fact that people overestimate their gym attendance by roughly 40%, the actual numbers of people that do not meet the recommended amount of physical activity may be even higher. This is crucial for an overview of public physical activity and their health status. Data on physical activity that is just measured by asking participants should be treated with caution.

This thesis has several limitations. First of all, and most importantly, more participants were required to meet the necessary statistical power. At least 89 participants were required to fill

out both questionnaires to reach a crucial point of statistical power. This thesis could only recruit 48 participants due to time issues. Also, the high number of dropouts (79 to 48) was an issue. High dropout rates can introduce selection bias, as those who dropped out may differ from those who remained in terms of motivation and gym attendance behaviour.

The study also observed participants for only 12 weeks. Longer observation periods could reveal how motivation and its impact on gym attendance change over an extended time. The lack of data beyond this period limits the ability to draw conclusions about the long-term effects of motivation.

# Conclusion

This study aimed to explore the effect of motivation on self reported and actual gym attendance among new fitness center members and to compare self-reported gym attendance with actual gym attendance. Additionally, it sought to identify changes in motivation and to observe the evolution of motivation on self reported and actual gym attendance. The study revealed valuable insights into the complex relationship between motivation and gym attendance.

The findings revealed that intrinsic motivation played a significant role in both self-reported and actual gym attendance during this relatively short timeframe. Participants with higher intrinsic motivation were more likely to accurately self-report and attend the gym consistently, as they derived genuine pleasure and satisfaction from their exercise activities (Teixeira, 2012, Caudwell & Keatley,2016). However, it's important to note that this effect may weaken over longer observation periods, as suggested by Kopp (2020). In longer-term scenarios, the influence of intrinsic motivation on gym attendance may become less pronounced. Furthermore, the study did not detect a significant impact on self-reported or actual gym attendance from other types of motivation, such as identified and external motivation. This suggests that external factors such as rewards or social pressure did not play a substantial role in sustaining participants' gym attendance within the observed time frame.

The evolution of motivation types over time showed no effect, eventough an increase in introjected and external motivation was observed between week 4 and week 12.This increase may be attributed to participants feeling a stronger sense of social expectations and pressure during the initial weeks of their membership. The desire to meet social comparisons, maintain a certain image, avoid guilt, and overcome the fear of losing fitness could have driven

these changes. Social support, possibly from friends, family, or training partners, might have contributed to strengthening both introjected and external motivation.

A notable finding was the significant difference between self-reported and actual gym attendance, indicating a 38% overestimation in self-reported attendance. This gap aligns with similar results in Kopp (2020) and Garon, Masse & Michaud (2015), emphasizing the need for more accurate data collection methods. The study's limitation in recruiting a sufficient number of participants, along with a relatively high dropout rate, underscores the challenges of conducting research in a real-world gym environment.

In conclusion, this study sheds light on the intricate dynamics of motivation and its varying effects on gym attendance. Understanding the intricate relationship between motivation and gym attendance is vital for promoting regular physical activity. The study highlighted the importance of addressing the gap between self-reported and actual gym attendance and encouraged future research to measure actual gym attendance or actual physical activity instead of relying on self reports. Moreover, it emphasized the need for interventions and strategies that enhance intrinsic motivation to foster sustained engagement in physical activity. Ultimately, such efforts could contribute to reducing the global levels of physical inactivity and promoting better health and well-being.

**Implications for future research**

As motivation is unstable and varies over time (Ryan & Deci, 2000) it is recommended to let more time pass between the questionnaires, otherwise it could lead to different results. Chu et al., (2021) found that SDT is not capable of predicting physical activity over a 8 week period while Teixeira et al. (2012) shows consistent support for the relationship between the basic psychological need for competence and exercising frequently. As well as Seymour et. al. (2022) who found that more self-determined motivation was associated with meeting physical activity guidelines over a 8 week period.

More time is required to see the evolution of motivation, since Kopp (2020) found changes in identified motivation were positively associated with both self-reported and actual gym attendance over the 30-week period.

Future research should also focus on asking both, self reported physical activity and acutal physical activity, since those numbers may be significant apart from each other, like 38% percent in the present research.

# The didactical aspects of the topic

In the realm of physical fitness and exercise science, motivation plays a pivotal role in driving individuals to maintain regular gym attendance. The recent research conducted in the context of new gym members has yielded valuable insights into the complex relationship between motivation and gym attendance. These findings not only have practical implications for fitness professionals but can also be integrated into school settings to educate students about the nuances of motivation, exercise, and long-term behavior change.

## Understanding the motivation types

The first key takeaway from this research is the need to comprehend the various forms of motivation. Intrinsic, identified, introjected, and external motivations have distinct impacts on individuals' exercise behaviors and self-reporting accuracy. Fitness professionals should recognize and differentiate between these motivation types when working with clients. Similarly, educators in school settings can incorporate these distinctions, promoting a deeper understanding of what drives physical activity.

## Emphasizing intrinsic motivation

Intrinsic motivation emerges as a main predictor of consistent gym attendance. Those who genuinely enjoy fitness activities and derive personal satisfaction from exercise are more likely to both self-report and actually attend the gym consistently. Fitness professionals can encourage individuals to discover activities they genuinely enjoy, aligning their interests and values with regular gym attendance. In school settings, teachers can instill a love for physical activity by offering diverse and enjoyable activities that spark intrinsic motivation among students.

## Managing social expectations

Social expectations and pressures can influence motivation. Fitness professionals should be sensitive to these external pressures and guide clients in managing them. In educational contexts, teachers can educate students about the impact of social influences, and teaching them strategies to cope with such expectations and stay motivated.

Long-term behavior change

The effect of motivation on gym attendance may change over time. Educators and fitness professionals should prepare individuals for these changes, helping them adapt to different motivation types and maintain their exercise routines. This long-term perspective is essential in school settings as well, where students can benefit from learning that motivation is not static and that they have the power to maintain it over time.

Accurate self-reporting

Fitness professionals should encourage accurate self-reporting of exercise attendance. Tracking tools or methods can be employed to ensure clients honestly report their participation. This not only enhances the effectiveness of fitness plans but also cultivates honesty and responsibility. Educators could also experiment with to get an overview of physical activity of their students.

Recognizing dropout rates

Recognizing the high dropout rate among new gym members within the first few months is crucial. Fitness professionals can implement strategies to engage and support new members, reducing early dropout rates. In a school environment, teachers can inform their students about high drop out rates in gym memberships and teach them strategies to counteract and reduce the chance of dropping out after 3 months.

Realistic goal setting

Both fitness instructors and educators can assist individuals in setting achievable fitness goals based on their intrinsic motivations. These personalized goals can significantly enhance the effectiveness of fitness programs and promote adherence in the long run.

Social support and peer Influence

Fitness professionals can foster a supportive community within the gym, where members encourage and assist one another. In school settings, educators can create an environment that promotes teamwork and positive peer influence to motivate students to stay active.

Research integration

In educational settings, both for fitness professionals and teachers the research findings can be incorporated into curricula to provide evidence-based knowledge for the students. This approach can help understand the science behind motivation and how it drives exercise behaviors, fostering a more informed and mindful approach to physical activity.

Longitudinal Studies

Encouraging professionals in the fitness industry to undertake longer-term, longitudinal studies can bridge the gap between research and practice. It allows for a deeper understanding of how motivation evolves and its implications for gym attendance and enhancing the overall quality of fitness programs.

In conclusion the relationship between motivation and gym attendance is a multifaceted one. Both fitness professionals and educators can leverage these research findings to enhance their practices. By considering the varied forms of motivation, we can empower individuals to develop and maintain healthy exercise habits over the long term. Whether in the gym or in the classroom, understanding motivation is a key to promoting a healthier and more active lifestyle.

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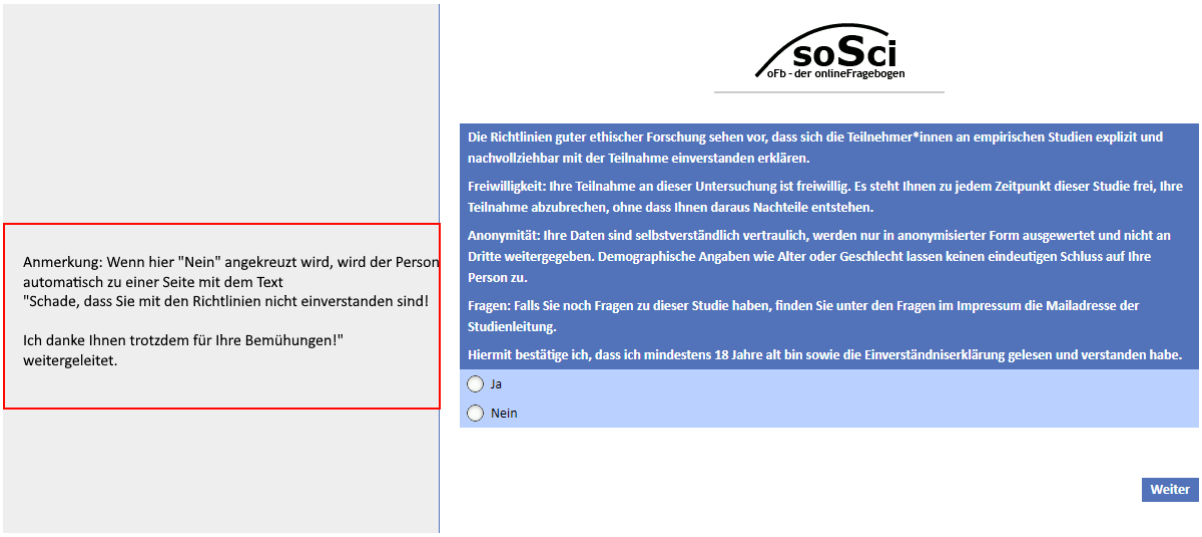
# List of tables



# Figures

# Annex


Anmerkung: Wenn hier "Nein" angekreuzt wird, wird der Person automatisch zu einer Seite mit dem Text
"Schade, dass Sie mit den Richtlinien nicht einverstanden sind!
Ich danke Ihnen trotzdem für Ihre Bemühungen!"
weitergeleitet.
soSci
oFb - der onlineFragebogen
Die Richtlinien guter ethischer Forschung sehen vor, dass sich die Teilnehmer*innen an empirischen Studien explizit und nachvollziehbar mit der Teilnahme einverstanden erklären.
Freiwilligkeit: Ihre Teilnahme an dieser Untersuchung ist freiwillig. Es steht Ihnen zu jedem Zeitpunkt dieser Studie frei, Ihre Teilnahme abzubrechen, ohne dass Ihnen daraus Nachteile entstehen.
Anonymität: Ihre Daten sind selbstverständlich vertraulich, werden nur in anonymisierter Form ausgewertet und nicht an Dritte weitergegeben. Demographische Angaben wie Alter oder Geschlecht lassen keinen eindeutigen Schluss auf Ihre Person zu.
Fragen: Falls Sie noch Fragen zu dieser Studie haben, finden Sie unter den Fragen im Impressum die Mailadresse der Studienleitung.
Hiermit bestätige ich, dass ich mindestens 18 Jahre alt bin sowie die Einverständniserklärung gelesen und verstanden habe.
Ja
Nein
Weiter


soSci
oFb - der onlineFragebogen
Wie alt sind Sie?
Welches Geschlecht haben Sie?
[Bitte auswählen]
Weiter


soSci
oFb - der onlineFragebogen
Geben sie hier Ihren individuellen Code ein
Weiter

soSci
oFb - der onlineFragebogen

**Waren Sie früher einmal Mitglied in einem Fitnessstudio?**

[Bitte auswählen]

**Waren Sie früher einmal Mitglied in einem Sportverein (z.B. Fußball, Tennis, Basketball)?**

[Bitte auswählen]

**Wie oft haben Sie in den letzten Wochen durchschnittlich das Fitnessstudio besucht?**

Mal pro Woche

Weiter

soSci
oFb - der onlineFragebogen

**Beurteile Sie bitte die folgenden Aussagen durch Ankreuzen von 1-7, wobei 1=überhaupt nicht zutreffend und 7=in jedem Fall zutreffend bedeutet.**

| **Wieso betreiben Sport im Fitnessstudio?** | 1 – überhaupt nicht zutreffend | | | | | | 7 – in jedem Fall zutreffend |
|---|---|---|---|---|---|---|---|
| 1. Weil ich es einfach genieße sportlich aktiv zu sein. | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| 2. Weil sportliche Aktivität für meine Gesundheit und Lebensweise wichtig und nützlich ist. | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| 3. Weil ich ein schlechtes Gewissen hätte, wenn ich es nicht tun würde. | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| 4. Weil es mir Spaß macht und interessant ist. | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| 5. Weil mich andere lieber mögen, wenn ich in Form bin. | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| 6. Weil ich sonst befürchten würde, zu sehr außer Form zu geraten. | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| 7. Weil es mein Image stärkt. | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| 8. Weil es für mich persönlich wichtig ist sportlich aktiv zu sein. | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| 9. Weil ich mich unter Druck gesetzt fühle, sportlich aktiv zu sein. | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| 10. Weil ich großen Wert darauflege, aktiv gesund zu sein | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| 11. Für das Vergnügen, neue Trainingsmethoden zu beherrschen. | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| 12. Weil ich möchte, dass die anderen mich als körperlich fit wahrnehmen. | ○ | ○ | ○ | ○ | ○ | ○ | ○ |

Weiter

# Deutsche Zusammenfassung

In dieser Masterarbeit wurde die Bedeutung von regelmäßiger körperlicher Aktivität für die Gesundheit, sowohl physisch als auch psychisch, hervorgehoben. Die Weltgesundheitsorganisation (WHO) berichtet, dass mehr als ein Viertel der erwachsenen Weltbevölkerung nicht ausreichend aktiv ist, was zu gesundheitlichen Problemen führen kann. Trotz des Wachstums der Fitnessindustrie um über 40% in den letzten zehn Jahren (Statista, 2020) gab es seit 2001 keine Verbesserung im weltweiten Aktivitätsniveau (WHO, 2022). Zusätzlich zeigt die Evidenz (Dishman & Buckworth, 1996; FIA, 2001; James et al., 2008), dass nur 55% der Menschen, die ein Trainingsprogramm beginnen, es nach 6 Monaten fortsetzen, was auf Schwierigkeiten bei der langfristigen Aufrechterhaltung von körperlicher Aktivität hinweist. Laut einer Eurobarometer-Umfrage (2022), sind die Hauptgründe für unregelmäßige körperliche Aktivität "Zeitmangel" (41%) und "Motivationsmangel" (23%). Daher ist es wichtig zu verstehen, warum einige Menschen in der Lage sind, ein Trainingsprogramm beizubehalten, während andere es nicht tun.

Die vorliegende Studie basiert auf der Selbstbestimmungstheorie (SDT) von Ryan & Deci (1985, 2000), die die Formen der Motivation von Teilnehmern misst. Die SDT konzentriert sich auf die Bedeutung von Autonomie, Kompetenz und sozialer Verbundenheit als grundlegende psychologische Bedürfnisse für intrinsische Motivation und Wohlbefinden. Diese Bedürfnisse beeinflussen die langfristige Aufrechterhaltung von körperlicher Aktivität.

Autonomie bezieht sich dabei auf den Wunsch nach Unabhängigkeit und Selbstbestimmung in Handlungen und Entscheidungen. Sportler*innen, die ihre Aktivitäten frei wählen können und ein Gefühl der Selbstbestimmung erleben, sind intrinsisch motivierter und neigen dazu, länger aktiv zu bleiben (Ryan & Deci, 1985, 2000).

Kompetenz bezieht sich auf das Bedürfnis, sich effektiv in Aktivitäten zu engagieren und gewünschte Ergebnisse erreichen zu können. Positive Rückmeldungen und Erfolgserlebnisse steigern die intrinsische Motivation, da Sportler sich kompetent fühlen (Ryan & Deci, 1985, 2000).

Soziale Verbundenheit ist das Bedürfnis nach emotionaler Unterstützung und zwischenmenschlichen Beziehungen. Menschen, die soziale Unterstützung in ihren sportlichen Aktivitäten erfahren, sind eher langfristig aktiv (Ryan & Deci, 1985, 2000).

Die Studie zielt darauf ab, den Einfluss von Motivation auf die tatsächliche Teilnahme im Fitnessstudio bei neuen Mitgliedern zu untersuchen und die wahrgenommene gegenüber der

tatsächlichen Anwesenheit im Fitnesscenter zu vergleichen. Die SDT bietet einen theoretischen Rahmen, um diese Aspekte zu analysieren und die Faktoren zu verstehen, die zur Aufrechterhaltung von körperlicher Aktivität beitragen.

Die Studie wurde über einen Zeitraum von 6 Monaten in einem neu wiedereröffneten Fitnesscenter in Niederösterreich durchgeführt. Die Teilnehmer*innen waren ausschließlich neue Mitglieder, die sich in den ersten 2 Monaten nach der Eröffnung angemeldet hatten. Es gab zwei Messzeitpunkte: eine Messung erfolgte 4 Wochen nach der Anmeldung, die andere 12 Wochen nach der Anmeldung. Insgesamt nahmen 76 Personen an der Studie teil, mit einem Durchschnittsalter von 28 Jahren. Von ihnen vervollständigten 69 (38 Frauen, 31 Männer) den ersten Fragebogen und 48 Teilnehmer*innen beendeten die Studie. Die Abbruchrate von der ersten zur zweiten Messung betrug 30,4%. Insgesamt beendeten 48 Teilnehmer (63,2%) die beiden Messungen, die von April bis September 2023 durchgeführt wurden.
Die Teilnehmer*innen wurden über drei verschiedene Wege rekrutiert: direkt im Fitnesscenter, über Instagram und über den E-Mail-Newsletter des Fitnesscenters. Die Teilnehmer erhielten nach 4 und 12 Wochen einen Link zu einem Fragebogen (SRQ-E, Ryan & Connell, 1989) um ihre Motivation und die selbstberichtete Anwesenheit im Fitnesscenter zu erfragen. Der SRQ-E Fragebogen misst die Motivationsformen intrinsische, identifizierte, introjizierte und externale Motivation mit jeweils 3 Aussagen zur jeweiligen Motivationsform. Die tatsächliche Anwesenheit im Fitnesscenter wurde über Mitgliedskarten erfasst. Die Daten wurden über SurveyMonkey und Magic Line erfasst und die Teilnehmer*innen konnten ein gratis Monat im Fitnesscenter bei vollständiger Teilnahme gewinnen.

Die Datenanalyse umfasste Regressionsanalysen, um den Einfluss der Motivationsarten auf die selbstberichtete und tatsächliche Anwesenheit im Fitnesscenter in Woche 4 und Woche 12 zu bestimmen. Differenzwerte zwischen den Motivations-Scores in Woche 4 und Woche 12 wurden berechnet, um den Einfluss der Motivationsentwicklung auf die selbstberichtete und tatsächliche Anwesenheit in Woche 12 zu ermitteln. Es wurden auch T-Tests durchgeführt, um Unterschiede zwischen selbstberichteter und tatsächlicher Anwesenheit im Fitnesscenter in Woche 4 und Woche 12 herauszufinden und um Unterschiede zwischen den Motivationsformen von Woche 4 und Woche 12 zu ermitteln.

In den Ergebnissen dieser Studie wurde zuerst der Unterschied zwischen der selbstberichteten und tatsächlichen Anwesenheit untersucht. Die Teilnehmer*innen gaben an, dass sie in den ersten 4 Wochen durchschnittlich 3,4 (±1,4) Mal pro Woche ins Fitnesscenter gegangen

sind, während die tatsächliche Anwesenheit bei 2,4 (±1,4) Mal lag. Nach 12 Wochen berichteten sie von durchschnittlich 3,1 (±1,5) Besuchen pro Woche, während sie tatsächlich nur 2,3 (±1,5) Mal pro Woche ins Fitnesscenter gingen. Die T-Tests zeigten einen statistisch signifikanten Unterschied ($p = <0.001$) zwischen selbstberichteter und tatsächlicher Anwesenheit sowohl in Woche 4 als auch in Woche 12.

In Bezug auf die Motivationsvariablen und die Anwesenheit im Fitnesscenter zeigten die Regressionsanalysen, dass es einen signifikanten Effekt von intrinsischer Motivation auf die selbstberichtete ($P = <0.001$ Woche 4/Woche 12) und tatsächliche Anwesenheit ($p = 0.006$ Woche 4/ $p = 0.017$ Woche 17) gab. Intrinsische Motivation hatte einen positiven Einfluss auf die Anwesenheit im Fitnesscenter, was nicht mit den Ergebnissen von Kopp (2020) übereinstimmte, da intrinsische Motivation keinen Einfluss auf die tatsächliche Anwesenheit im Fitnesscenter hatte. Hinsichtlich der Unterschiede in der Motivation zwischen Woche 4 und Woche 12 wurde festgestellt, dass sowohl introjizierte als auch externale Motivation zugenommen haben. Es gab signifikante Unterschiede (introjizierte Motivation: $p = 0.015$, externale Motivation: $p = 0.005$) zwischen den Motivationsniveaus in Woche 4 und Woche 12. Die Analyse der Entwicklung der Motivation und deren Einfluss auf die selbstberichtete und tatsächliche Anwesenheit im Fitnesscenter in Woche 12 ergab, dass die Entwicklung der Motivation keinen signifikanten Effekt hatte. Dies unterschied sich von den Ergebnissen von Kopp (2020), wo die Entwicklung der identifizierten Motivation sowohl die selbstberichtete als auch die tatsächliche Anwesenheit im Fitnesscenter beeinflusste.

Zusammengefasst zeigten diese Ergebnisse, dass intrinsische Motivation einen positiven Einfluss auf die tatsächliche Anwesenheit im Fitnesscenter hat, während andere Formen der Motivation und die Entwicklung der Motivation keinen signifikanten Einfluss auf die Anwesenheit im Fitnesscenter hatten. Die Diskrepanz zwischen selbstberichteter und tatsächlicher Anwesenheit (38%) wurde ebenfalls bestätigt und entspricht den Ergebnissen von Kopp (2020).

Diese Arbeit hat mehrere Einschränkungen, darunter eine geringe Anzahl an Teilnehmer*innen und hohe Ausfallraten. Die Beobachtungsdauer von 12 Wochen begrenzt ebenfalls auch die Schlussfolgerungen über langfristige Auswirkungen der Motivation auf die tatsächliche Anwesenheit im Fitnesscenter. Es ist wichtig, diese Ergebnisse mit Vorsicht zu interpretieren und weitere Forschung in diesem Bereich durchzuführen.

Diese Arbeit gibt Einblicke in die komplexen Dynamiken von Motivation und deren unterschiedliche Auswirkungen auf die selbstberichtete und tatsächliche Anwesenheit im Fitness-

center. Das Verständnis der komplexen Beziehung zwischen Motivation und Anwesenheit im Fitnesscenter ist entscheidend für die Förderung regelmäßiger körperlicher Aktivität. Die Arbeit betont die Bedeutung der Diskrepanz zwischen selbstberichteter und tatsächlicher Anwesenheit im Fitnesscenter und weist darauf hin, dass Studien, welche die bloße Selbsteinschätzung der Teilnehmer*innen als Maß für körperliche Aktivität nehmen, mit Vorsicht genossen werden sollten. Darüber hinaus wird auf die Notwendigkeit von Interventionen und Strategien hingewiesen, welche intrinsische Motivation stärken, um langfristiges Engagement in körperlicher Aktivität zu fördern. Letztendlich könnten solche Bemühungen dazu beitragen, die weltweiten Raten der körperlichen Inaktivität zu reduzieren und die Gesundheit und das Wohlbefinden der Menschen zu fördern.