

MASTERARBEIT | MASTER'S THESIS

Titel | Title

Feeling Like a Fraud on the Field: Impostor Phenomenon and
Stereotype Threat in Women's Team Sports

verfasst von | submitted by
Giordana Turi BSc

angestrebter akademischer Grad | in partial fulfilment of the requirements for the degree of
Master of Science (MSc)

Wien | Vienna, 2026

Studienkennzahl lt. Studienblatt | Degree
programme code as it appears on the
student record sheet:

UA 066 840

Studienrichtung lt. Studienblatt | Degree
programme as it appears on the student
record sheet:

Masterstudium Psychologie

Betreut von | Supervisor:

Assoz. Prof. Mgr. Dr. Peter Gröpel

Abstract:

The present study examined the impostor phenomenon (IP) and stereotype threat (ST) among athletes in competitive team sports, with a particular focus on female athletes. A total of 269 players (142 female, 127 male) from football and volleyball clubs participated in an online survey. Participants completed adapted versions of the *Clance Impostor Phenomenon Scale* (CIPS; Clance, 1985b) and the *Stereotype Threat at School Scale* (STaS; Bedyńska et al., 2021). Statistical analyses included t-tests and regression-based mediation analyses using Hayes' (2022) PROCESS macro. Results showed that female athletes reported significantly higher impostor scores than male athletes. Furthermore, female football players reported stronger stereotype threat and higher impostor scores than female volleyball players. Mediation analyses revealed that stereotype threat mediated the relationship between sport type and impostor phenomenon among women, suggesting that gender-related stereotypes may contribute to impostor feelings in masculine-typed sports. These findings extend existing research by identifying stereotype threat as a key psychological mechanism underlying impostor experiences in female athletes. Future studies should replicate these results in diverse cultural and sporting contexts and examine intervention strategies to strengthen athletes' psychological resilience.

Keywords: impostor phenomenon; stereotype threat; female athletes; team sports; gender stereotypes; sport psychology; performance anxiety

TABLE OF CONTENTS

1. Introduction.....	6
1.1. Theoretical Background of the Impostor Phenomenon.....	8
1.2. The Impostor Phenomenon among Athletes.....	12
1.3. Theoretical Background of Stereotype Threat.....	14
1.4. Stereotype Threat among Athletes.....	16
1.5. Stereotype Threat and Impostor Phenomenon.....	20
1.6. The current study.....	23
2. Methods.....	25
2.1. Participants.....	25
2.2. Design.....	27
2.3. Materials.....	27
2.3.1. Adapted Clance Impostor Phenomenon Scale (CIPS).....	27
2.3.2. Adapted Stereotype Threat at School Scale (STaS).....	28
2.4. Procedure.....	29
2.5. Statistical analysis.....	29
3. Results.....	31
3.1. Preliminary Analyses.....	31
3.1.1. Internal consistency.....	31
3.1.2. Descriptive statistics and normality.....	31
3.1.3. Assumption checks.....	33
3.2. Testing of hypotheses.....	34
3.2.1. Gender differences in impostor phenomenon among team sport athletes.....	34
3.2.2. Impostor phenomenon among female athletes across sport types (football vs. volleyball).....	35
3.2.3. The mediating role of stereotype threat in impostor phenomenon among female athletes.....	35
3.2.4. Comparison of impostor phenomenon in athletic and academic contexts.....	38
4. Discussion.....	38
4.1. Summary of Main Findings.....	38
4.2. Gender and gender-typing in sport as determinants of impostor feelings.....	39
4.2.1. Gender differences in impostor phenomenon among athletes.....	39
4.2.2. Gender-typing of sport and impostor experiences among female athletes.....	40
4.3. Stereotype threat as a mechanism underlying impostor feelings.....	40
4.4. The relevance of the impostor phenomenon in competitive sport.....	42
4.5. Limitations.....	43
4.6. Outlook and Implications.....	46
5. References.....	48
6. Appendices.....	60
6.1. Index of Tables.....	60
6.2. Index of Figures.....	61
6.3. Supplementary Tables.....	62

6.4. Supplementary Figures.....	73
6.3. German Questionnaire.....	76
6.4. English Questionnaire.....	81
6.5. Abstract: German.....	87

Acknowledgements

First and foremost, I would like to express my sincere gratitude to my supervisor, Assoc. Prof. Dr. Peter Gröpel, for his valuable guidance, constructive feedback, and continuous support throughout the process of this thesis. His expertise, his encouragement and his patience have been essential in shaping this work.

I would also like to thank all participants who took the time to contribute to this study. Their openness and engagement made this research possible.

I am also very grateful to my dog, who provided emotional support by sitting on my lap while I was writing this thesis and occasionally forcing me to go outside.

Special thanks go to my family and my friends for their patience, motivation, and constant encouragement during this journey. Your belief in me has been a source of strength and optimism.

Parts of this thesis were translated from German to English and edited for language clarity using ChatGPT (OpenAI, 2025) and DeepL (DeepL SE, 2025). Both tools were employed solely for linguistic purposes; all scientific content remains my own work.

Note.

Firstly, it should be emphasized that the psychological factors examined in this study, such as stereotype threat and the perception of impostor feelings, must always be considered in the cultural and social context of the sample studied. In particular, the interpretation of corresponding results should be carried out against this background in the spirit of culturally sensitive research.

1. Introduction

“Sometimes you have to fake it [...] ‘cause not everyday I would walk out there [...] and feel good. And there are some days as an athlete [...] you’re never playing at a 100%, but [...] you really have to just have this space of [...] ‘No, I’m confident, I’m perfect and I’ve never been healthier.’ [...] And that was literally never the story and never the case, and some days you just don’t feel like showing up, but you have to show up.” (The New York Times Events, 2024, 2:26–3:19).

Serena Williams' answer to the interview question of where she gets her confidence from, shows how important “mental toughness” (The New York Times Events, 2024, 10:21), as Williams called it in the same interview with *The New York Times Events*, self-belief, and the general mental state of athletes are, in order to optimize their athletic performance and maintain it under the stress of competition (Mendizabal, 2024; Singh & Arora, 2023).

There are many factors that can influence the mental state of athletes, including self-doubt, fears, and dealing with pressure to perform (Baumeister, 1984; Moritz et al., 2000). Another mental challenge might be so-called *impostor thoughts*; or even the fear of being an impostor: the *impostor phenomenon* (Singh & Arora, 2023).

The Cambridge Dictionary defines an impostor as “a person who pretends to be someone else in order to deceive others” (Cambridge Dictionary, n.d., Definition of impostor). When we hear the word *impostor*, many of us might first think of Leonardo DiCaprio in *Catch Me If You Can* or Anna Sorokin in *Inventing Anna*. In these two popular culture examples, the main characters impersonate individuals with specific qualifications in order to obtain what they desire. For instance, Frank Abagnale Jr. in *Catch Me If You Can* falsely claimed to be a lawyer to secure a position in the legal industry, while Anna Sorokin in *Inventing Anna* adopted the persona *Anna Delvey* and pretended to come from a wealthy family to obtain substantial loans (Ransom & Palmer, 2019; Spielberg, 2002). Both are well-known examples of impostors, essentially, con artists. However, this study does not aim to examine impostors themselves, but rather the scientific understanding of the *impostor phenomenon* – the experience of feeling like an impostor. Considering the definition of an impostor, what does it actually mean to struggle with the impostor phenomenon?

The term *impostor phenomenon (IP)* was first introduced by Clance and Imes (1978) in their article *The Imposter Phenomenon in High Achieving Women: Dynamics and Therapeutic Intervention*. They described it as a prevalent pattern in which high-achieving

individuals, despite evidence of their competence, persistently doubt their abilities and fear being exposed as intellectual frauds – or *impostors*. Instead of attributing their success to skill or intelligence, they often credit it to luck, good timing, or the belief that they have deceived others. Clance and Imes (1978) initially observed this phenomenon primarily among female patients in their therapeutic practice. These women were typically highly successful in their professional or academic endeavors, yet attributed their achievements to the factors mentioned above and lived with a constant fear of being ‘exposed’. Paradoxically, further recognition and confirmation of their accomplishments did not reduce this anxiety; rather, it intensified the psychological pressure. Many became convinced that they had to maintain the perceived ‘false’ positive image of themselves and continuously surpass their previous performance to avoid exposure. Clance (1985a) later referred to this recurring pattern as the *impostor cycle*. In this cycle, which starts with the individual being confronted with a task or challenge, they subsequently experience strong self-doubt and fear, questioning their ability to succeed. This leads to heightened anxiety, followed either by intense effort and over-preparation or by procrastination and a last-minute rush to finish the task. When the task is ultimately completed successfully and external recognition is received, the pattern is reinforced, setting the stage for the same cycle to repeat with future tasks, as the recognition is not internalized and once again fosters the fear of not being able to repeat this achievement, and of having been ‘lucky’ or having faked one’s competence (Clance & O’Toole, 1988).

According to Clance and Imes (1978), two criteria must be met in order to speak of an impostor phenomenon. On the one hand, an objectively high performance in the field in question. On the other hand, the occurrence of impostor thoughts, as described above. That is, the feeling of not being competent enough in reality, attributing success to external factors, and the fear of being exposed as ‘incompetent’.

Overall, these findings laid the foundation for many other studies, which essentially reinforced the principles established by Clance and Imes (1978), but also specified them further and applied them to different contexts. In most subsequent studies, the term *impostor syndrome* is used instead of *impostor phenomenon*. This study remains with the original term, as both are academically established terms for the same phenomenon. The spellings for the phenomenon also vary between *impostor* and *imposter*, both of which are used in scientific studies (Bravata et al., 2020).

Ultimately, the *impostor phenomenon* can be described by specific patterns of cognition and behavior characterized by the mistaken internal belief that the individuals in question are not ‘capable’ or ‘capable enough’ and have instead ‘deceived’ others by convincing them that

they are competent or good enough. These beliefs are reinforced by the fear of being ‘exposed’ and by the tendency to attribute one's own success to external factors such as luck, effort, charm, or good timing (Feenstra et al., 2020).

While Clance and Imes (1978) focused only on academically and work-related high-achieving women; and described the phenomenon as something that occurred in women due to behavioral patterns within their family and in part to societal role expectations, subsequent research has broadened the perspective, examining various aspects of the impostor phenomenon across genders and exploring it both qualitatively and quantitatively in diverse domains (Bravata et al., 2020). The next section will discuss the available research in greater detail in order to provide a better fundamental understanding of the phenomenon and its possible triggers and characteristics.

1.1. Theoretical Background of the Impostor Phenomenon

Clance (1985a) identified four characteristics that, according to them, contribute to the likelihood of experiencing the impostor phenomenon: (1) The impression that one's own talents are unusual or atypical compared to those of other family members. (2) Family messages that innate talent is of central importance and that success therefore requires little effort. (3) Discrepancies between feedback from family and social environment regarding abilities and achievements. (4) Low positive reinforcement.

In a systematic review, Yaffe (2023) examined and compared 13 studies investigating the family background and attachment styles of individuals with pronounced impostor thoughts. The findings indicate that the severity of the impostor phenomenon appears to be associated with maladaptive attachment styles. Furthermore, factors such as overparentification, low parental care, excessive control, and negative parenting turned out to be significant predictors, as they showed positive correlations with impostor scores. However, it was also found that, after controlling for psychological factors such as self-esteem and mental health, most of these variables no longer had a significant effect on the impostor phenomenon itself, but rather on these psychosocial factors, which in turn had the main influence on impostor feelings.

More recent findings by Yaffe & Karny (2025) further expand on the connection between parenting and impostor tendencies. In a study examining 220 adolescents, the authors investigated how parenting styles relate to impostor feelings, self-esteem, and emotion dysregulation, while also differentiating between maternal and paternal influences and

considering the adolescent's gender. The results showed that authoritative parenting, particularly from mothers, was linked to lower impostor feelings – directly among boys and indirectly among girls through higher self-esteem. Among fathers, an indirect effect through self-esteem was observed only for boys. Moreover, emotional dysregulation was associated with authoritarian parenting among girls and with permissive parenting among boys, mediating the link between parenting styles and impostor feelings. The results could therefore also indicate that impostor thoughts manifest themselves differently depending on gender.

While many studies like these focus on family background (Tomičević & Lang, 2025) and thus individual factors for the development of the impostor phenomenon, Feenstra et al. (2020), however, point out that the social context and aspects of society's influence should not be overlooked. They argue that, instead of viewing the insecurities of people from certain groups exclusively as an individual problem, future research should also focus on the significant role played by the social environment in contributing to the development of impostor feelings.

Just as the feeling of being unusual (Clance, 1985a) can arise within one's family, it may also manifest in a societal context (Cokley et al., 2015). Accordingly, numerous studies have examined the impostor phenomenon (IP) among minority groups, particularly within academic settings (Bernard et al., 2018; Cokley et al., 2013). For instance, a study surveying 157 African American college students attending predominantly white colleges found that more frequent experiences of racial discrimination were associated with higher levels of IP (Bernard et al., 2018). It therefore seems possible that individuals also feel atypical in their social or societal context as well (Feenstra et al., 2020), where they might receive different kinds of feedback compared to the feedback or recognition they encounter in academic or professional contexts. This dissonance in the feedback received may also manifest in the opposite direction. In a study of 220 ethnic minority students, Cokley et al. (2013) found that while African American participants reported the highest levels of *minority stress*, Asian American students experienced stronger impostor feelings. This may be due to the influence of stereotypes that can create unrealistically high academic and intellectual expectations, which, in turn, can negatively affect their self-perception when individuals feel unable to meet these expectations or receive critical feedback in academic settings (Cokley et al., 2024).

Clance (1985a) similarly emphasized the role of both family and social background, as well as social role expectations, particularly in the case of women. Specifically, Clance and Imes (1978) proposed that impostor feelings among women and girls often stem from

conflicting social messages that portray women as either intellectually inferior or exceptionally capable. On one hand, negative gender-role stereotypes and societal feedback that devalue women's intelligence may lead women to underestimate their own intellectual abilities. On the other hand, perfectionistic expectations within the family context may contribute to impostor feelings when women encounter normal learning challenges that suggest they are not intellectually 'flawless'.

Research investigating gender differences in the impostor phenomenon has found mixed results (Bravata et al., 2020). For instance, Caselmann et al. (2006) found that high school students reported impostor thoughts with similar frequency regardless of gender. Similarly, Leonhardt et al. (2017) observed comparable rates of IP among men and women in professional leadership positions. However, other studies reported significantly higher impostor scores among female participants (Diaconescu et al., 2024; Jöstl et al., 2012). In a meta-analysis by Bravata et al. (2020), which included 33 studies comparing IP prevalence across gender groups, 17 studies found no statistically significant gender differences, while 16 reported significantly higher impostor scores among women. None of the studies indicated higher IP levels among men. Overall, these findings suggest that while the impostor phenomenon appears to be particularly prevalent among women, it affects individuals across genders. Cokley et al. (2024) argue that a possible reason why other sociocultural factors have received relatively little attention in subsequent research may be this inconsistency of findings regarding gender differences.

Research further suggests that the experience of IP is a global phenomenon that can affect people of different ages, backgrounds, professions, and institutions, as, over the years, the impostor phenomenon has been identified and examined across various contexts and environments. In addition to the 'high-achieving women' studied by Clance (1985a), the impostor phenomenon has been observed among managers in various professional settings (Bechtold, 2015), clinical nurse specialists (Ares, 2018), African American students (Cokley et al., 2015), psychology graduate students (Castro et al., 2004) and college students in general (Cusack et al., 2013). Overall, it is estimated that up to 70% of people experience impostor feelings at some point in their careers (Gravois, 2007).

A study involving 130 Romanian psychology students revealed that 56.15% of participants experienced high and intense levels of the impostor phenomenon (Maftei et al., 2021). Other studies examining prevalence among students have reported both comparable and differing results. For instance, Castro et al. (2004) found a prevalence rate of 80% for moderate impostor feelings among psychology students. In contrast, among a sample of

Austrian doctoral students, only 29.2% (69.6% of whom were women) reported moderate scores, while 4.8% (93.3% women) reported high scores on the IP scale (Jöstl et al., 2012). To determine prevalence, these studies employed the *Clance Impostor Phenomenon Scale* (CIPS, Clance, 1985b), using the recommended cut-off values (Clance & O'Toole, 1988). However, overall, differences in cut-off criteria, as well as contextual factors such as academic level or cultural background, may partly account for the variation in prevalence rates. Altogether, the meta-analysis by Bravata et al. (2020) reported a general prevalence ranging from 9% to 82% – a wide spectrum that highlights the need for more context-sensitive investigation of the impostor phenomenon.

Although the impostor phenomenon is not classified as a mental disorder in either the *Diagnostic and Statistical Manual of Mental Disorders* (5th ed., American Psychiatric Association, 2013) or the *International Classification of Diseases* (11th revision, World Health Organization, 2019), the most commonly reported clinical comorbidities among individuals experiencing impostor feelings are generalized anxiety, lack of self-confidence, and low self-esteem (El-Ashry et al., 2024; Schubert & Bowker, 2019). Studies also report associations with depression and psychological stress (Diaconescu et al., 2024; Holden et al., 2024; McGregor et al., 2008).

In the workplace, impostor thoughts have been linked to reduced job performance and satisfaction (Vergauwe et al., 2015), as well as an increased risk of burnout, less career planning, and lower motivation to pursue leadership roles (Bravata et al., 2020). In academic settings, by contrast, students with and without impostor experiences do not differ in their grades but rather in their self-perception of performance (Ménard & Chittle, 2023). However, in professional contexts, impostor feelings may have more tangible long-term effects on performance and career success (Bravata et al., 2020; Cozzarelli & Major, 1990). Across both populations, evidence consistently indicates a negative impact of impostor feelings on psychological well-being. These findings showcase the importance of gaining a deeper understanding of the phenomenon, extending beyond academic and professional domains. Clance (1985a) further identified several key characteristics of the impostor phenomenon: perfectionistic traits, the need to be the best, fear of failure, denial of competence, discounting of praise, as well as fear and guilt associated with success. Each of these aspects might be easily applied to the struggles athletes might face in the sporting context. Research also shows that athletes in particular often pursue perfection and are especially vulnerable to a range of mental health concerns (Rice et al., 2016).

This raises the question of how, and under what circumstances, the impostor phenomenon may also manifest among athletes.

1.2. The Impostor Phenomenon among Athletes

While the prevalence and characteristics of the impostor phenomenon in academic and work contexts have been extensively studied, there are only a few studies examining its occurrence in sports contexts (Denney & Whitley, 2022).

One of the few studies to quantitatively assess the prevalence of impostor thoughts among athletes was conducted by Singh and Arora (2023). Findings revealed that the impostor phenomenon is clearly present within this population. More than half of the participants (54.8%) demonstrated moderate impostor feelings, while 32.3% reported frequent impostor experiences and 6.5% experienced them at an intense level. Only a small fraction (6.5%) reported very few impostor characteristics. No significant gender differences were observed, suggesting that impostor feelings affect both male and female athletes in comparable ways. However, the study is limited by its small pilot sample of only 31 athletes, which restricts the generalizability of the findings. Furthermore, the data were collected exclusively from Indian athletes, and while quota sampling ensured some diversity in gender and sport type it could not fully capture the heterogeneity of athletes at different competitive levels or within different cultural contexts. Although the study recorded whether participants engaged in team or individual sports, this aspect was not further explored – despite the fact that the type of sport may be a relevant factor influencing the occurrence of impostor feelings. Furthermore, the study was only conducted on Indian athletes. Consequently, it might be beneficial to conduct a survey in additional cultural contexts and with a larger number of athletes to gain a deeper understanding of the phenomenon in athletic domains.

Overall, Singh and Arora (2023) emphasized that the impostor phenomenon functions as a psychosocial barrier to both performance and well-being in sports. The authors suggest that future research should extend these findings with larger samples, explore subgroup differences among athletes, and examine psychosocial determinants.

A study by Denney and Whitley (2022) provides additional insight into impostor feelings in athletic populations by focusing on the role of perfectionism. In this study, 93 athletes from both team and individual sports participated in an online survey assessing impostor feelings, perfectionistic strivings, and perfectionistic concerns. To measure the impostor phenomenon, the authors employed the *Leary Impostorism Scale* (LIS; Leary et al., 2000). With only seven

items, this scale is shorter than the *Clance Impostor Phenomenon Scale* (CIPS; 20 items; Clance, 1985b) and focuses more specifically on the aspect of inauthenticity within the impostor experience. Scores on the *LIS* can range from 7 to 35. In Dennehy's and Whitley's (2022) sample, the mean score for impostorism was 15.03 ($SD = 6.42$). However, no further information on prevalence rates or categorical interpretations of the scores was provided, making direct comparisons with results obtained using Clance's (1985b) *CIPS* difficult. Using bivariate correlations and hierarchical regression analyses, the authors investigated how perfectionism, gender, and age predicted impostor experiences. The results revealed that perfectionistic concerns, reflecting self-criticism, fear of mistakes, and worry over external evaluation, were positively associated with impostor scores and emerged as the only significant predictor of impostor feelings. In contrast, perfectionistic strivings, which represent the adaptive pursuit of high personal standards, were not significantly related to impostor experiences. Gender and age likewise showed no significant predictive value.

These findings suggest that athletes with higher impostor scores are more likely to strive for externally imposed standards of perfection rather than internally defined goals. The authors therefore concluded that athletes high in impostor feelings may be driven primarily by the belief that they must meet the expectations of others, as their self-evaluations are shaped less by self-imposed expectations and more by social concerns. As a result, high-performing athletes experiencing impostor feelings tend to attribute their success to external factors, feel unworthy of their achievements, and believe that others overestimate their abilities. Such tendencies may become particularly evident following setbacks, when athletes fear criticism or exposure as 'frauds'. Consequently, they may either engage in excessive efforts to perfect their performance or engage in avoidance behavior to prevent being found out (Dennehy & Whitley, 2022).

These findings strongly echo the assumptions of Clance and Imes (1978), who emphasized the important role of external expectations and perfectionism (Clance, 1985a) in the emergence of impostor feelings. Dennehy and Whitley (2022) did not examine additional variables or distinctions between team and individual sports. However, it seems plausible that in team settings, impostor feelings may be further reinforced by comparison with, and the perceived expectations of teammates, potentially adding another layer of psychological pressure (Wergin et al., 2019).

To date, these studies remain two of the few articles addressing this phenomenon in a sporting context. This lack of research is striking, given that sport represents a setting in which impostor feelings might be particularly likely to emerge. Athletes are not only required

to deliver consistently high performances, compete against others, and be evaluated by coaches and achievements, but they are also exposed to the judgement of spectators and teammates, all of which may intensify impostor feelings (Dennehy & Whitley, 2022; Koivula et al., 2002).

Taken together, these insights suggest that the athletic context provides a fertile ground for impostor feelings, yet empirical evidence in this area remains lacking. This research is therefore crucial to better understand how impostor thoughts manifest among athletes. In order to accomplish this, it might be beneficial to consider further potential determinants of the impostor phenomenon as well. Among other factors, this could include the phenomenon of stereotype threat (Nadal et al., 2021).

1.3. Theoretical Background of Stereotype Threat

The term *stereotype threat* (ST) was first introduced in a study by Steele and Aronson (1995) in their concluding theory. In this study, the authors analyzed the performance of African American and White students in a language-related test. They were particularly interested in the extent to which the activation of negative social stereotypes affects test performance. It was found that African American participants performed significantly worse when they were subtly confronted with the stereotype that Black people are less competent in language tasks before the test – for example, by simply having to state their ethnicity before the test began. In addition, the participants confronted with the stereotype subsequently reported increased levels of anxiety. These results suggest that the mere possibility of confirming a negative stereotype is enough to significantly influence actual performance and emotional experience.

The term *stereotype threat* accordingly describes the concern that one's own behavior will confirm a negative stereotype about one's own social group. Similar to the impostor phenomenon, this concept involves external expectations directed toward the individual, however, in this case, these expectations are socially constructed and externally imposed based on group membership. In contrast to the impostor phenomenon, where individuals fear not meeting high external expectations due to their own perceived lack of competence (Dennehy & Whitley, 2022), stereotype threat involves the fear of confirming negative societal expectations about one's group and, in doing so, reinforcing both the stereotype and, again, one's own concerned lack of competence or skill. In the context of the study mentioned above, this manifests itself in the fear of reinforcing the idea that Black

individuals, and, by extension, oneself, have poorer language skills by performing poorly on a language test (Steele & Aronson, 1995). This psychological stress can have a negative impact on performance; an effect that has since been replicated in numerous studies and examined in greater detail (Liu et al., 2021). Stereotype threat with potential underperformance has been observed in women (Smerdon et al., 2020), immigrants (Appel et al., 2015), people affected by age-related stereotypes (Lamont et al., 2015), and ethnic minorities (Nguyen & Ryan, 2008), among others. A meta-analysis on stereotype threat in the workplace concluded that ST is negatively correlated with career aspirations, performance, job engagement, and self-efficacy, and positively correlated with exhaustion (von Hippel et al., 2024).

From a psychological perspective, stereotype threat is understood as a stress response that consumes cognitive and emotional resources. Individuals under threat may experience heightened anxiety, intrusive thoughts, and self-monitoring, all of which can reduce working memory capacity and impair focus on the task at hand (Schmader et al., 2008). Consequently, performance declines not because of reduced ability but because attentional control and self-regulation are compromised. The degree to which stereotype threat affects performance depends on various factors, including the significance of the stereotype, the individual's identification with the stereotyped domain, and the importance of the task to one's self-concept (Inzlicht & Schmader, 2012; Spencer et al., 2016).

In competitive or evaluative environments, such as academic testing or athletic performance, these dynamics can be particularly pronounced (Beilock et al., 2007; Steele, 1997). These contexts may make ability and group membership highly salient, thereby increasing the likelihood that stereotypes are activated and interfere with cognitive processing and self-regulation (Cadinu et al., 2005; Schmader et al., 2008). For instance, when individuals are aware that their group is negatively stereotyped in a given domain, the resulting pressure to disprove that stereotype can paradoxically impair performance (Grabow & Kühl, 2019).

In a competitive context, stereotype threat among women was examined in female chess players, among others. Rothgerber and Wolsiefer (2014) found that young female chess players were vulnerable to stereotype threat in competitive contexts, with performance decrements most pronounced when competing against men, achieving 83% of the expected success based on their own and their opponent's prerating. No such effect was found in male chess players. Their study suggests that stereotype-related anxiety may impair performance when the competitive situation is challenging, thereby reinforcing gender disparities in chess.

In contrast, Stafford (2018) analyzed more than 5.5 million international tournament games and reported no evidence of stereotype threat among female players. According to their analyses, female players even outperformed expectations when competing against men. This study thus questions the robustness of stereotype threat in high-level competitive chess and suggests that other factors, such as male underperformance due to overconfidence or ego-threat, may partly explain observed gender differences. In response to this, Smerdon et al. (2020) re-analyzed the same dataset, paying closer attention to potential confounding variables such as age. Consistent with Rothgerber and Wolsiefer (2014), they found that female chess players underperformed when competing against men and attributed these results to stereotype threat effects.

Altogether, these findings highlight the complexity of stereotype threat mechanisms and suggest that its influence may depend on situational factors such as age, level of expertise, and competitive context. However, they also show that ST can influence performance, particularly in competitive, high-pressure, and evaluative situations, and may therefore also represent a potential risk factor for an athlete's performance and psychological well-being (Rothgerber & Wolsiefer, 2014).

1.4. Stereotype Threat among Athletes

“It was the conversations: Who did you look up to when you were growing up - what athlete did you aspire to be? And most of our responses were sports we didn’t play and if they were team sports, they were men. So most of the time, the women that I followed [...], they were all individual sports.” (Positive Coaching Alliance, 2019, 4:32 - 5:30).

In this quote, American soccer player Mia Hamm reflects on the absence of role models who truly represented her experience as a female football player. She highlights an issue that remains relevant today: gender stereotypes and the underrepresentation of women in certain types of sports (Frabotta & Fernández-Cruz, 2025; Plaza et al., 2017).

While stereotypes in sports exist across various dimensions, such as ethnicity (Harrison, 2001), appearance (Jones & Greer, 2011), and gender (Koivula, 2001), the following section focuses specifically on gender-related stereotypes and stereotype threats within athletic contexts.

To understand the potential effects of gender-related stereotype threat in sports, it is first necessary to consider which gender stereotypes are embedded within the sports context itself.

A study conducted by Koivula (2001) provides insights that align closely with Hamm's observations. In this study, 403 students at Stockholm universities, including participants from two sports-oriented institutions, evaluated a total of 41 different sports. Each participant was randomly assigned one sport to assess and asked to categorize it as *masculine*, *feminine*, or *gender-neutral*. Additionally, participants were instructed to describe each sport using adjectives and nouns, such as *team spirit* or *aesthetic*, to capture their perceptions and associations.

The results illustrated prevailing social stereotypes: not a single ball sport was classified as *feminine*, and the only team sport classified as *feminine* was synchronized swimming. This perception was also reflected in the *team spirit* category, which was almost exclusively associated with sports carrying masculine connotations. Sports perceived as feminine, such as dance or horse riding, were significantly more often associated with *aesthetics* and *gracefulness*. Masculine sports such as football or ice hockey were predominantly associated with the nouns *danger*, *risk*, *speed* and *strength*. The only ball and team sports considered *gender-neutral* were volleyball and racket sports.

These findings also align with Mia Hamm's observation: female athletes are rarely associated with football, ball sports, or team sports in general, and by extension, not with the concept of *team spirit* itself.

To update and expand research on gender stereotypes in sport, Plaza et al. (2017) conducted a comparable study involving 690 participants from France, who rated various sports in terms of their perceived femininity, masculinity, or neutrality. The study also aimed to move beyond the typical student population by including participants from different age groups.

Consistent with Koivula's (2001) results, only 6 of 39 sports, including synchronized swimming, dancing, and horse riding, were categorized as *feminine*, while sports like football, ice hockey, and rugby remained strongly associated with masculinity. A small number of sports, including volleyball, racket sports, and handball and basketball, were rated as *gender-neutral*, suggesting subtle shifts in perception. However, these could be attributed to methodological differences: handball ($M = 4.44$) and basketball ($M = 4.48$) were only slightly below the specified threshold of $M = 4.5$, above which sports were classified as *typically masculine*. Furthermore, older participants tended to rate sports in more gender-typical ways, viewing feminine sports as more *typically feminine* and masculine sports as more *typically masculine*, than younger participants, suggesting a potential generational shift. Nevertheless, significant differences persisted across all age groups,

indicating that strong gender stereotypes remain embedded in perceptions of sport. Additional analyses from the same study revealed that gender stereotypes in sport operate not only explicitly but also implicitly, as participants unconsciously associated male and female cues with stereotypically masculine or feminine sports.

Practicing certain sports as a woman or man may thus in itself evoke a stereotype threat (Grabow & Kühn, 2019). Research has shown that women participating in male-dominated sports, such as football, are often exposed to sexism, harassment, and verbal abuse (Caudwell, 2011). Similarly, a study on the treatment of female referees revealed that comments, media coverage, and public discourse frequently imply that women do not belong on the football field simply because of their gender (Forbes et al., 2015). Historically, women's football was banned across much of Europe, dismissed as *unladylike*, *harmful to women's health*, and a *lower-quality version* of the men's game (Pfister et al., 2017). In an interview with the German public broadcaster *NDR*, several female football players reported experiences of everyday sexism, objectification, and derogatory remarks in their sport, such as the comment, "*Women's football is like a horse race. Only on donkeys.*" (*NDR*, 2022, p. 1). The players explained that they have learned to ignore such statements over time. This illustrates how the devaluation of women's football compared to men's is perpetuated both through public discourse (Focus Online, 2024), and through direct verbal or behavioral discrimination (*NDR*, 2022). These examples further demonstrate that gender stereotypes like the ones found by Plaza et al. (2017) can thus have a direct impact on people's behavior and shape the environment in which athletes practice their sport.

In this sense, gender stereotypes act as socially imposed expectations, operating on both conscious and unconscious levels, which can undermine confidence, increase pressure, and affect psychological well-being (Fink, 2015; Krane et al., 2004; Steele, 1997). This mechanism thus shows conceptual overlap with the impostor phenomenon, where external expectations and fear of negative evaluation similarly contribute to self-doubt and performance anxiety (Dennehy & Whitley, 2022).

Consequently, such dynamics raise questions about the extent to which these stereotypes and the resulting stereotype threat may influence athletes' performance and well-being in more detail.

Early research on gender-related stereotype threat in sport was conducted using golf-putting tasks, which provided an optimal setting for studying motor performance under evaluative pressure. In these experiments, performance differences emerged depending on how the task was framed. Beilock et al. (2006) found that men who were confronted with a

stereotype that women would be better at the task before undertaking it performed worse. Furthermore, they found that performance recovered when participants' attention was diverted by a secondary task. This suggests that stereotype threat does not only deplete working memory but can also disrupt automatic motor processes by prompting excessive self-monitoring. In line with theories of choking under pressure (Baumeister, 1984; Masters, 1992), these findings indicate that stereotype activation can redirect attention toward task execution processes that normally operate automatically, and thereby undermine performance – an effect that may have been resolved by directing attention to the secondary task.

A study by Grabow and Kühn (2019) investigated the effects of stereotype threat among female football players, examining whether the stereotype that women are less skilled at football could impair performance of a trained motor performance task through stereotype threat. In a controlled experiment involving 80 female amateur players, participants in the experimental group were subtly reminded of the gender stereotype before completing a precision shooting task, while the control group received neutral instructions. The findings revealed that participants exposed to the stereotype performed significantly worse in the shooting task than those in the control group, despite having comparable technical skills. Interestingly, the stereotype threat effect was limited to the skilled motor performance, with no differences found in tasks that involved a greater cognitive component (such as shooting with the weaker foot). The authors did not find clear evidence for mediating variables such as anxiety or self-efficacy but observed that players under stereotype threat reported lower identification with their gender group. This indicates that female athletes may psychologically distance themselves from their in-group as a self-protective strategy when confronted with negative stereotypes.

Another study on stereotype threat among female football players was conducted by Chalabaev et al. (2008). The authors examined whether stereotype threat would impair female football players' performance of a more complex task, such as dribbling, and through which motivational mechanisms this effect might occur, specifically, whether achievement goals mediate the relationship between stereotype activation and performance. The study involved 51 experienced female football players from French clubs, who were randomly assigned to one of three conditions. In the athletic ability condition, the task was framed as measuring natural athletic abilities, such as strength, accuracy and speed, as a personal factor, whereas in the technical football ability condition, it was described as assessing technical football abilities correlated to personal factors. A third control group was told the task evaluated psychological factors. The authors assumed that stereotypes regarding women's

poor athletic abilities and poor technical football skills would activate a stereotype threat and have a negative effect on the players' performance compared to the control condition.

Results confirmed these hypotheses: players in the athletic ability condition performed significantly worse than those in the control group, and those in the technical ability condition showed a similar, though weaker, decline. Participants exposed to the threatening conditions also reported stronger performance-avoidance goals, although these did not statistically mediate the relationship between stereotype activation and performance.

Compared to Grabow and Köhl (2019), who focused on the direct behavioral effects of stereotype activation, Chalabaev et al. (2008) investigated a more complex motor performance task such as dribbling. Their findings suggest that stereotype threat in sport is content-dependent, stereotypes emphasizing a lack of athletic ability appear more detrimental than those targeting technical skills, as they are more closely tied to masculine-coded traits such as strength and power.

A meta-analysis by Gentile et al. (2018) examined 24 studies on stereotype threat among female athletes. The results revealed a moderate overall effect, comparable to findings in academic contexts. The only significant moderator was the stereotypicality of the sport: stereotype threat effects were stronger in masculine sports and weaker in feminine ones, indicating that the social affiliation attached to a sport critically shapes the experience of threat.

Overall, the findings confirm that stereotype threat affects women's performance in sport, particularly in domains culturally or socially coded as masculine. At the same time, they highlight the broader psychological implications of external expectations and self-doubt, which conceptually link stereotype threat to the impostor phenomenon, a related form of performance-inhibiting self-perception rooted in social evaluation and identity processes (Dennehy & Whitley, 2022).

1.5. Stereotype Threat and Impostor Phenomenon

“There’s this feeling that – because you’ve been told you’re not good enough – when you’re in a room, you’re wondering: well, how did I get here, if I’ve been told I’m not good enough? [...] So you feel like an impostor in your own life. [...] Especially if you’ve achieved success or you’re in rooms that you are ‘not supposed to be in’ – because society has told you that – you think: maybe somebody is going to discover that I shouldn’t be here.” (The Star, 2019, 0:24–0:53).

This quote by Michelle Obama, in which she explains the feeling of impostor phenomenon in an interview with *The Star* (2019), highlights the similarities and connections between impostor phenomenon and stereotype threat. In principle, both phenomena can affect anyone and are applicable to different situations in which performance is required. In both experiences, there is a fear of confirming something with one's performance results or behavior – in IP, of not actually being competent enough and ‘being exposed’; in ST, of confirming the negative stereotypes about one's own group. In Michelle Obama's quote, she addresses the stereotypical threat that she, as a Black woman, should not be in these ‘rooms,’ meaning important political discussions (The Star, 2019). She also addresses the subsequent fear of not being good enough and therefore failing, which corresponds to the impostor phenomenon. Both phenomena also often affect socially oppressed or disadvantaged groups, or at least groups that are heavily stereotyped (Appel et al., 2015; Cokley et al., 2015; Gentile et al., 2018). Both phenomena are associated with negative psychological and performance-related effects for those affected (Cokley et al., 2015; Nadal et al., 2021). The impostor phenomenon is thus repeatedly associated with stereotypes, albeit without directly examining them (Cokley et al., 2024). In this sense, the high-achieving women described by Clance and Imes (1978) can also be viewed as experiencing a form of stereotype threat – being successful in academic and professional contexts that are traditionally male-dominated (Clance, 1985a).

Cokley et al. (2015) explored the relationship between *gender stigma consciousness* (GSC), the impostor phenomenon, and academic outcomes among university students. GSC refers to a chronic awareness that one's gender is stigmatized and that one's abilities may be judged through the lens of gender stereotypes. While conceptually related to stereotype threat, which occurs in specific evaluative situations, GSC reflects a more enduring cognitive and emotional orientation toward social evaluation.

Their findings revealed that higher levels of gender stigma consciousness were associated with stronger impostor feelings in both women and men. In turn, impostor feelings were negatively related to academic self-concept, that is, students who felt like impostors also tended to view their academic abilities less positively. Interestingly, impostor feelings were directly related to academic performance (GPA) among women, but not among men. These results suggest that a persistent awareness of gender-based evaluation can heighten impostor

feelings, which in turn undermine confidence and, for women in particular, may also affect measurable academic outcomes.

Moreover, Hill and Vera (2024) investigated the interplay between impostor beliefs, stereotype threat, and mental health among female Black college students attending predominantly White institutions. Their results showed that impostor beliefs indirectly affect the relationship between group stereotype threat and symptoms of depression. Participants who endorsed both stronger group stereotypes and higher impostor beliefs reported more anxiety and depressive symptoms than those with lower levels of these beliefs. The data also indicated a significant correlation between stereotype endorsement and impostor beliefs in the mediation analysis. Higher ST values thus predicted higher IP values. These findings highlight that impostor feelings can affect the psychological burden associated with stereotype threat and group-based stigma, and that the two psychological phenomena are interlinked.

Similarly, Nadal et al. (2021) proposed an interactional model linking microaggressions, internalized oppression, stereotype threat, and impostor phenomenon. They argue that individuals from historically marginalized groups are repeatedly exposed to negative messages about their social identities through family, peers, media, and institutions. These experiences contribute to internalized oppression, which can manifest as impostor feelings or as stereotype threat during performance situations. The model suggests that both phenomena reinforce each other: impostor feelings can heighten vulnerability to stereotype threat, while stereotype threat experiences, which may also be accompanied by impaired performance, can intensify impostor beliefs. Over time, this reciprocal dynamic may negatively affect performance, self-esteem, and mental health.

This framework of interaction could also apply to women competing in male-dominated sports, where gender stereotypes and microaggressions remain widespread (NDR, 2022). Constant exposure to messages that question their legitimacy or competence as athletes could lead to internalized self-doubt and reinforce both feelings of being an impostor and stereotype threat. In line with the model proposed by Nadal et al. (2021), these overlapping stresses could reinforce each other and ultimately impair female athletes' self-confidence, performance, and psychological well-being.

Overall, existing literature on this topic suggests that stereotypes might play a key role in the experience of the impostor phenomenon (Hill & Vera, 2024), and that this phenomenon may also affect athletes (Singh & Arora, 2023). This could be because athletic performance, much like academic performance, is often associated with pressure, expectations, and

perfectionism (Dennehy & Whitley, 2022). Strong stereotypes also exist within the athletic domain (Koivula, 2001; Plaza et al., 2017), which may further contribute to the development of impostor feelings (Nadal et al., 2021) and, subsequently, influence both athletic performance and self-perception, as well as mental health (Cokley et al., 2015; Hill & Vera, 2024). Therefore, it can be assumed that the type of sport an individual engages in, and the associated stereotypes or stereotype threat (Gentile et al., 2018), may have an impact on the occurrence and intensity of impostor feelings (Nadal et al., 2021).

However, the lack of quantitative research on the relationship between stereotype threat and the impostor phenomenon, particularly in athletic contexts, highlights the need for further empirical investigation.

1.6. The current study

In sum, previous research has shown that both impostor phenomenon (IP) and stereotype threat (ST) can negatively affect performance and psychological well-being (Bravata et al., 2020; Grabow & Kühl, 2019). While impostor thoughts are characterized by doubts about one's own competence despite objectively high achievements (Clance & Imes, 1978), stereotype threat refers to the fear of confirming a negative stereotype about one's social group, which has been shown to impair performance in evaluative situations (Spencer et al., 1999). These constructs are partly discussed together (Nadal et al., 2021), but empirical studies investigating their relationship, particularly in the sports context, remain scarce.

The aim of the current study was to investigate the impostor phenomenon (IP) in the context of women's competitive team sports and to examine its relationship with stereotype threat (ST) and type of team sport. Specifically, the study sought to determine whether women in sports that are strongly gender-typed as masculine (i.e., football) are more vulnerable to impostor thoughts than women in sports that are perceived as gender-neutral (i.e., volleyball). More precisely, the objective was to test whether stereotype threat mediates the relationship between type of sport and the extent of impostor thoughts in female athletes. The study thus addresses a potential mechanism that may negatively affect women's athletic performance and well-being.

Female football players, who may be exposed to stronger gender-related stereotypes and who are subject to much public debate and comparison (Koivula, 2001; Grabow & Kühl, 2019; Pfister et al., 2017), were expected to report higher levels of impostor thoughts compared to female volleyball players, whose sport is perceived as more gender-neutral

(Koivula, 2001). Female football players were therefore also expected to report higher on the adapted *Stereotype Threat at School Scale* (STaS; Bedyńska et al., 2021). It was also assumed that women in team sports generally report higher IP scores than men in team sports. This assumption was based on the gender typicality of team sports on the one hand (Plaza et al., 2017), and on the other hand on numerous study results on the commonality of the experience of the impostor phenomenon in women (Bravata et al., 2020).

To test this model, competitive athletes from football and volleyball clubs were recruited, with male athletes serving as a comparison group. Participants completed adapted versions of the *Clance Impostor Phenomenon Scale* (CIPS; Clance, 1985b) and the *Stereotype Threat at School Scale* (STaS; Bedyńska et al., 2021), which were modified for age and sports-related contexts.

The statistical analyses included independent-samples *t*-tests to examine main effects of gender and sport type, as well as regression and mediation analyses to test the hypothesized mediating role of stereotype threat in the relationship between sport type and impostor phenomenon, and a one-sample *t*-test in order to establish comparability of the prevalence of IP with an academic sample from Pannhausen et al. (2022).

Based on the outlined framework, four hypotheses were proposed:

Hypothesis 1. Female athletes in team sports are expected to report higher levels of impostor phenomenon than male athletes.

Hypothesis 2. Female athletes competing in a masculine-typed sport (football) are expected to report more impostor thoughts than female athletes participating in a gender-neutral sport (volleyball).

Hypothesis 3. Stereotype threat is expected to mediate the relationship between type of sport and impostor phenomenon among female athletes, such that higher levels of stereotype threat will be associated with increased impostor scores.

Hypothesis 4. Athletes are expected to experience impostor thoughts to a similar extent as individuals in academic contexts, indicating that the impostor phenomenon is also a relevant psychological factor in competitive sports.

If these hypotheses were supported, the findings would indicate that stereotype threat serves as a key mechanism linking type of sport and impostor thoughts in female athletes. More broadly, this would suggest that IP, traditionally studied within academic or professional domains, also plays a crucial role in competitive sports.

By focusing on team sports with differing gender-typing (i.e., football vs. volleyball), this study addresses a significant research gap in the literature, as empirical evidence on the impostor phenomenon in athletic populations, particularly in relation to stereotype threat, remains scarce.

Thus, the aim of the current study is to contribute to a deeper understanding of the psychosocial mechanisms and risk factors underlying athletes' self-perceptions and performance-related anxiety and to inform interventions designed to strengthen athletes' mental health and performance.

2. Methods

2.1. Participants

The suggested sample size of 89 participants per gender was estimated using G*Power (Faul et al., 2009). Based on the results and the procedure of a study investigating similar effects, a moderate effect size (i.e., $f=0.15$) was assumed (Gentile et al., 2018). For higher power and in case of noise effects or the like leading to exclusion, the study targeted a recruitment of 100 participants per gender and type of sport.

Participants were recruited using a snowball sampling approach. Eligibility criteria required participants to be at least 16 years old and actively competing in either a football or volleyball club. Volleyball and football clubs in Austria and Germany were contacted via Email, and the study link was additionally distributed via social media platforms (*Instagram*, *WhatsApp*) targeting relevant athlete communities.

A total of 365 athletes initially participated in the survey; however, only 269 cases were retained for statistical analyses. One participant was excluded for being under the minimum age requirement of 16 years, and the remaining exclusions were due to incomplete questionnaire responses.

The final sample therefore consisted of 269 athletes aged 16 to 70 years ($M = 29.14$, $SD = 11.73$). For all further sample characteristics, see the accompanying Table 1.

Table 1.*Characteristics of the Study Sample (N = 269)*

Variable	Category	<i>n</i>	Percent %
Gender	Female	142	52,8
	Male	127	47,2
Team sport	Volleyball	119	44,2
	Football	150	55,8
Gender × Team sport	Female – Volleyball	62	23,1
	Female – Football	80	29,7
	Male – Volleyball	57	21,2
	Male – Football	70	26
Country of residence	Germany	233	86,6
	Austria	29	10,8
	Other	7	2,6
Test language	German	256	95,2
	English	13	4,8
Playing experience	Under 5 years	35	13
	5–10 years	48	17,8
	More than 10 years	186	69,1

Variable	Category	<i>n</i>	Percent %
Frequency of trainings	Less than 3 times a week	105	39
	3 times a week	122	45,4
	4 times a week	25	9,3
	5 times a week	11	4,1
	More than 5 times a week	6	2,2

Note. Before the evaluation began, the test offered the option of completing it in German or English.

2.2. Design

The present study employed a cross-sectional, correlational design to examine the relationship between stereotype threat and the impostor phenomenon among athletes in competitive team sports. The primary aim was to test whether stereotype threat mediates the association between sport type (football vs. volleyball) and impostor feelings among female athletes. All participants completed an online questionnaire assessing *impostor phenomenon* (IP), *stereotype threat* (ST), and demographic variables including age, gender, and years of sport experience. Overall, the study followed a non-experimental comparative design with gender and sport type as between-subject factors and impostor phenomenon and stereotype threat as key outcomes.

2.3. Materials

2.3.1. Adapted Clance Impostor Phenomenon Scale (CIPS)

A modified version of the *Clance Impostor Phenomenon Scale* (CIPS; Clance, 1985b) was used to assess impostor phenomenon. The scale includes 20 items that are rated on a five-point Likert scale (1 = “*never / not at all true*”, 2 = “*rarely*”, 3 = “*sometimes*”, 4 = “*often*”, 5 = “*mostly / very true*”). To maintain consistency in the responses, response options “1 = *not at all true*” and “5 = *very true*” from the original *Clance Impostor Phenomenon*

Scale (Clance, 1985b, pp. 1-2) were replaced by the above. Higher scores thus indicate a stronger manifestation of impostor phenomenon-related feelings and thoughts.

The overall score is calculated from the sum of all item scores. A total score of ≤ 40 indicates that only some characteristics of the impostor phenomenon are present. Scores between 41 and 60 indicate moderate manifestations, while scores between 61 and 80 indicate frequent experiences with impostor-related thoughts and feelings. Finally, a score above 80 is considered an indication of an intense experience of the impostor phenomenon (Clance, 1985b).

The original questionnaire was designed to examine the prevalence of the impostor phenomenon in academic and work contexts. In order to adapt the questionnaire to the sporting context, some questions have been reworded. Care has been taken to ensure that they still probe the same core concepts. An example of this is item number 17. Instead of the original item “*I often compare my ability to those around me and think they may be more intelligent than I am.*” (Clance, 1985b, p.2), the item was reformulated in the following manner: “*I often compare my ability to my teammates and think they may be more skilled than I am.*” The modified version used in the present study included 20 items as well and demonstrated good internal consistency (Cronbach’s $\alpha = .93$).

Table S1 provides the full list of adapted items, their German translations, and the corresponding item statistics. Filler words such as “sometimes” were also replaced in most cases in order to avoid giving any indication of direction in the answer options and to lend them more logic and weight.

2.3.2. Adapted Stereotype Threat at School Scale (STaS)

A modified version of the *Stereotype Threat at School Scale* (STaS; Bedyńska et al., 2021) was used to assess stereotype threat experiences in the athletic context. The original instrument was developed to measure perceived stereotype threat in school environments and consists of items assessing anxiety and self-evaluative thoughts related to confirming negative stereotypes about one’s social group.

To ensure contextual relevance, the items were adapted to the sports domain, following the procedures outlined by Bedyńska et al. (2021, p. 5). For example, the original item “*I am afraid that some of my friends think that I have much lower math/language skills because I am a girl/boy*” was modified to read “*I am afraid that others think that I have much lower skills in my sport because of my gender.*” Hereby, the items were also formulated in a gender-neutral manner so that all participants were given the same questionnaire. All items

were rated on a five-point Likert scale ranging from *1 = never* to *5 = most of the time*, with higher scores indicating a stronger experience of stereotype threat.

The modified version used in the present study included seven items and demonstrated good internal consistency (Cronbach's $\alpha = .91$). Sample items include "*I have the feeling that I should not be good at my sport because of my gender*" and "*When I play, I'm afraid that a bad performance will confirm that my gender is worse at my sport.*" The rewording process aimed to maintain the semantic and psychological equivalence of the original items while transforming them to a performance-based, athletic context.

Table S2 provides the full list of adapted items, their German translations, and the corresponding item statistics.

2.4. Procedure

Data were collected through an online questionnaire designed and administered via SoSciSurvey (Leiner, 2019; <https://www.soscisurvey.de>) between November 11, 2024, and September 25, 2025.

Before completing the questionnaire, participants were informed about the procedure and overall course of the study and provided written informed consent, which was obtained from all of the final 269 participants. The questionnaire included items on demographic information and sport-related experience, the items of the adapted *Stereotype Threat at School Scale* (STaS; Bedyńska et al., 2021), the adapted *Clance Impostor Phenomenon Scale* (CIPS; Clance, 1985b), as well as subsequent questions assessing the accuracy and possible distractions with which the questionnaire had been completed. The vast majority of participants (98.5%) reported having followed the instructions carefully, and 88.1% indicated completing the study without major distractions. Finally, participants were asked whether their data could be used for research purposes, to which all 269 participants agreed.

The online questionnaire required approximately six minutes to complete on average ($M = 380.00$ s, $SD = 140.38$). Completion time was recorded automatically by the survey platform and served only as an indicator of data quality.

2.5. Statistical analysis

All statistical analyses were conducted using IBM SPSS Statistics (Version 29; IBM Corp., 2022). Prior to hypothesis testing, preliminary analyses were performed to examine internal consistencies, descriptive statistics, and the assumptions required for parametric

testing. Cronbach's alpha coefficients were computed to assess the internal consistency of the adapted *Clance Impostor Phenomenon Scale* (CIPS, Clance, 1985b) and the adapted *Stereotype Threat at School Scale* (STaS, Bedyńska et al., 2021). To ensure that normality assumptions were met, Shapiro–Wilk tests were conducted for all main variables, followed by an inspection of skewness, kurtosis, and Q–Q plots. Levene's tests for equality of variances were additionally carried out prior to independent-samples *t*-tests.

To address the main research hypotheses, a series of parametric analyses were conducted. First, independent-samples *t*-tests were used to examine potential group differences in impostor scores and stereotype threat between male and female athletes, as well as between female football and volleyball players. To address Hypothesis 4, a one-sample *t*-test was conducted to compare the mean value of the adapted *Clance Impostor Phenomenon Scale* (CIPS, Clance 198b) of athletes in the present sample ($N = 269$) with the mean value reported for psychology university students in Pannhausen et al. (2022; $N = 274$, $M = 59.08$, $SD = 15.46$). The particular study was chosen as a reference point for the one-sample comparison because it used a comparable academic sample of psychology students, with a similar sample size and mean age (27.63 years). Moreover, data were collected online within a German-speaking context, making it well-suited for comparison with the present athlete sample.

To test the proposed mediation model (Hypothesis 3), a regression-based mediation analysis was conducted using the PROCESS macro (Model v5.0; Hayes, 2022). In this model, sport type (0 = volleyball, 1 = football) was entered as the predictor (X), stereotype threat as the mediator (M), and impostor phenomenon scores as the criterium (Y). Age was included as a control variable. Unstandardized regression coefficients were estimated using ordinary least squares (OLS) path analysis. Indirect effects were tested using 5,000 bootstrap resamples, and 95% bias-corrected confidence intervals (CIs) were used to determine statistical significance. An indirect effect was considered significant if the CI did not include zero. While the mediation analysis was conducted for the female athlete sample in line with the study's main focus, an exploratory mediation was also performed among male athletes for comparison.

For all analyses, the significance level was set at $p \leq .05$. Effect sizes were reported where applicable, including Cohen's d for *t*-tests and Cohen's f^2 for regression-based mediation analyses. All assumptions for the applied analyses (normality, linearity, homoscedasticity, and independence of residuals) were examined through residual plots, scatter plots and P–P plots. Visual inspection confirmed that these requirements were adequately met.

The overall analytical strategy aimed to test the hypothesized relationships between sport type, stereotype threat, and impostor phenomenon, while controlling for age and experience.

Significant effects were expected, with higher levels of stereotype threat predicting higher impostor scores, and with female football players showing stronger impostor feelings and stereotype threat experiences than female volleyball players.

3. Results

3.1. Preliminary Analyses

Prior to hypothesis testing, preliminary analyses were conducted to examine the psychometric quality of the measures and to ensure that the assumptions for parametric testing were met.

3.1.1. Internal consistency

The adapted *Clance Impostor Phenomenon Scale* (CIPS, 20 items, Clance, 1985b) demonstrated high internal consistency, Cronbach's $\alpha = .93$ (see Table S1). The *Stereotype Threat at School Scale* (STaS, 7 items, Bedyńska et al., 2021) also showed high internal consistency, Cronbach's $\alpha = .91$ (see Table S2). Corrected item–total correlations within the adapted *STaS* indicated satisfactory homogeneity, suggesting that all items contributed meaningfully to their respective constructs. All items of the *CIPS* showed satisfactory corrected item–total correlations as well ($r_{it} \geq .40$), except for one item (“I can give the impression that I am a better player than I really am”), which displayed a slightly lower item–total correlation ($r_{it} = .19$). However, Cronbach's α remained unchanged when this item was excluded ($\alpha = .93$), indicating that its inclusion did not reduce the overall internal consistency of the scale. Therefore, the item was retained. Item–total correlations and internal consistency were interpreted following Field (2018).

3.1.2. Descriptive statistics and normality

Pearson correlations were computed to examine associations among the main study variables and relevant control variables (see Table 2).

Table 2.*Means, Standard Deviations and Intercorrelations of Study Variables (N = 269)*

Variable	Mean	SD	Range	Inter-correlation				
				1	2	3	4	5
1. Impostor Phenomenon	50.82	14.40	20-90	—				
2. Stereotype Threat	11.61	5.77	7-35	.53***	—			
3. Age (years)	29.14	11.73	16-70	-.40***	-.33***	—		
4. Frequency	1.85	.91	1-5	.15*	.04	-.03	—	
5. Experience	2.56	.713	1-3	-.11	-.19**	.68***	-.10	—

Note. $p < .05^*$, $p < .01^{**}$, $p < .001^{***}$. Correlations are Pearson's r .

Response options for Frequency: (1) less than 3 times a week (2) 3 times a week (3) 4 times a week (4) 5 times a week (5) more than 5 times a week.

Response options for Experience: (1) less than 5 years (2) 5 to 10 years (3) more than 10 years.

Stereotype threat showed a strong positive correlation with impostor phenomenon scores, $r(267) = .53$, $p < .001$, indicating that athletes who experienced higher levels of stereotype threat also reported stronger impostor feelings. Age was significantly negatively correlated with both impostor scores ($r = -.40$, $p < .001$) and stereotype threat ($r = -.33$, $p < .001$), suggesting that younger athletes tended to experience more impostor thoughts and stereotype threat. Training frequency was weakly positively associated with impostor phenomenon ($r = .15$, $p < .05$), but unrelated to stereotype threat ($r = .04$, $p = .51$). Playing experience was negatively related to stereotype threat ($r = -.19$, $p = .002$), but not significantly to impostor phenomenon ($r = -.11$, $p = .09$). A multiple regression analysis was conducted to examine whether age and playing experience predicted impostor phenomenon scores. The overall

model was significant, $F(2,266) = 27.26, p < .001$, explaining 17% of the variance in impostor scores ($R^2 = .17$). Age was a significant negative predictor of impostor phenomenon, $B = -0.62, SE B = 0.09, \beta = -.41, p < .001$, whereas playing experience was not significant, $B = -0.18, p = .13$. Multicollinearity diagnostics indicated no concerns (Tolerance = .91, VIF = 1.10) (see Table S3).

To ensure that the assumptions of normality were met, Shapiro–Wilk tests were conducted for the continuous variables included in the analyses (impostor phenomenon and stereotype threat). The results indicated significant deviations from normality for both impostor phenomenon ($p = .030$) and stereotype threat ($p = .001$). While the distribution of IP scores showed only minor skewness (skew = 0.36), ST values displayed a somewhat stronger positive skew (skew = 1.13) (see Table S4). However, visual inspection of Q–Q plots (see Figure S1, Figure S2) suggested that both distributions were approximately normal, with no extreme deviations. Normality of CIPS scores was additionally inspected within each subgroup (gender and sport type).

Within the male subsample, boxplots and histograms indicated two mild outliers in impostor scores, defined as values exceeding 1.5 times the interquartile range. No extreme outliers were identified. Given that these data points appeared valid and did not substantially alter the results, they were retained in the analyses. The distribution of stereotype threat scores showed strong positive skewness (skew = 4.05, kurtosis = 21.43), reflecting that most male athletes reported minimal stereotype threat experiences. Despite the skewed distribution of ST scores in the male sample, the t -test was considered robust given the sample size ($N = 127$) and the absence of extreme outliers. No substantial deviations from normality were observed in the other subgroups, and distributions showed acceptable skewness and kurtosis values ($|\text{skew}| < 1, |\text{kurtosis}| < 1$).

Given the large sample size ($N = 269$) and the robustness of the applied statistical procedures, including the use of bootstrapping in the mediation model, the data were considered suitable for parametric analyses.

3.1.3. Assumption checks

Assumption checks for the mediation analysis were mainly conducted for the female sample, as this group constituted the main focus of the study. For the exploratory male mediation model, the same regression assumptions were visually inspected and showed no indication of violations. Scatterplots confirmed linear relationships between the main variables. The relationship between stereotype threat and impostor phenomenon was positive

and approximately linear ($R^2 = .27$) (see Figure S3). To assess multicollinearity between the predictors (sport type and stereotype threat), tolerance and variance inflation factor (VIF) values were examined. Both predictors showed tolerance values of .964 and VIF values of 1.037, below the recommended thresholds (Tolerance $> .10$; VIF < 10 ; Hair et al., 2010) (see Table S5). These results indicate that multicollinearity was not a concern in the mediation model. In addition, the Durbin–Watson statistic was inspected to test for autocorrelation of residuals. The obtained value ($d = 2.30$) fell well within the acceptable range ($1.5 < d < 2.5$), indicating that the assumption of independent residuals was met. The standardized residuals appeared randomly scattered around zero, indicating homoskedasticity (see Figure S4), and the P–P plot of standardized residuals closely followed the diagonal line, confirming the normality of residuals (see Figure S5). Thus, all regression assumptions for mediation testing were met.

3.2. Testing of hypotheses

3.2.1. Gender differences in impostor phenomenon among team sport athletes

Female athletes reported significantly higher impostor scores than male athletes (for means and standard deviations (see Table 3), $t(266.09) = -6.39, p < .001$. Levene’s test indicated unequal variances, $F(1, 267) = 7.89, p = .005$; therefore, results are reported with adjusted degrees of freedom. The mean difference was 10.40 points, with a medium-to-large effect size, $d = 0.77$, 95% CI [0.52, 1.02] (see Table S6). These results support Hypothesis 1 that women in team sports experience stronger impostor feelings than men.

Table 3.

Means and standard deviations of main study variables by gender and sport type

Gender	Type of sport	Impostor phenomenon	Stereotype threat
Female athletes	Football ($n = 80$)	58.05 (14.70)	17.25 (5.57)
	Volleyball ($n = 62$)	52.74 (13.72)	13.10 (4.73)
	Total ($n = 142$)	55.73 (14.47)	15.44 (5.60)

Gender	Type of sport	Impostor phenomenon	Stereotype threat
Male athletes	Football ($n = 70$)	47.19 (13.03)	7.26 (1.03)
	Volleyball ($n = 57$)	43.05 (10.78)	7.44 (0.80)
	Total ($n = 127$)	45.33 (12.20)	7.34 (0.94)

Note. Values are means with standard deviations in parentheses.

Football represents a masculine-typed team sport; volleyball represents a gender-neutral team sport. Sport-type differences were hypothesized and inferentially tested within the female subsample; values for male athletes by sport type are reported for descriptive purposes.

3.2.2. Impostor phenomenon among female athletes across sport types (football vs. volleyball)

Descriptive statistics showed that female football players (for means and standard deviations see Table 3) reported significantly higher impostor scores than female volleyball players, $t(140) = 2.20$, $p = .030$, 95% CI [0.53, 10.09]. Levene's test for equality of variances was not significant, $F(1, 140) = 1.22$, $p = .271$, indicating that equal variances could be assumed. The effect size was small to medium, $d = 0.37$, 95% CI [0.04, 0.71] (see Table S7). These findings support Hypothesis 2 and indicate that women in masculine-typed sports such as football experience greater impostor feelings than those in more gender-neutral sports such as volleyball. To provide a more complete picture, the same comparison was additionally conducted for male athletes. Male football players reported descriptively higher impostor scores than male volleyball players (see Table 3 for means and standard deviations). However, this difference did not reach statistical significance, $t(125) = -1.92$, $p = .057$, with a small effect size, $d = 0.34$, 95% CI [-0.69, 0.01]. Levene's test indicated homogeneity of variances, $F(1, 125) = 1.47$, $p = .228$. Thus, unlike the female subsample, no significant sport-type differences in impostor phenomenon were observed among male athletes.

3.2.3. The mediating role of stereotype threat in impostor phenomenon among female athletes

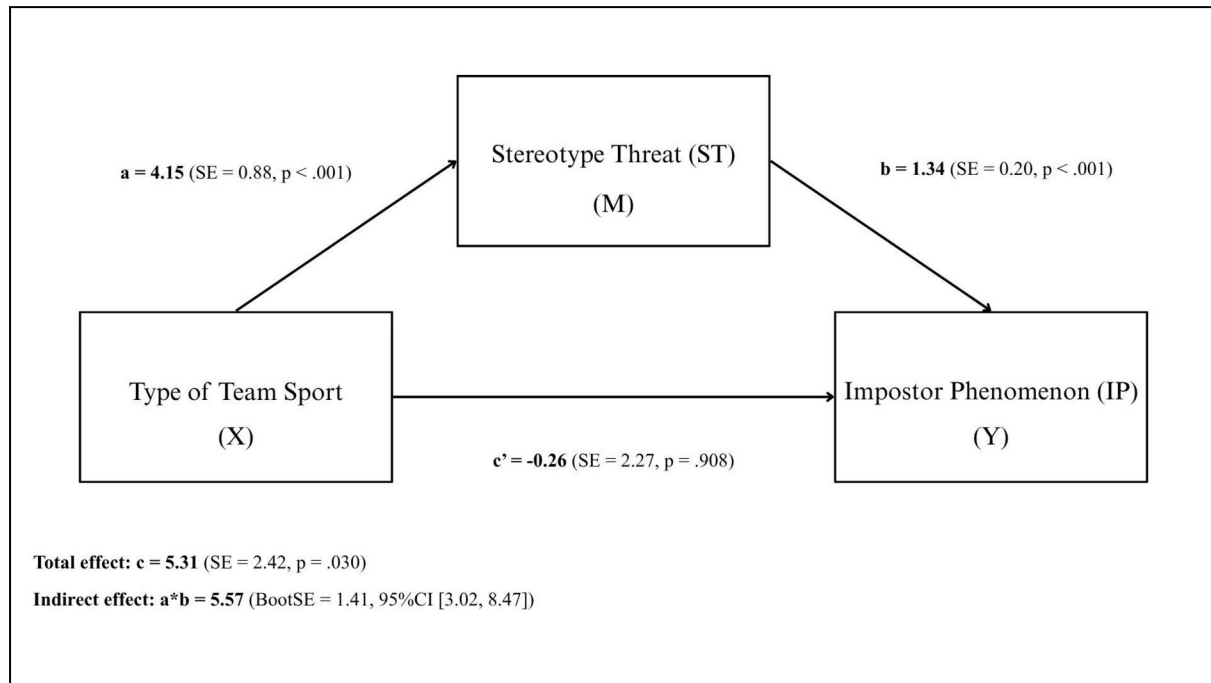
Before conducting the mediation analysis, preliminary independent-samples t -tests were performed to examine whether the predictor variable (type of sport) was associated with significant differences in the mediator (stereotype threat) and the outcome variable (impostor

scores). In addition to the results of the t -test used to examine hypothesis 2, female football players reported significantly higher stereotype threat scores (for means and standard deviations see Table 3) compared to female volleyball players, $t(140) = 4.70, p < .001, d = 0.80$. Together, these results confirmed that significant mean differences existed in both the mediator and the outcome variable across sport types, justifying their inclusion in the subsequent mediation analysis.

The analysis was carried out for the female subsample only ($N = 142$). Results indicated a significant effect of type of sport on stereotype threat, $b = 4.15, SE = 0.88, t = 4.70, p < .001$, 95% CI [2.41, 5.90], showing that female football players reported higher levels of stereotype threat than female volleyball players. In turn, stereotype threat significantly predicted impostor scores, $b = 1.34, SE = 0.20, t = 6.63, p < .001$, 95% CI [0.94, 1.74], indicating that higher levels of stereotype threat were associated with stronger impostor feelings. The total effect of type of sport on impostor phenomenon was significant, $b = 5.31, SE = 2.42, t = 2.20, p = .030$, 95% CI [0.53, 10.09]. However, when stereotype threat was included as a mediator, the direct effect of sport type on impostor phenomenon became non-significant, $b = -0.26, SE = 2.27, t = -0.12, p = .908$, 95% CI [-4.76, 4.23]. The mediation effect through stereotype threat was significant, $b = 5.57, BootSE = 1.41$, 95% BootCI [3.02, 8.47] (see Figure 1, Table S8). The mediation model explained 27% of the variance in impostor phenomenon scores ($R^2 = .27$), corresponding to a large effect size (Cohen's $f^2 = .37$). These findings indicate a mediation: the effect of sport type on impostor phenomenon was mediated by stereotype threat. Female football players experienced higher levels of stereotype threat, which in turn predicted stronger impostor feelings. Thus, Hypothesis 3 was supported.

Figure 1.

Mediation model of sport type predicting impostor phenomenon through stereotype threat (female subsample, $N = 142$).



Note. X = Type of Team Sport (0 = volleyball, 1 = football); M = stereotype threat; Y = impostor phenomenon scores. Path a represents the effect of sport type on stereotype threat, path b the effect of stereotype threat on impostor phenomenon, and c' the direct effect of sport type on impostor phenomenon when controlling for stereotype threat. The indirect effect ($a \times b$) was significant, indicating a mediation.

To examine whether the observed mediation pattern was specific to female athletes, an exploratory mediation analysis (PROCESS Model v5.0; Hayes, 2022) was also conducted among male participants ($N = 127$). The overall model accounted for 9.5% of the variance in impostor scores ($R^2 = .095$, $F(2,124) = 6.51$, $p = .002$), corresponding to a small-to-moderate effect size (Cohen's $f^2 = .11$). Sport type significantly predicted impostor scores ($b = 4.75$, SE = 2.10, $p = .025$), while stereotype threat was also a significant positive predictor ($b = 3.38$, SE = 1.12, $p = .003$). Interestingly, football players in the male sample likewise reported higher impostor scores than volleyball players. However, sport type did not significantly predict stereotype threat ($b = -0.18$, SE = 0.17, $p = .28^*$), and the indirect effect via stereotype threat was not significant ($b = -0.61$, BootSE = 0.65, 95% CI [-2.13, 0.50]*) (see Table S9). Thus, the mediation model was not supported for male athletes.

3.2.4. Comparison of impostor phenomenon in athletic and academic contexts

Results indicated that athletes' impostor scores were significantly lower than those of the academic comparison group, $t(268) = -9.41$, $p < .001$, Cohen's $d = -0.57$, 95% CI $[-9.99, -6.53]$ (see Table S10). Although average impostor levels among athletes were lower than in academic contexts, prevalence analyses showed that 47.3% of athletes experienced moderate impostor feelings, 26% frequent, and 4.7% intense impostor experiences (see Table 4). These findings indicate that impostor phenomenon is also prevalent in sport settings, though potentially to a lesser extent than in academic populations. Hypothesis 4 was therefore partially supported.

Table 4.

Frequency distribution of impostor phenomenon categories (IP).

IP	Frequency	Percent %	Cumulative Percent %
Low IP (CIPS ≤ 40)	71	26,4	26,4
Moderate IP (CIPS 41-60)	128	47,6	74
Frequent IP (CIPS 61-80)	63	23,4	97,4
Intense IP (CIPS > 80)	7	2,6	100
Total	269	100	100

Note. Categories follow Clance (1985b) cut-offs: < 41 = few impostor characteristics, 41–60 = moderate, 61–80 = frequent, > 80 = intense.

4. Discussion

4.1. Summary of Main Findings

The aim of this study was to investigate the impostor phenomenon in the context of women's competitive team sports and to examine its relationship with stereotype threat and sport type. The results largely supported the proposed hypotheses. Female athletes reported significantly higher impostor scores than their male counterparts (H1), and female football players, representing a more strongly gender-typed, 'masculine' sport (Koivula, 2001),

exhibited stronger impostor feelings (H2) and stereotype threat than female volleyball players. Mediation analyses for female athletes confirmed that stereotype threat explained the relationship between sport type and impostor phenomenon (H3), suggesting that gender stereotypes in sport contexts may foster impostor experiences. Finally, the overall level of impostor feelings among athletes was lower than in academic samples, yet still substantial, confirming the phenomenon's relevance beyond educational or occupational settings (H4).

4.2. Gender and gender-typing in sport as determinants of impostor feelings

The first two hypotheses addressed gender-related differences in impostor feelings among athletes, focusing both on gender (Hypothesis 1) and the gender-typing of the sport context (Hypothesis 2). Taken together, these findings indicate how structural and cultural aspects of sport shape athletes' impostor experiences.

4.2.1. Gender differences in impostor phenomenon among athletes

Consistent with Hypothesis 1, female athletes reported higher impostor scores than male athletes. This aligns with numerous studies showing that women tend to experience stronger impostor feelings than men (e.g., Bravata et al., 2020; Diaconescu et al., 2024; Jöstl et al., 2012). One explanation lies in the persistence of gendered socialization and evaluative standards that foster self-criticism and perfectionistic tendencies in women (Clance, 1985a). In sports, as in academic or professional domains, women often encounter environments that question their legitimacy and competence, particularly in performance-driven and male-dominated settings (Fink, 2015; Koivula, 2001; NDR, 2022; Pfister et al., 2017). Such contexts may intensify the internalization of external expectations, reinforcing impostor thoughts such as “I do not truly belong here” or “I only succeed by luck” (Clance & Imes, 1978), similar to what Michelle Obama described in her quote in *The Star* (The Star, 2019).

The medium-to-large gender effect found here supports the idea that impostor feelings among female athletes are not merely individual insecurities but rather reflect systemic and cultural dynamics that shape women's experiences in sport. Interestingly, these findings contrast with the results of Singh and Arora (2023) and Dennehy and Whitley (2022), who found no gender-related differences in scores in their studies on IP in athletes. Differences in sample composition, measurement instruments, and study context may account for these divergent findings. While Singh and Arora (2023) and Dennehy and Whitley (2022) included

athletes from both individual and team sports and partly used alternative impostor measures (Leary et al., 2000), the present study focused on team-sport athletes and assessed stereotype threat prior to impostor feelings, which may have increased the salience of gender-related experiences. In further research, it could be interesting to examine the extent to which the specific sports, the sample size or the context of the study played a role here.

4.2.2. Gender-typing of sport and impostor experiences among female athletes

As expected, female football players exhibited higher impostor phenomenon scores than female volleyball players. This supports the assumption that the gender-typing of a sport influences athletes' psychological experiences (Gentile et al., 2018). Football, historically and culturally coded as a masculine sport, continues to be associated with traits such as strength, power, and aggression – qualities that are often stereotypically ascribed to men (Plaza et al., 2017). Women who succeed in such a context may therefore experience dissonance between their achievements and socially prescribed gender expectations, heightening impostor thoughts (Clance, 1985a).

This pattern might echo Dennehy's and Whitley's (2022) observation that athletes high in impostorism are driven by external standards of perfection and the fear of not meeting, or not being able to meet, others' expectations. In masculine-typed sports, external recognition might be particularly significant, if the theoretical concepts of stereotype threat are taken into account, heightening the pressure to prove oneself (Grabow & Köhl, 2019). Conversely, volleyball's more gender-neutral social perception may offer women a psychologically safer environment with fewer stereotype-based threats, and fewer public debates and comparisons with the respective male athletes (NDR, 2022; Plaza et al., 2017), thereby attenuating impostor phenomenon experiences.

4.3. Stereotype threat as a mechanism underlying impostor feelings

The third hypothesis proposed that stereotype threat mediates the relationship between type of sport and impostor thoughts among female athletes. In line with the hypothesis, results from the mediation analysis among female athletes supported this assumption. Women competing in football, representing a “typically” masculine-typed sport (Koivula, 2001), reported significantly higher levels of stereotype threat than female volleyball players, representing a neutral-typed sport. Stereotype threat, in turn, significantly predicted impostor feelings, and when this mediator was included in the model, the direct effect of sport type on

impostor scores became non-significant. This pattern indicates a mediation, suggesting that the higher levels of impostor phenomenon observed in female football players can, to an extent, be explained by their heightened experiences of stereotype threat.

These findings extend previous theoretical models (Schmader et al., 2008; Steele & Aronson, 1995) to a sporting context and integrate with models linking stereotype threat and impostor phenomenon (Cokley et al., 2015; Hill & Vera, 2025; Nadal et al., 2021), who assume that the expectation of a negative evaluation in challenging experiences due to stereotypes of one's own group, as well as the possible decline in performance that accompanies this, can lead to persistent feelings of inadequacy, i.e., impostor feelings.

Both constructs share a common psychological mechanism: the fear of confirming negative expectations about one's competence (Clance & Imes, 1978; Steele & Aronson, 1995). In athletic settings, especially those historically and socially dominated by men, female athletes may internalize societal messages that question their belonging or ability (Gentile et al., 2018), thereby experiencing stereotype-related anxiety that manifests as impostor thoughts. In addition, the inward focus triggered by the possible and potentially frequent confrontation with gender-related stereotypes when performing may cause them to feel more inwardly focused, which impairs their attention to the actual performance and makes an otherwise automated skill correspondingly more difficult, which can result in poorer performance (Chalabaev et al., 2008; Grabow & Köhl, 2019; Steele & Aronson, 1995). This poorer performance, or one's own perception of it, could contribute to the feelings of inauthenticity described by Clance (1985a), as proposed by Cokley et al. (2015). Experiences such as these could also lead to the triggering of the *impostor cycle* (Clance & Imes, 1978) when confronted with a new challenge or task, in which the player experiences negative feelings and fears directly as a result of the confrontation, believing that she cannot meet the high expectations imposed on her from outside because she does not feel competent enough; and thus tends toward either over-preparation or avoidance behaviors (Chalabaev et al., 2008; Dennehy & Whitley, 2022). Altogether, the findings to this mediation analysis demonstrate that stereotype threat serves as a key social-psychological mechanism that can amplify impostor experiences in women's sport.

To examine whether this mediation pattern was specific to female athletes, an exploratory mediation analysis was conducted for male participants as well. In this case, stereotype threat did not mediate the relationship between type of sport and impostor feelings. The absence of a mediation effect among men suggests that stereotype threat in this context may operate asymmetrically across genders. Whereas women may experience strong stereotype activation

in masculine-typed sports such as football (Gentile et al., 2018), men may not be subject to comparable negative stereotypes within these domains. However, it should also be noted that no athletes from “typically feminine” sports such as figure skating, horse riding, or dance (Plaza et al., 2017) were examined. Future studies could test a similar model on male athletes, including sports that are coded as *feminine* (Koivula, 2001). Interestingly, the type of sport had a significant effect on the level of impostor feelings, with men who played football expressing more impostor feelings than men who played volleyball. Thus, in this case, football players playing a “typically” male sport (Plaza et al., 2017) did not have significantly higher stereotype threat scores, but they did have higher impostor scores. This could indicate that impostor thoughts in male athletes arise from and are correlated to other factors than in female athletes. While women in masculine-typed sports appear to be affected by stereotype threat rooted in negative group-based expectations, men may instead experience impostor feelings in response to normative performance expectations within a male-typed domain such as football or team sports in general (Plaza et al., 2017; Koivula, 2001). In this case, success or achievement may be perceived more as an obligation, while setbacks or fluctuations in performance may be interpreted as personal inadequacy. This dynamic may lead to impostor thoughts, motivated more by concern about failing to meet internalised standards of competence than by concern about confirming negative stereotypes about one's own group. This interpretation aligns with theoretical explanations emphasizing the role of external performance expectations and internalized performance standards in the development of impostor feelings (Clance, 1985a; Dennehy & Whitley, 2022). Future research could examine more closely whether aspects such as fear of disappointing external expectations (Clance, 1985a) and traditional masculinity roles in sport (Plaza et al., 2017), as well as constructs such as perfectionistic concerns, i.e. the need to fulfil high expectations placed on oneself by others (Dennehy & Whitley, 2022), in this case, perhaps by society, better explain feelings of impostor phenomenon in male athletes in team sports.

4.4. The relevance of the impostor phenomenon in competitive sport

Although athletes' mean impostor scores were lower than those reported in the compared academic sample (Pannhausen et al., 2022), nearly half of the participants experienced moderate impostor feelings. This supports the view that the impostor phenomenon extends beyond educational and professional domains and may play a relevant factor in sports performance and athlete's well-being (Singh & Arora, 2023).

For a more accurate assessment, it might be important to investigate the prevalence of the phenomenon in other athletic populations, possibly in competitive sports. The present study primarily examined amateur athletes, for whom athletic performance may not be the primary focus of their careers, whereas academic achievements may be directly related to career paths and could therefore create more psychological pressure for individuals, taking on a different significance that is more directly linked to psychological associations and assessments with oneself. Consequently, it might be beneficial to conduct an assessment among athletes who are professionally involved in sports.

4.5. Limitations

Although this study offers valuable theoretical and empirical insights, several limitations should be noted.

First, the cross-sectional design does not allow conclusions about cause and effect. While the mediation analysis suggests that stereotype threat might increase impostor feelings, it is also possible that people with stronger impostor tendencies are more sensitive to stereotype-related cues. Future research could therefore use longitudinal or experimental designs to clarify the direction of these effects.

Second, the study relied solely on self-report questionnaires, which can be influenced by factors such as social desirability, limited self-awareness, or situational motivation (Podsakoff et al., 2003). The *Clance Impostor Phenomenon Scale* (CIPS, Clance, 1985b) was further critiqued for measuring relatively stable *traits* rather than *state* impostor feelings (Cokley et al., 2024). As a result, the data may capture general tendencies instead of momentary experiences, like i.e. the impostor cycle (Clance, 1985a). Future studies could add measures that assess situational or state-based impostor feelings during or before real performance settings. Moreover, multi-method approaches, including observer ratings, behavioral measures, or peer assessments, could help reduce the potential biases and provide a more comprehensive picture of impostor feelings and stereotype threat in sports.

Third, the order of the questionnaires may have influenced the results. Participants completed the adapted *Stereotype Threat at School Scale* (STaS, Bedyńska et al., 2021) before the adapted *Clance Impostor Phenomenon Scale* (CIPS, Clance, 1985b), which might have acted as a priming effect. Being reminded of gender stereotypes right before reflecting on one's competence could have increased impostor-related thoughts. Counterbalancing the

order of the instruments or including a manipulation check would help control such effects in future studies.

Fourth; another limitation of the present study concerns the role of age. Although age was not a central variable, and controlled for in the mediation analyses, additional analyses revealed a negative association between age and both impostor phenomenon and stereotype threat. Data indicated that younger athletes reported considerably higher levels of impostor thoughts, even when controlling for playing experience. This finding suggests that age-related differences might influence the experience of impostor feelings and perceived stereotype threat in sport contexts. One possible explanation is that younger athletes may be more sensitive to external evaluation and social constructs, as self-perceptions of competence and athletic identity are still developing (Horn, 2004). Research in sport psychology suggests that younger athletes also tend to use less effective coping strategies when dealing with performance-related stressors (Nicholls & Polman, 2007). In line with stereotype threat theory, identity-related threats are particularly impactful when self-concepts are less stable, which may increase vulnerability to both stereotype threat and impostor feelings (Schmader et al., 2008). Similar findings were reported by Smerdon et al., (2020), who also linked effects of stereotype threat and performance to the age of the female competitors, in this case chess players, even though gender was still found to be a stronger explanatory factor than age as well. Even though age was controlled for in this study, further research could examine the impact of social constructs on the impostor phenomenon in younger athletes in greater detail, including development-specific aspects.

Fifth, it is worth noting that sport-type differences in impostor phenomenon among male athletes did not reach statistical significance in the *t*-test, yet were significant in the regression-based mediation model. This discrepancy can be explained by differences in statistical sensitivity between bivariate group comparisons and multivariate regression analyses. While the *t*-test assesses mean differences in isolation, the regression model estimates the unique effect of sport type on impostor phenomenon while accounting for variance associated with stereotype threat, and could therefore be more sensitive to the unique predictor effect. Future research with larger samples and preregistered hypotheses might be needed to clarify whether sport-type differences in impostor feelings among male athletes represent a robust effect.

Sixth, the sample composition limits the generalizability of the findings. Participants were mainly amateur athletes from Austria and Germany, meaning that cultural and linguistic factors may have influenced the perception and expression of impostor and stereotype-related

experiences. Furthermore, all of the participants played team sports – football or volleyball. These sports were chosen to examine gender-typical contrasts and because team settings may be a futile ground for impostor feelings (Wergin et al, 2019). However, this focus excludes individual sports, where athletes carry full responsibility for their performance. Future studies should therefore include both team and individual sports to compare potential differences. Additionally, although the sample size was adequate, the male subsample was smaller than the female group, reducing the statistical power to detect comparable effects in men. More balanced gender distributions would allow for stronger comparisons and more reliable insights into gender-specific mechanisms.

Seventh, most participants were non-elite athletes. It would be valuable to replicate this study with elite or professional athletes, who face greater external expectations and performance pressure. This could help determine whether the connection between stereotype threat and impostor phenomenon becomes stronger with higher competitive levels. Furthermore, the analysis would be consistent with the definition of impostor phenomenon according to Clance and Imes (1978), in which objectively high performance plays a significant role. The present study assumed that club players demonstrate sufficient performance in this regard, among other reasons to obtain a sufficiently large sample. However, future research should also focus on the level at which the athletes play and, ideally, investigate the phenomenon in professional athletes as well.

Eight, the data showed minor deviations from normality. However, it is assumed that the use of bootstrapped confidence intervals in the mediation analysis already accounted for potential violations of normality and ensured the robustness of the indirect effects (Field, 2018).

Finally, although stereotype threat explained a significant portion of variance in impostor scores, a large part remained unexplained. This indicates that additional factors such as self-esteem (Yaffe & Karny, 2025) or maladaptive perfectionism (Denney & Whitley, 2022) might contribute to impostor experiences among athletes (Bernard et al., 2002). Future research should therefore adopt a more integrative approach, examining how these psychological and contextual factors interact with stereotype threat to predict impostor feelings and performance outcomes. Moreover, investigating protective factors could provide valuable insights into mechanisms that buffer athletes against both stereotype threat and impostor experiences.

4.6. Outlook and Implications

The present study provides new insights into how gender-related stereotype threat and impostor phenomenon interact in the context of women's sports. By extending these constructs from academic and professional domains to the athletic field, the findings highlight that both psychological mechanisms also shape the experiences of athletes. The results suggest that stereotype threat serves as a key mediating factor through which social and cultural expectations contribute to impostor feelings in female athletes, particularly in sports that are socially coded as masculine.

From a theoretical perspective, these findings support integrative models of performance anxiety and identity threat (Schmader et al., 2008; Cokley et al., 2015; Nadal et al., 2021) and expand their applicability to the sport domain. They underline that impostor feelings are not only rooted in individual traits but are shaped by broader sociocultural dynamics, such as gender stereotypes and evaluative contexts. This understanding may help refine future conceptual frameworks to examine how social identity, performance pressure, and perceived (in)competence interact to influence both psychological well-being and performance. Future research thus should build on this knowledge, deepen it, and examine it further in the context of sport in order to create a stronger database for possible practical interventions.

Building on the present findings, future research could specifically examine whether and how subjective experiences of stereotype threat and impostor feelings relate to observable behavioral, psychological or performance-related outcomes in sport. Although performance was not the focus of the present study, previous research suggests that these psychological processes may influence attentional focus, coping strategies, and self-regulatory behaviors under pressure (Chalabaev et al., 2008; Clance & O'Toole, 1988). Including objective or observational performance indicators would therefore help to clarify the practical relevance of stereotype threat and impostor phenomenon in athletic contexts. Similarly, the inclusion of mental health indicators in future research would help to clarify whether and to what extent increased feelings of impostor phenomenon and stereotype threat in a sporting context are related to mental well-being, as earlier research (e.g., Bravata et al., 2020; El-Ashry et al., 2024) has shown links between psychological well-being and impostor feelings in other samples.

From a practical standpoint, the results might carry important implications for coaches, sport psychologists, and athletic organizations. Addressing impostor feelings and stereotype threat could become part of athlete development and mental health programs, particularly in

female athletes in male-dominated sports who may face stronger external scrutiny. Coaches and staff could play a crucial role in counteracting stereotype-based expectations by fostering inclusive climates and normalizing open discussions about self-doubt and perceived competence.

Future interventions might also aim to strengthen athletes' self-efficacy and internal attribution styles, helping them recognize and internalize their achievements rather than attributing success to luck or external factors (Clance, 1985a). Moreover, raising awareness of subtle gender stereotypes in sport environments could reduce their impact on performance and well-being.

In summary, the present study demonstrates that impostor feelings and stereotype threat are intertwined phenomena that extend beyond the academic or professional realm into sports. Recognizing and addressing these mechanisms is essential for promoting both athletic performance and psychological well-being. By acknowledging the social context in which athletes train and compete, future research and practice can work toward creating sport environments that support authentic confidence, resilience, and inclusion.

5. References

- American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders* (5th ed.). <https://doi.org/10.1176/appi.books.9780890425596>
- Appel, M., Weber, S., & Kronberger, N. (2015). The Influence of Stereotype Threat on Immigrants: Review and Meta-Analysis. *Frontiers in Psychology*, 6, 900. <https://doi.org/10.3389/fpsyg.2015.00900>
- Ares, T. L. (2018). Role transition after clinical nurse specialist education. *Clinical Nurse Specialist*, 32(2), 71-80. doi: 10.1097/NUR.0000000000000357
- Baumeister, R. F. (1984). Choking under pressure: Self-consciousness and paradoxical effects of incentives on skillful performance. *Journal of Personality and Social Psychology*, 46(3), 610–620. <https://doi.org/10.1037/0022-3514.46.3.610>
- Bechtoldt, M. N. (2015). Wanted: Self-doubting employees—Managers Scoring Positively on Impostorism Favor Insecure Employees in Task Delegation. *Personality and Individual Differences*, 86, 482-486. <https://doi.org/10.1016/j.paid.2015.07.002>
- Beilock, S. L., Jellison, W. A., Rydell, R. J., McConnell, A. R., & Carr, T. H. (2006). On the causal mechanisms of stereotype threat: Can skills that don't rely heavily on working memory still be threatened? *Personality and Social Psychology Bulletin*, 32(8), 1059-1071. <https://doi.org/10.1177/0146167206288489>
- Beilock, S. L., Rydell, R. J., & McConnell, A. R. (2007). Stereotype threat and working memory: Mechanisms, alleviation, and spillover. *Journal of Experimental Psychology. General*, 136(2), 256–276. <https://doi.org/10.1037/0096-3445.136.2.256>
- Bernard, N. S., Dollinger, S. J., & Ramaniah, N. V. (2002). Applying the Big Five personality factors to the impostor phenomenon. *Journal of Personality Assessment*, 78(2), 321–333. https://doi.org/10.1207/S15327752JPA7802_07

Bernard, D. L., Hoggard, L. S., & Neblett, E. W. (2018). Racial Discrimination, Racial Identity, and Impostor Phenomenon: A Profile Approach. *Cultural Diversity & Ethnic Minority Psychology, 24*(1), 51–61. <https://doi.org/10.1037/cdp0000161>

Bedyńska, S., Rycielski, P., & Jabłońska, M. (2021). Measuring Stereotype Threat at Math and Language Arts in Secondary School: Validation of a Questionnaire. *Frontiers in Psychology, 12*, 553964. <https://doi.org/10.3389/fpsyg.2021.553964>

Bravata, D. M., Watts, S. A., Keefer, A. L., Madhusudhan, D. K., Taylor, K. T., Clark, D. M., Nelson, R. S., Cokley, K. O., & Hagg, H. K. (2020). Prevalence, Predictors, and Treatment of Impostor Syndrome: a Systematic Review. *Journal of General Internal Medicine : JGIM, 35*(4), 1252–1275. <https://doi.org/10.1007/s11606-019-05364-1>

Cadinu, M., Maass, A., Rosabianca, A., & Kiesner, J. (2005). Why Do Women Underperform Under Stereotype Threat? Evidence for the Role of Negative Thinking. *Psychological Science, 16*(7), 572–578. <https://doi.org/10.1111/j.0956-7976.2005.01577.x>

Cambridge Dictionary. (n.d.). Impostor. In *Cambridge English Dictionary*. Cambridge University Press. Retrieved August 7, 2025, from <https://dictionary.cambridge.org/dictionary/english/impostor>

Caselman, T. D., Self, P. A., & Self, A. L. (2006). Adolescent attributes contributing to the impostor phenomenon. *Journal of adolescence, 29*(3), 395-405. <https://doi.org/10.1016/j.adolescence.2005.07.003>

Castro, D. M., Jones, R. A., & Mirsalimi, H. (2004). Parentification and the Impostor Phenomenon: An Empirical Investigation. *The American Journal of Family Therapy, 32*(3), 205-216. <https://doi.org/10.1080/01926180490425676>

Caudwell, J. (2011). Gender, feminism and football studies. *Soccer and Society, 12*(3), 330–344. <https://doi.org/10.1080/14660970.2011.568099>

Chalabaev, A., Sarrazin, P., Stone, J., & Cury, F. (2008). Do achievement goals mediate stereotype threat? An investigation on females' soccer performance. *Journal of Sport and Exercise Psychology*, 30(2), 143–158. <https://doi.org/10.1123/jsep.30.2.143>

Clance, P. R., & Imes, S. A. (1978). The Imposter Phenomenon in High Achieving Women: Dynamics and Therapeutic Intervention. *Psychotherapy: Theory, Research & Practice*, 15(3), 241.

Clance, P. R. (1985a). The impostor phenomenon: Overcoming the fear that haunts your success. (*No title*). Atlanta, GA: Peachtree Publishers.

Clance, P. R. (1985b). *The Impostor Phenomenon: When Success Makes You Feel Like A Fake*. [PDF]. <https://paulineroseclance.com/pdf/IPTestandscore.pdf>

Clance, P. R., & O'Toole, M. A. (1988). The Imposter Phenomenon: An Internal Barrier to Empowerment and Achievement. In *Treating Women's Fear of Failure* (pp. 51-64). Routledge.

Cokley, K., McClain, S., Enciso, A., & Martinez, M. (2013). An Examination of the Impact of Minority Status Stress and Impostor Feelings on the Mental Health of Diverse Ethnic Minority College Students. *Journal of Multicultural Counseling and Development*, 41(2), 82–95. <https://doi.org/10.1002/j.2161-1912.2013.00029.x>

Cokley, K., Awad, G., Smith, L., Jackson, S., Awosogba, O., Hurst, A., Stone, S., Blondeau, L., & Roberts, D. (2015). The Roles of Gender Stigma Consciousness, Impostor Phenomenon and Academic Self-Concept in the Academic Outcomes of Women and Men. *Sex Roles*, 73(9–10), 414–426. <https://doi.org/10.1007/s11199-015-0516-7>

Cokley, K. O., Bernard, D. L., Stone-Sabali, S., & Awad, G. H. (2024). Impostor Phenomenon in Racially/Ethnically Minoritized Groups: Current Knowledge and Future Directions. *Annual Review of Clinical Psychology*, 20(1), 407–430. <https://doi.org/10.1146/annurev-clinpsy-081122-015724>

IBM Corp. (2022). *IBM SPSS Statistics for Macintosh (Version 29.0)* [Computer software]. IBM Corp.

Cusack, C. E., Hughes, J. L., & Nuhu, N. (2013). Connecting Gender and Mental Health to Imposter Phenomenon Feelings. *Psi Chi Journal of Psychological Research*, 18(2).

Cozzarelli, C., & Major, B. (1990). Exploring the Validity of the Impostor Phenomenon. *Journal of Social and Clinical Psychology*, 9(4), 401-417.
<https://doi.org/10.1521/jscp.1990.9.4.401>

DeepL SE. (2025). *DeepL Translator* [Machine translation software].
<https://www.deepl.com/translator>

Dennehy, V., & Whitley, B. E. (2022). Perfectionism and Impostor Phenomenon Among Athletes: Exploring Self-Doubt in Performance Contexts. *Psychology of Sport and Exercise*, 58, 102091. <https://doi.org/10.1016/j.psychsport.2021.102091>

Diaconescu, L. V., Mihăilescu, A. I., Stoian-Bălăsoiu, I. R., Cosma, A.-N., Drakou, A., & Popa-Velea, O. (2024). The Predictive Value of Burnout and Impostor Syndrome on Medical Students' Self-Esteem and Academic Performance: A Cross-Sectional Study. *Education Sciences*, 14(12), 1318. <https://doi.org/10.3390/educsci14121318>

El-Ashry, A. M., Taha, S. M., Elhay, E. S. A., Hammad, H. A. H., Khedr, M. A., & El-Sayed, M. M. (2024). Prevalence of Imposter Syndrome and its Association with Depression, Stress, and Anxiety among Nursing Students: A Multi-Center Cross-Sectional Study. *BMC nursing*, 23(1), 862. <https://doi.org/10.1186/s12912-024-02414-w>

Faul, F., Erdfelder, E., Buchner, A., & Lang, A.-G. (2009). Statistical power analyses using GPower 3.1: Tests for correlation and regression analyses.* *Behavior Research Methods*, 41(4), 1149–1160. <https://doi.org/10.3758/BRM.41.4.1149>

Feenstra, S., Begeny, C. T., Ryan, M. K., Rink, F. A., Stoker, J. I., & Jordan, J. (2020). Contextualizing the Impostor “Syndrome.” *Frontiers in Psychology*, 11, 575024.
<https://doi.org/10.3389/fpsyg.2020.575024>

Field, A. (2018). *Discovering statistics using IBM SPSS Statistics* (5th ed.). SAGE Publications.

Fink, J. S. (2015). Female Athletes, Women's Sport, and the Sport Media Commercial Complex: Have We Really "Come a Long Way, Baby"? *Sport Management Review*, 18(3), 331–342. <https://doi.org/10.1016/j.smr.2014.05.001>

Focus Online. (2024, May 20). *Felix Baumgartner gegen EM-Star Alisha Lehmann: Seine letzte Kontroverse*.
https://www.focus.de/sport/felix-baumgartner-gegen-em-star-alisha-lehmann-seine-letzte-kontroverse_274039b9-1f82-4dde-b2ea-42904931b4c5.html

Forbes, A., Edwards, L. & Fleming, S. (2015). 'Women can't referee': Exploring the experiences of female football officials within UK football culture. *Soccer and Society*, 16(4): 521-539. <http://dx.doi.org/10.1080/14660970.2014.882829>.

Frabotta, S., & Fernández-Cruz, J. (2025). The Most Gender-Equal Olympics? A Corpus-Assisted Keywords Analysis of Italian Press Coverage of Male and Female Athletes in Paris 2024. *Revista de Lingüística y Lenguas Aplicadas*, 20, 17–31.
<https://doi.org/10.4995/rlyla.2025.22927>

Gentile, A., Boca, S., Giammusso, I., & Lauriola, M. (2018). When the "weaker sex" feels the stereotype threat: A meta-analysis on stereotype threat effect on women's sport performance. *International Review of Sport and Exercise Psychology*, 12(1), 1–25.
<https://doi.org/10.1080/1750984X.2018.1529136>

Grabow, H., & Kühl, M. (2019). You Don't Bend it Like Beckham if You're Female and Reminded of it: Stereotype Threat Among Female Football Players. *Frontiers in Psychology*, 10, 1963. <https://doi.org/10.3389/fpsyg.2019.01963>

Gravois J. (2007). You're not fooling anyone. *Chron High Educ*, 54(11): A1.

Hair, J. F., Black, W. C., Babin, B. J., & Anderson, R. E. (2010). *Multivariate data analysis* (7th ed.). Pearson Education.

Hayes, A. F. (2022). *PROCESS macro for SPSS, SAS, and R (Version 5.0)* [Computer software]. <https://www.processmacro.org>

Harrison, L. (2001). Understanding the Influence of Stereotypes: Implications for the African American in Sport and Physical Activity. *Quest (National Association for Kinesiology in Higher Education)*, 53(1), 97–114.
<https://doi.org/10.1080/00336297.2001.10491732>

Hill, L., & Vera, C. (2024). Impostor phenomenon, group stereotype endorsement, and mental health in Black college women attending predominantly White institutions. *Journal of College Counseling, Advance online publication*.
<https://doi.org/10.1177/00957984241287251>

Holden, C. L., Wright, L. E., Herring, A. M., & Sims, P. L. (2024). Imposter Syndrome Among First-and Continuing-Generation College Students: The Roles of Perfectionism and Stress. *Journal of College Student Retention: Research, Theory & Practice*, 25(4), 726-740.
<https://doi.org/10.1177/152102512110193>

Horn, T. S. (2004). Developmental Perspectives on Self-Perceptions in Children and Adolescents. In M. R. Weiss (Ed.), *Developmental sport and exercise psychology: A lifespan perspective* (pp. 101–143). Fitness Information Technology.

Inzlicht, M., & Schmader, T. (2012). *Stereotype threat : theory, process, and application* (1st ed.). Oxford University Press.
<https://doi.org/10.1093/acprof:oso/9780199732449.001.0001>

Jones, A., & Greer, J. (2011). You Don't Look Like an Athlete: The Effects of Feminine Appearance on Audience Perceptions of Female Athletes and Women's Sports. *Journal of Sport Behavior*, 34(4).

Jöstl, G., Bergsmann, E., Lüftenegger, M., Schober, B., & Spiel, C. (2012). When Will They Blow My Cover? The Impostor Phenomenon Among Austrian Doctoral Students. *Zeitschrift Für Psychologie*, 220(2), 109–120. <https://doi.org/10.1027/2151-2604/a000102>

Koivula, N. (2001). Perceived characteristics of sports categorized as gender-neutral, feminine and masculine. *Journal of Sport Behavior*, 24(4), 377–393.

Koivula, N., Hassmén, P., & Fallby, J. (2002). Self-Esteem and Perfectionism in Elite Athletes: Effects on Competitive Anxiety and Self-Confidence. *Personality and Individual Differences*, 32(5), 865–875. [https://doi.org/10.1016/S0191-8869\(01\)00092-7](https://doi.org/10.1016/S0191-8869(01)00092-7)

Krane, V., Choi, P. Y. L., Baird, S. M., Aimar, C. M., & Kauer, K. J. (2004). Living the Paradox: Female Athletes Negotiate Femininity and Muscularity. *Sex Roles*, 50(5–6), 315–329. <https://doi.org/10.1023/B:SERS.0000018888.48437.4f>

Lamont, R. A., Swift, H. J., & Abrams, D. (2015). A Review and Meta-Analysis of Age-Based Stereotype Threat: Negative Stereotypes, Not Facts, Do The Damage. *Psychology and Aging*, 30(1), 180–193. <https://doi.org/10.1037/a0038586>

Leary, M. R., Patton, K. M., Orlando, A. E., & Wagoner Funk, W. (2000). The Impostor Phenomenon: Self-Perceptions, Reflected Appraisals, and Interpersonal Strategies. *Journal of Personality*, 68(4), 725–756. <https://doi.org/10.1111/1467-6494.00114>

Leiner, D. J. (2019). *SoSci Survey (Version 3.1.06) [Computer software]*. <https://www.soscisurvey.de>

Leonhardt, M., Bechtoldt, M. N., & Rohrmann, S. (2017). All Impostors Aren't Alike—Differentiating the Impostor Phenomenon. *Frontiers in Psychology*, 8, 1505. <https://doi.org/10.3389/fpsyg.2017.01505>

Liu, S., Liu, P., Wang, M., & Zhang, B. (2021). Effectiveness of Stereotype Threat Interventions: A Meta-Analytic Review. *Journal of Applied Psychology*, 106(6), 921–949. <https://doi.org/10.1037/apl0000770>

Maftai, A., Dumitriu, A., & Holman, A. C. (2021). "They will discover I'm a fraud!" The Imposter Syndrome Among Psychology Students. *Studia psychologica*, 63(4), 337-351. <https://doi.org/10.31577/sp.2021.04.831>

Masters, R. S. W. (1992). Knowledge, knerves and know-how: The role of explicit versus implicit knowledge in the breakdown of a complex motor skill under pressure. *British Journal of Psychology*, 83(3), 343-358. <https://doi.org/10.1111/j.2044-8295.1992.tb02446.x>

McGregor, L. N., Gee, D. E., & Posey, K. E. (2008). I Feel Like a Fraud and it Depresses Me: The Relation Between the Imposter Phenomenon and Depression. *Social Behavior and Personality: An International Journal*, 36(1), 43-48. <https://doi.org/10.2224/sbp.2008.36.1.43>

Ménard, A. D., & Chittle, L. (2023). The Impostor Phenomenon in Post-Secondary Students: A Review of the Literature. *Review of Education (Oxford)*, 11(2), n/a-n/a. <https://doi.org/10.1002/rev3.3399>

Mendizabal, B. (2024). The relationship between athletes' grit, mental toughness, and sport resilience. *Physical Education of Students*, 28(4), 188-194. <https://doi.org/10.15561/20755279.2024.0401>

Moritz, S. E., Feltz, D. L., Fahrback, K. R., & Mack, D. E. (2000). The Relation of Self-Efficacy Measures to Sport Performance: A Meta-Analytic Review. *Research Quarterly for Exercise and Sport*, 71(3), 280-294. <https://doi.org/10.1080/02701367.2000.10608908>

Nadal, K. L., King, R., Sissoko, D. G., Floyd, N., Hines, D., & et al. (2021). The legacies of systemic and internalized oppression: Experiences of microaggressions, imposter phenomenon, and stereotype threat on historically marginalized groups. *New Ideas in Psychology*, 63, Article 100895. <https://doi.org/10.1016/j.newideapsych.2021.100895>

NDR. (2022, June 16). *Fußballerinnen: Sexismus und dumme Sprüche*. Panorama | NDR. <https://www.ndr.de/fernsehen/sendungen/panorama/archiv/2022/Fussballerinnen-Sexismus-und-dumme-Sprueche,fussball3490.html#:~:text=Ignoriert%2C%20belächelt%2C%20objektiv%20betreut,vom%20eigenen%20Trainer%20und%20Betreuerteam>

Nguyen, H.-H. D., & Ryan, A. M. (2008). Does Stereotype Threat Affect Test Performance of Minorities and Women? A Meta-Analysis of Experimental Evidence. *Journal of Applied Psychology*, 93(6), 1314–1334. <https://doi.org/10.1037/a0012702>

Nicholls, A. R., & Polman, R. C. (2007). Coping in sport: A systematic review. *Journal of sports sciences*, 25(1), 11-31.

OpenAI. (2025). *ChatGPT (October 2025 version)* [Large language model]. OpenAI. <https://chat.openai.com/>

Pannhausen, S., Klug, K., & Rohrmann, S. (2022). Never good enough: The relation between the impostor phenomenon and multidimensional perfectionism. *Current Psychology*, 41(2), 888-901. <https://doi.org/10.1007/s12144-020-00613-7>

Pfister, G., Krustup, P., Ottesen, L., Elbe, A.-M., Bangsbo, J., & Hansen, P. R. (2017). Women's soccer: Historical Development and Current Situation in Europe. *In Science and Football VIII (1st ed., pp. 129–138)*. Routledge. <https://doi.org/10.4324/9781315670300-15>

Plaza, M., Boiché, J., Brunel, L., & Ruchaud, F. (2017). Sport = Male... But Not All Sports: Investigating the Gender Stereotypes of Sport Activities at the Explicit and Implicit Levels. *Sex Roles*, 76(3–4), 202–217. <https://doi.org/10.1007/s11199-016-0650-x>

Podsakoff, P. M., MacKenzie, S. B., Lee, J. Y., & Podsakoff, N. P. (2003). Common method biases in behavioral research: a critical review of the literature and recommended remedies. *Journal of applied psychology*, 88(5), 879.

Positive Coaching Alliance. (2019, April 30). *Mia Hamm, Brandi Chastain, Julie Foudy: Lifetime Achievement Award Panel* [Video]. YouTube. <https://www.youtube.com/watch?v=6TZHA4BHZIO>

Ransom, J., & Palmer, E. (2019, April 25). *Fake heiress who swindled New York's elite is found guilty*. The New York Times. <https://www.nytimes.com/2019/04/25/nyregion/anna-delvey-sorokin-verdict.html>

Rice, S. M., Purcell, R., De Silva, S., Mawren, D., McGorry, P. D., & Parker, A. G. (2016). The Mental Health of Elite Athletes: A Narrative Systematic Review. *Sports Medicine*, 46(9), 1333-1353. <https://doi.org/10.1007/s40279-016-0492-2>

Rothgerber, H., & Wolsiefer, K. (2014). A Naturalistic Study of Stereotype Threat in Young Female Chess Players. *Group Processes & Intergroup Relations*, 17(1), 79–90. <https://doi.org/10.1177/1368430213490212>

Schmader, T., Johns, M., & Forbes, C. (2008). An integrated process model of stereotype threat effects on performance. *Psychological Review*, 115(2), 336–356. <https://doi.org/10.1037/0033-295X.115.2.336>

Schubert, N., & Bowker, A. (2019). Examining the impostor phenomenon in relation to self-esteem level and self-esteem instability. *Current Psychology*, 38(3), 749-755. <https://doi.org/10.1007/s12144-017-9650-4>

Singh, A., & Arora, M. K. (2023). Perceived Incompetence: A Study of the Impostor Phenomenon among Sport Performers. *International Journal of Indian Psychology*, 11(1), 310-326. <https://doi.org/10.25215/1101.034>

Smerdon, D., Hu, H., McLennan, A., von Hippel, W., & Albrecht, S. (2020). Female Chess Players Show Typical Stereotype-Threat Effects: Commentary on Stafford (2018). *Psychological Science*, 31(6), 756–759. <https://doi.org/10.1177/0956797620924051>

Spencer, S. J., Logel, C., & Davies, P. G. (2016). Stereotype Threat. *Annual Review of Psychology*, 67(1), 415-437. <https://doi.org/10.1146/annurev-psych-073115-103235>

Spielberg, S. (Director). (2002). *Catch me if you can* [Film]. DreamWorks Pictures.

Stafford, T. (2018). Female chess players outperform expectations when playing men. *Psychological science*, 29(3), 429-436. <https://doi.org/10.1177/0956797617736>

Steele, C. M., & Aronson, J. (1995). Stereotype Threat and the Intellectual Test Performance of African Americans. *Journal of Personality and Social Psychology*, 69(5), 797–811. <https://doi.org/10.1037/0022-3514.69.5.797>

Steele, C. M. (1997). A Threat in the Air: How Stereotypes Shape Intellectual Identity and Performance. *American Psychologist*, 52(6), 613–629. <https://doi.org/10.1037/0003-066X.52.6.613>

The New York Times Events. (2024, December 6). *Game, set, legacy: Serena Williams on her impact in sports and beyond | DealBook Summit 2024* [Video]. YouTube. <https://www.youtube.com/watch?v=rchgZzMjQK4>

The Star. (2019, December 12). *Michelle Obama explains imposter syndrome* [Video]. YouTube. https://www.youtube.com/watch?v=dumm_XfHkmY

Tomičević, S. V., & Lang, V. B. (2025). Impostor Phenomenon and Psychological Outcomes among Family Medicine Residents: A Cross-Sectional Study in Croatia. *Arhiv Za Higijenu Rada i Toksikologiju*, 76(2), 113–118. <https://doi.org/10.2478/aiht-2025-76-3934>

Vergauwe, J., Wille, B., Feys, M., De Fruyt, F., & Anseel, F. (2015). Fear of Being Exposed: The Trait-Relatedness of the Impostor Phenomenon and its Relevance in the Work Context. *Journal of Business and Psychology*, 30, 565–581. doi: 10.1007/s10869-014-9382-5.

von Hippel, C., Kühner, C., Coundouris, S. P., Lim, A., Henry, J. D., & Zacher, H. (2024). Stereotype Threat at Work: A Meta-Analysis. *Personality & Social Psychology Bulletin*, 1461672241297884. <https://doi.org/10.1177/01461672241297884>

Wergin, V. V., Mallett, C. J., Mesagno, C., Zimanyi, Z., & Beckmann, J. (2019). When You Watch Your Team Fall Apart – Coaches’ and Sport Psychologists’ Perceptions on Causes of Collective Sport Team Collapse. *Frontiers in Psychology*, 10, 1331. <https://doi.org/10.3389/fpsyg.2019.01331>

World Health Organization. (2019). *International classification of diseases for mortality and morbidity statistics* (11th revision). <https://icd.who.int/>

Yaffe, Y. (2023) The Association between Familial and Parental Factors and the Impostor Phenomenon—A Systematic Review. *The American Journal of Family Therapy*, 51:5, 527-545. DOI: 10.1080/01926187.2021.2019140

Yaffe, Y., & Karny, S. (2025). The Role of Emotion Dysregulation and Self-Esteem in the Relationships Between Parenting Styles and Adolescents' Impostor Feelings: A Multiple Mediation Model by Parent and Child Gender. *The Journal of Genetic Psychology*, 1–19. <https://doi.org/10.1080/00221325.2025.2496272>

6. Appendices

6.1. Index of Tables

Table 1	26
Table 2	32
Table 3	34
Table 4	38
Table S1	62
Table S2	66
Table S3	67
Table S4	68
Table S5	68
Table S6	69
Table S7	69
Table S8	69
Table S9	70
Table S10	71
Table S11	71

6.2. Index of Figures

Figure 1	37
Figure S1	73
Figure S2	73
Figure S3	74
Figure S4	74
Figure S5	75

6.3. Supplementary Tables

Table S1.

Test statistics for the modified Clance Impostor Phenomenon Scale (CIPS) – adapted to the context of team sports.

If the item has been modified to fit the sporting context, the original version has been added for comparison (Clance, 1985b, pp. 1-2).

Nr	Item	<i>M</i>	<i>SD</i>	<i>r_{it}</i>
1	Mir wurde öfter gesagt, ich hätte gut gespielt, obwohl ich vorher befürchtet habe, schlecht zu spielen. <i>I was often told that I had played well, even though I was afraid I would play badly.</i> Clance (1985b): I have often succeeded on a test or task even though I was afraid that I would not do well before I undertook the task.	3.02	.981	.545
2	Ich kann den Eindruck erwecken, dass ich ein(e) bessere(r) Spieler(in) bin, als ich wirklich bin. <i>I can give the impression that I am a better player than I really am.</i> Clance (1985b): I can give the impression that I'm more competent than I really am.	2.38	1.01	.192
3	Ich vermeide Bewertungen wenn möglich und habe Angst davor, von Anderen bewertet zu werden. <i>I avoid evaluations if possible and have a dread of others evaluating me.</i>	2.35	1.15	.621
4	Wenn jemand meine Leistungen lobt, habe ich Angst, dass ich dessen Erwartungen an mich in Zukunft nicht mehr erfüllen kann. <i>When people praise me for something I've accomplished, I'm afraid I won't be able to live up to their expectations of me in the future.</i>	2.45	1.19	.749

Nr	Item	<i>M</i>	<i>SD</i>	<i>r_{it}</i>
5	Mir kommt es so vor, als hätte ich meinen Platz im Team nur, weil ich zufällig zur richtigen Zeit am richtigen Ort war oder die richtigen Leute kannte. <i>I sometimes think I obtained my present position in the team or gained my present success because I happened to be in the right place at the right time or knew the right people.</i> Clance (1985b): I sometimes think I obtained my present position or gained my present success because I happened to be in the right place at the right time or knew the right people.	1.80	1.11	.526
6	Ich habe Angst, dass Menschen, die mir wichtig sind, herausfinden könnten, dass ich nicht so gut bin, wie sie denken. <i>I'm afraid people important to me may find out that I'm not as capable or good as they think I am.</i>	1.94	1.15	.660
7	Ich erinnere mich häufiger an Situationen, in denen ich nicht gut gespielt habe, als an solche, in denen ich gut gespielt habe. <i>I tend to remember the incidents in which I didn't play well more than those in which I played well.</i> Clance (1985b): I tend to remember the incidents in which I have not done my best more than those times I have done my best.	2.92	1.20	.664
8	Ich erbringe nicht so gute Leistungen, wie ich es mir wünsche. <i>I'm not performing as well as I would like.</i> Clance (1985b): I rarely do a project or task as well as I'd like to do it.	3.55	.963	.574
9	Ich habe das Gefühl, meine sportlichen Erfolge sind Ergebnis eines Fehlers oder Zufalls. <i>I have the feeling that my sports achievements are the result of some kind of error.</i> Clance (1985b): Sometimes I feel or believe that my success in my life or in my job has been the result of some kind of error.	1.87	.942	.589

Nr	Item	<i>M</i>	<i>SD</i>	<i>r_{it}</i>
10	Es fällt mir schwer, Komplimente über meine sportlichen Leistungen oder Errungenschaften anzunehmen. <i>It's hard for me to accept compliments about my sporting achievements or accomplishments.</i> Clance (1985b): It's hard for me to accept compliments or praise about my intelligence or accomplishments.	2.62	1.26	.613
11	Ich habe das Gefühl, dass mein sportlicher Erfolg auf Glück zurückzuführen ist. <i>I feel my sporting success has been due to some kind of luck.</i> Clance (1985b): At times, I feel my success has been due to some kind of luck.	1.92	.935	.507
12	Ich bin enttäuscht über meine bisher erzielten Leistungen und Erfolge und denke, ich hätte mehr erreichen müssen. <i>I'm disappointed in my present accomplishments and think I should have accomplished much more.</i>	2.66	1.18	.567
13	Ich habe Angst, dass andere entdecken könnten, wie schlecht ich in einigen Aspekten bin. <i>I'm afraid others will discover how much ability I really lack.</i>	2.10	1.10	.709
14	Ich habe Angst, neue Herausforderungen nicht bewältigen zu können, obwohl ich diese in der Regel meistere, wenn ich es versuche. <i>I'm afraid that I may fail at a new challenge even though I generally do well at what I attempt.</i> Clance (1985b): I'm often afraid that I may fail at a new assignment or undertaking even though I generally do well at what I attempt.	2.46	1.13	.705
15	Wenn ich gute Leistungen abgeliefert habe, und dafür Anerkennung erhalte, befürchte ich, diese Leistungen in der Zukunft nicht wiederholen zu können. <i>If I have performed well and received recognition for it, I have doubts that I can keep repeating that success.</i>	2.39	1.15	.776

Nr	Item	<i>M</i>	<i>SD</i>	<i>r_{it}</i>
16	Wenn ich für meine sportlichen Leistungen viel Lob und Anerkennung erhalte, neige ich dazu, das Geleistete herunterzuspielen. <i>When I receive a lot of praise and recognition for my sporting achievements, I tend to discount the importance of what I've done.</i> Clance (1985b): If I receive a great deal of praise and recognition for something I've accomplished, I tend to discount the importance of what I've done.	3.16	1.09	.552
17	Ich vergleiche meine sportlichen Fähigkeiten mit meinen Mitspieler(innen), und denke, dass sie besser sind als ich. <i>I often compare my ability to my teammates and think they may be more skilled than I am.</i> Clance (1985b): I often compare my ability to those around me and think they may be more intelligent than I am.	3.23	1.15	.640
18	Ich mache mir Sorgen, nicht gut zu spielen, obwohl mein Umfeld zuversichtlich ist, dass ich gute Leistungen erbringen werde. <i>I'm worried about not playing well, even though others around me have considerable confidence that I will do well.</i> Clance (1985b): I often worry about not succeeding with a project or examination, even though others around me have considerable confidence that I will do well.	2.92	1.07	.718
19	Wenn mir irgendeine Art von Anerkennung oder Beförderung bevorsteht, wie zum Beispiel einen Platz im Startteam zu erhalten, zögere ich, es anderen mitzuteilen, bis es tatsächlich geschehen ist. <i>If I'm up for any kind of recognition or promotion, like getting a spot on the starting team, I hesitate to tell others until it's actually happened.</i>	2.26	1.29	.478
20	Ich fühle mich schlecht oder entmutigt, wenn ich in Situationen, in denen es um das Zeigen von sportlicher Leistung geht, nicht „der/die Beste“ oder zumindest „ganz besonders gut“ bin. <i>I feel bad or discouraged if I'm not "the best" or at least "very special" in situations that involve athletic achievement.</i>	2.85	1.21	.549

Clance (1985b): I feel bad and discouraged if I'm not "the best" or at least "very special" in situations that involve achievement.

Note. Cronbach's $\alpha = .926$ ($N = 269$), $M = 50.822$, $SD = 14.398$

Table S2.

Test statistics for the modified version of the Stereotype Threat at School Scale (STaS) (Bedyńska et al., 2021).

The items were reworded to be gender-neutral and adapted to the sports context. The original version according to Bedyńska et al. (2021, p.5) is attached as a comment.

Nr	Item	<i>M</i>	<i>SD</i>	<i>r_{it}</i>
1	Ich befürchte, dass Andere aufgrund meines Geschlechts davon ausgehen, dass ich weniger fähig in meinem Sport bin. <i>I am afraid that others think that I have much lower skills in my sport because of my gender.</i> Bedyńska et al. (2021): I am afraid that some of my friends think that I have much lower math / language skills because I am a girl / boy.	2.09	1.36	.792
2	Wenn ich spiele, habe ich Angst, dass eine schlechte Leistung bestätigt, dass mein Geschlecht schlechter in meinem Sport ist. <i>When I play, I'm afraid that a bad performance will confirm that my gender is worse at my sport.</i> Bedyńska et al. (2021): When I take a math / language test I am afraid that my low score will confirm a stereotype that girls / boys have lower math skills.	1.80	1.14	.821
3	Die Menschen in meinem Umfeld denken, dass mein Geschlecht sich nicht in meinem Sport betätigen sollte, weil es nicht maskulin/feminin ist. <i>People around me think that my gender shouldn't be playing my sport because it's not masculine/feminine.</i> Bedyńska et al. (2021): Some of my friends think that girls / boys should not be interested in science / language because it is not feminine / masculine.	1.53	.920	.601
4	Ich habe das Gefühl, dass ich in meinem Sport aufgrund meines Geschlechts nicht wirklich gut sein kann. <i>I have the feeling that I should not be good at my sport because of my gender.</i> Bedyńska et al. (2021): Sometimes I think that I should not be good in math / language because I am a girl / boy.	1.40	.724	.728

Nr	Item	<i>M</i>	<i>SD</i>	<i>r_{it}</i>
5	Ich habe Angst, dass mein Umfeld aufgrund meines Geschlechts denkt, dass ich keine guten Leistungen und Erfolge in meinem Sport erzielen werde. <i>I'm afraid that my environment will think that I won't perform well and be successful in my sport because of my gender.</i> Bedyńska et al. (2021): I am afraid that my math/ language teacher will think that I may not succeed because I am a girl / boy.	1.52	.904	.776
6	Während meiner Spiele oder Trainings habe ich Angst, dass ich, wenn ich keine guten Leistungen erziele, einen Stereotyp bestätige, dass mein Geschlecht sich nicht in meiner Sportart betätigen sollten. <i>During my games or practices, I'm afraid that if I don't perform well, I'm confirming a stereotype that my gender shouldn't be playing my sport.</i> Bedyńska et al. (2021): During math / language classes I feel anxious that if I do not succeed I will reinforce a stereotype that girls / boys should not be interested in math / language arts.	1.54	.916	.766
7	Ich habe das Gefühl, dass ich in meiner Sportart eher nach meinem Geschlecht beurteilt werde, und nicht nach meinen eigentlichen Fähigkeiten. <i>I have the feeling that when it comes to my sport, I am evaluated based on my gender and not my actual abilities.</i> Bedyńska et al. (2021): I sometimes think that when it comes to math / language I am evaluated based on my gender and not my actual abilities	1.74	1.04	.769

Note. Cronbach's $\alpha = .913$ ($N = 269$), $M = 11.613$, $SD = 5.771$

Table S3.

Multiple regression analysis predicting impostor phenomenon (CIPS) from age and playing experience

Predictor	<i>B</i>	<i>SE B</i>	β	<i>t</i>	<i>p</i>	Tolerance	VIF
Constant	68.23	2.51	—	27.19	< .001	—	—
Age (years)	-0.62	0.09	-0.41	-6.89	< .001	0.91	1.10

Predictor	<i>B</i>	<i>SE B</i>	β	<i>t</i>	<i>p</i>	Tolerance	VIF
Playing experience (years)	-0.18	0.12	-0.09	-1.52	.129	0.91	1.10

Note. Model summary | $R = .41$ | $R^2 = .17$ | $F(2,266) = 27.26, p < .001$ |

Dependent variable: *Clance Impostor Phenomenon Scale* (CIPS, Clance, 1985b).

Tolerance > .10 and VIF < 10 indicate no multicollinearity.

$p < .05^*$, $p < .01^{**}$, $p < .001^{***}$.

Table S4.

Descriptive statistics and tests of normality for continuous variables

Variable	<i>M</i>	<i>SD</i>	Shapiro-Wilk <i>W</i>	<i>p</i>	Skewness	Kurtosis	Range
Stereotype Threat	11.61	5.77	.798	.001	1.13	.44	20-90
Impostor Phenomenon Score	50.82	14.40	.983	.003	.36	-.38	7-35

Note. *W* = Shapiro–Wilk test statistic ($N=269$). Significant *p*-values ($<.05$) indicate deviation from normality; however, visual inspection suggested approximately normal distributions.

Table S5.

Multicollinearity Statistics for Predictors in the Mediation Model (Female Sample)

Predictor	Tolerance	VIF
Sport type	.964	1.037
Stereotype threat (ST)	.964	1.037

Note. Multicollinearity was examined for the predictors in the mediation analysis.

Tolerance values greater than .10 and variance inflation factors (VIF) below 10 indicate that multicollinearity was not a concern (Hair et al., 2010).

Table S6.

Independent-samples t-test comparing impostor phenomenon scores between male and female athletes

Gender	<i>N</i>	<i>M</i>	<i>SD</i>	<i>SE</i>	<i>t</i> (149.79)	<i>p</i>	95% CI [LL, UL]	<i>d</i>
Male	127	45.33	12.20	1.08	-6.39	< .001	[-13.61, -7.20]	0.77
Female	142	55.73	14.47	1.21				

Note. The table summarizes an independent-samples *t*-test comparing *Clance Impostor Phenomenon Scale* (CIPS, Clance, 1985b) scores between male and female athletes. Levene's test indicated unequal variances, $F(1, 267) = 7.89, p = .005$; therefore, corrected degrees of freedom are reported. Cohen's *d* was calculated using pooled standard deviations. $p < .001$.

Table S7.

Independent-samples t-test comparing female football and volleyball players (Impostor Phenomenon)

Group	<i>n</i>	<i>M</i>	<i>SD</i>	<i>t</i> (<i>df</i>)	<i>p</i>	Cohen's <i>d</i>	95% CI [LL, UL]
Football	80	58.05	14.70	2.20 (140)	.030	0.37	[0.53, 10.09]
Volleyball	62	52.74	13.72				

Note. Equal variances assumed (Levene's test $p = .271$). A positive *d* indicates higher scores among football players.

Table S8.

Mediation analysis predicting impostor phenomenon from sport type via stereotype threat (female sample)

Path	Effect	<i>SE</i>	<i>t</i>	<i>p</i>	95% CI
X → M (a)	4.15	0.88	4.70	<.001	[2.41, 5.90]

Path	Effect	SE	<i>t</i>	<i>p</i>	95% CI
M → Y (b)	1.34	0.20	6.63	<.001	[0.94, 1.74]
X → Y (c)	5.31	2.42	2.20	.030	[0.53, 10.09]
X → Y (c')	-0.26	2.27	-0.12	.908	[-4.76, 4.23]
Indirect (a×b)	5.57	1.41	—	—	[3.02, 8.47]

Note. Model summary | $R = .52$ | $R^2 = .27$ | $F(2,139) = 25.60$, $p < .001$ |

X = sport type (0 = volleyball, 1 = football); M = stereotype threat; Y = impostor phenomenon (CIPS).

Bootstrapped 95 % CIs are based on 5,000 resamples. Significant indirect effect indicates full mediation.

Table S9.

Mediation model for male athletes (exploratory analysis)

Path	Effect	SE	<i>t</i>	<i>p</i>	95% CI
X → M (a)	-0.18	0.17	-1.07	.286	[-0.52, 0.15]
M → Y (b)	3.38	1.12	3.02	.003	[1.14, 5.63]
X → Y (c)	4.75	2.10	2.26	.025	[0.58, 8.92]
X → Y (c')	5.36	2.44	2.19	.030	[0.52, 10.10]
Indirect (a×b)	-0.61	0.65	—	—	[-2.13, 0.50]

Note. Model summary | $R = .31$ | $R^2 = .095$ | Adj. $R^2 = .081$ | $F(2,124) = 6.51$, $p \leq .002$ |

X = sport type (0 = volleyball, 1 = football); M = stereotype threat; Y = impostor phenomenon.

Bootstrapped 95 % CIs are based on 5,000 resamples.

No significant indirect effect was observed.

Table S10.

One-sample t-test comparing athlete CIPS (impostor phenomenon) scores with academic reference mean (Pannhausen et al., 2022)

Variable	<i>N</i>	<i>M</i>	<i>SD</i>	Reference <i>M</i>	<i>t</i> (<i>df</i>)	<i>p</i>	95% CI [LL, UL]	Cohen's <i>d</i>
CIPS	269	50.82	14.40	59.08	−9.41 (268)	<.001	[−9.99, −6.53]	−0.57

Note. Reference mean = 59.08 (*N* = 274 psychology students; Pannhausen et al., 2022).

Negative *t* and *d* values indicate lower impostor scores among athletes.

Table S11.

Overview of statistical abbreviations and their meanings

Abbreviation	Statistical term
<i>N</i>	Total sample size
<i>n</i>	Subsample size
<i>p</i>	<i>p</i> -value (significance level)
<i>M</i>	Mean
<i>SD</i>	Standard deviation
<i>Md</i>	Median
<i>df</i>	Degrees of freedom
<i>t</i>	<i>t</i> -value
<i>d</i>	Cohen's <i>d</i> (effect size)
η^2	Eta squared (effect size measure)
<i>F</i>	<i>F</i> -value (ANOVA or regression test statistic)
<i>r</i>	Pearson's product–moment correlation coefficient
<i>R</i>	Multiple correlation coefficient
<i>R</i> ²	Coefficient of determination (proportion of explained variance)

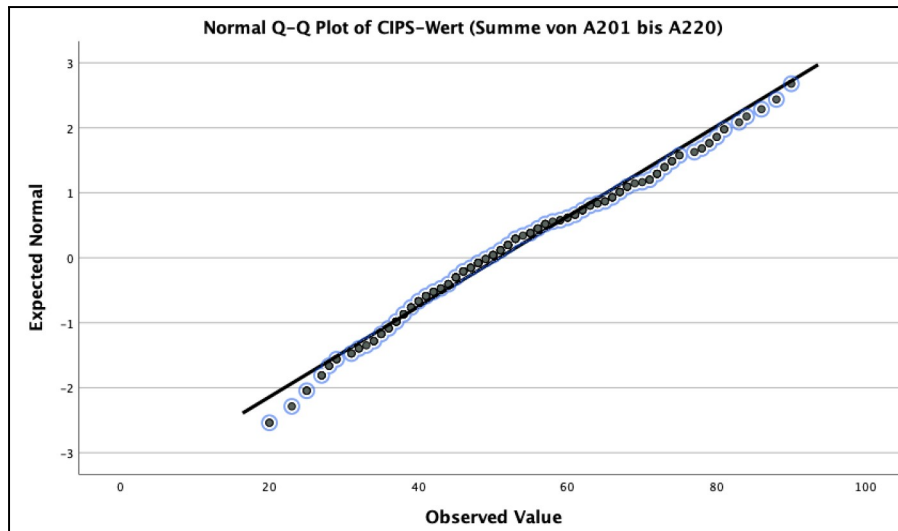
Abbreviation	Statistical term
R^2_{adj}	Adjusted coefficient of determination
ΔR^2	Change in explained variance
ΔF	Change in F -value between models
b	Unstandardized regression coefficient
β	Standardized regression coefficient
SE	Standard error
$BootSE$	Bootstrapped standard error
CI	Confidence interval
$LLCI / ULCI$	Lower- and upper-level confidence interval bounds (bootstrapped)
α	Cronbach's alpha (internal consistency)
KMO	Kaiser–Meyer–Olkin measure of sampling adequacy
VIF	Variance inflation factor (multicollinearity statistic)
Tol	Tolerance (multicollinearity statistic)
R^2_{change}	Change in explained variance across steps or models
$IP / CIPS$	Clance Impostor Phenomenon Scale
ST	Stereotype Threat
$CI (boot)$	Bootstrapped confidence interval
$CI (95\%)$	95% confidence interval
LL	Lower limit of confidence interval
UL	Upper limit of confidence interval

Note. Abbreviations refer to the statistical symbols and metrics used throughout the results section.

6.4. Supplementary Figures

Figure S1.

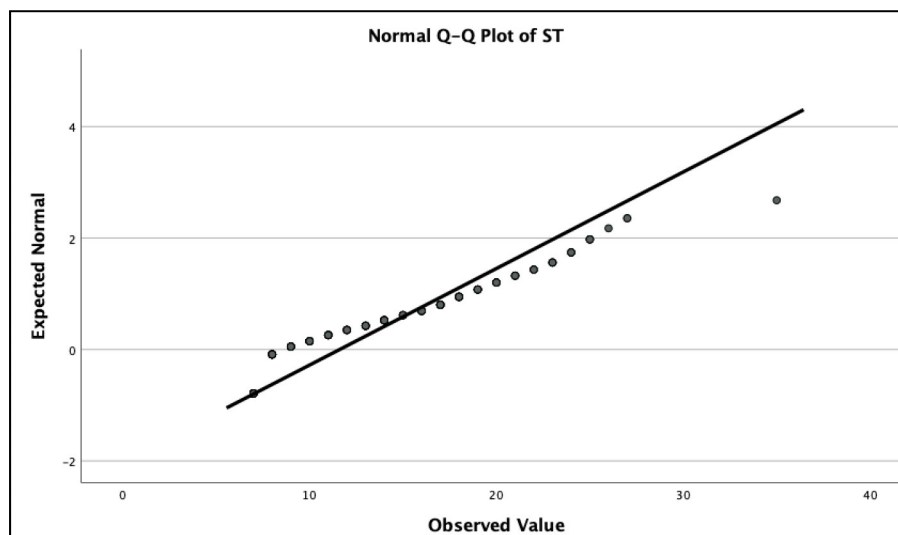
Normal Q-Q Plot of Impostor Phenomenon Scores



Note. Normal Q-Q plot of total impostor phenomenon (CIPS) scores ($N = 269$). Data points closely follow the diagonal line, indicating an approximately normal distribution.

Figure S2.

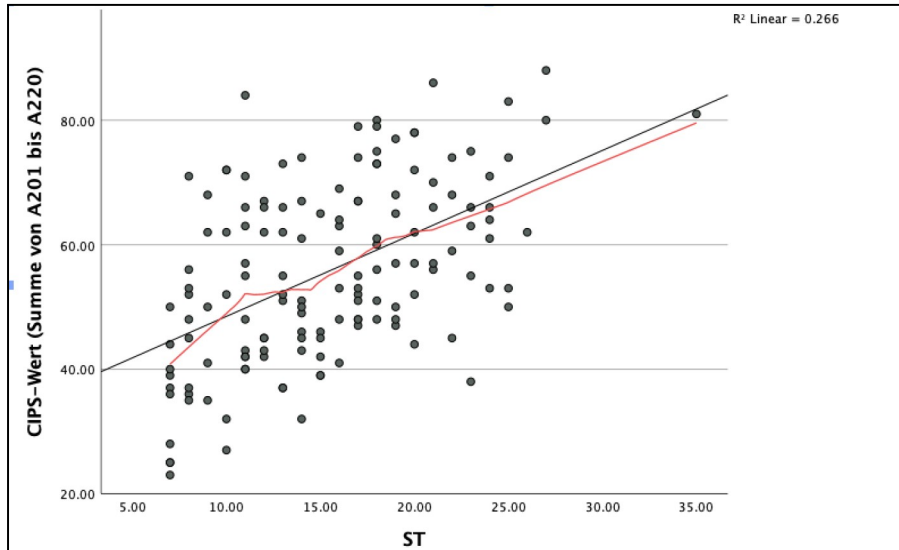
Normal Q-Q Plots of Stereotype Threat Scores



Note. Normal Q-Q plot of Stereotype Threat (ST) scores ($N = 269$). Most data points align closely with the diagonal, indicating an approximately normal distribution of Stereotype Threat values.

Figure S3.

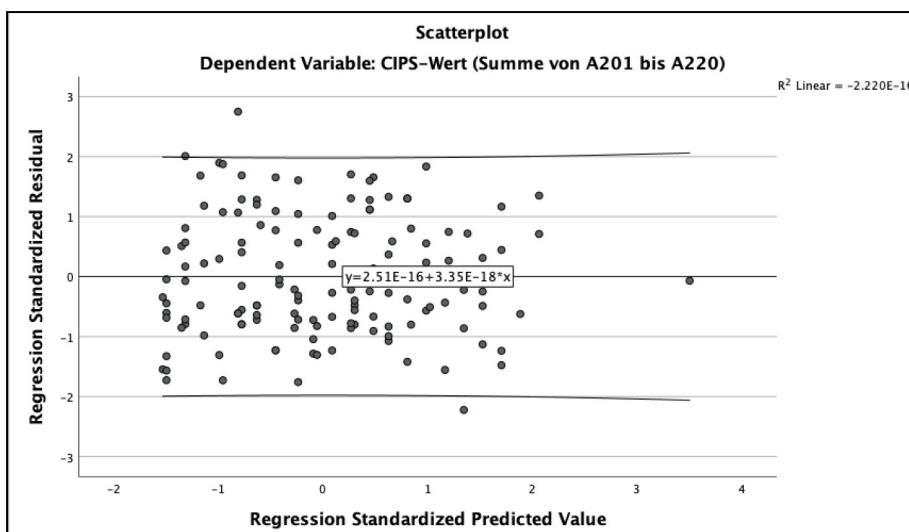
Scatterplot showing the linear relationship between Stereotype Threat (ST) and Impostor Phenomenon (CIPS) among female athletes ($N = 142$).



Note. The red line represents the fitted regression line ($R^2 = .27$), showing a positive linear association. Visual inspection indicates that the assumption of linearity for the mediation analysis was met.

Figure S4.

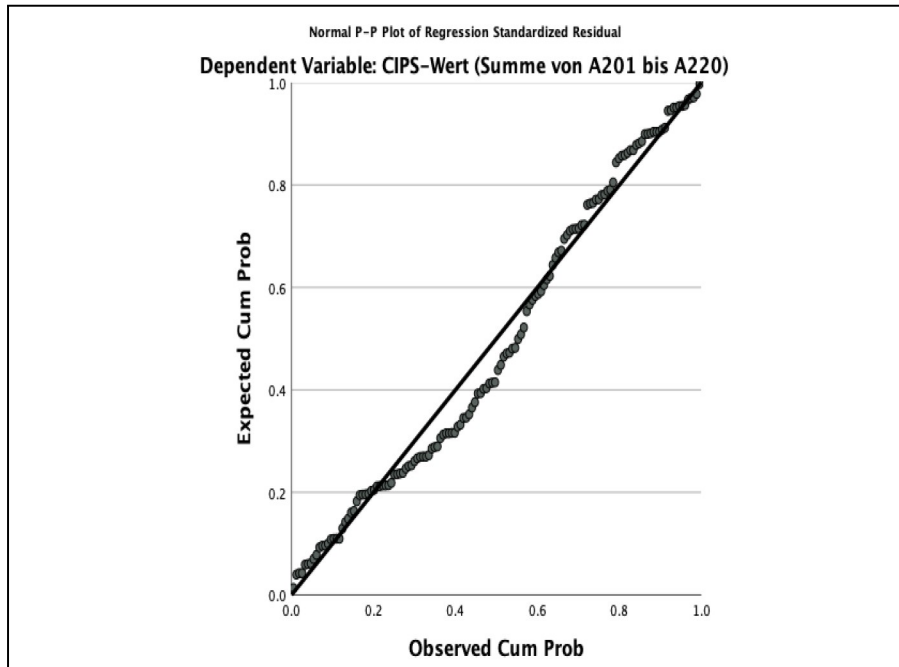
Scatterplot of standardized residuals versus predicted values for the mediation model (female sample, $N = 147$).



Note. The residuals appear randomly distributed around zero, suggesting homoskedasticity.

Figure S5.

Normal P–P plot of regression standardized residuals (indicating normality of residuals)



Note. Normal P–P plot of regression standardized residuals for the mediation model, showing that the residuals closely follow the expected diagonal line, indicating approximate normality.

6.3. German Questionnaire

Herzlich Willkommen und vielen Dank für Ihr Interesse! Bevor Sie mit der Studie beginnen, lesen Sie bitte die folgenden Informationen durch und bestätigen Sie Ihre freiwillige Teilnahme.

Thema der Forschung: Psychologische Erlebnissfaktoren im Teamsport

Zweck: Diese Studie findet im Rahmen einer Forschungsarbeit von der Universität Wien statt. Studienleiterin ist Giordana Turi unter der Aufsicht von Assoc. Prof. Dr. Peter Gröpel.

Was von Ihnen erwartet wird: Sie werden an einer Studie teilnehmen, in der Sie Ihr emotionales Befinden und Erleben im Zusammenhang mit ihrer Sportart angeben sollen. Dafür werden Sie verschiedene persönliche Fragen zu sich selbst beantworten.

Erwartete Dauer: Die Gesamtstudie wird maximal 5 Minuten dauern.

Risiken und Vorteile: Die Teilnehmenden sind während der Studie nicht an Risiken oder Vorteilen gebunden.

Vertraulichkeit: Alle während der Studie geteilten persönlichen Informationen werden außerhalb des Forschungsteams auf individueller Ebene nicht weitergegeben. Nach Abschluss der Studie werden alle Teilnehmenden anonymisiert. Wenn die Ergebnisse dieser Studie veröffentlicht werden, werden sie nur auf aggregierter Ebene ohne Möglichkeit, Antworten auf die Personen zurückzuführen, die sie geäußert haben, veröffentlicht.

Freiwillige Teilnahme: Die Teilnahme an dieser Studie ist freiwillig. Es steht Ihnen zu jedem Zeitpunkt dieser Studie frei, Ihre Teilnahme abubrechen, ohne dass Ihnen daraus Nachteile entstehen

Kontaktinformationen: Wenn Sie Feedback hinterlassen möchten oder Fragen zur Studie(-ergebnisse) haben, wenden Sie sich gerne an:

a11834838@unet.univie.ac.at

Hiermit bestätige ich, dass ich die Bedingungen der Studie gelesen und verstanden habe. Ich bestätige meine freiwillige Teilnahme.

Ja

Nein

1. Zu Beginn möchten wir Sie um einige Angaben zu Ihrer Person bitten.

Sie sind: [Bitte auswählen] (männlich, weiblich, divers)

2. Wie alt sind Sie?

Ich bin [] Jahre alt.

3. In welchem Land leben Sie derzeit?

Deutschland

Österreich

Schweiz

Anderes Land:

4. Welchen Sport betreiben Sie?

Volleyball

Fußball

keinen der Beiden

5. Wie häufig in der Woche betreiben Sie diesen Sport? Bitte berücksichtigen Sie mit ihrer Antwort Trainings und Spiele.

weniger als 3-mal die Woche

3-mal die Woche

4-mal die Woche

5-mal die Woche

häufiger als 5-mal die Woche

6. Seit wie vielen Jahren betreiben Sie Ihre angegebene Sportart?

unter 5 Jahre

5-10 Jahre

mehr als 10 Jahre

7. In welcher Liga spielen Sie? [Text]

☐

Ich weiß es nicht.

Bitte lesen Sie diese Information aufmerksam durch, bevor Sie mit dem Fragebogen fortfahren.

Im Anschluss werden Sie einige Statements finden, die sich auf Ihr Geschlecht im Sportkontext berufen.

Bitte bewerten Sie die Statements mithilfe der Auswahlmöglichkeiten ehrlich. Beziehen Sie sich dafür auf Ihr eigenes Geschlecht und die Sportart, die Sie betreiben und angegeben haben.

8. Ich befürchte, dass Andere aufgrund meines Geschlechts davon ausgehen, dass ich weniger fähig in meinem Sport bin.

nie - selten - manchmal - häufig - meistens

9. Wenn ich spiele, habe ich Angst, dass eine schlechte Leistung bestätigt, dass mein Geschlecht schlechter in meinem Sport ist.

nie - selten - manchmal - häufig - meistens

10. Die Menschen in meinem Umfeld denken, dass mein Geschlecht sich nicht in meinem Sport betätigen sollte, weil es nicht maskulin/feminin ist.

nie - selten - manchmal - häufig - meistens

11. Ich habe das Gefühl, dass ich in meinem Sport aufgrund meines Geschlechts nicht wirklich gut sein kann.

nie - selten - manchmal - häufig - meistens

12. Ich habe Angst, dass mein Umfeld aufgrund meines Geschlechts denkt, dass ich keine guten Leistungen und Erfolge in meinem Sport erzielen werde.

nie - selten - manchmal - häufig - meistens

13. Während meiner Spiele oder Trainings habe ich Angst, dass ich, wenn ich keine guten Leistungen erziele, einen Stereotyp bestätige, dass mein Geschlecht sich nicht in meiner Sportart betätigen sollten.

nie - selten - manchmal - häufig - meistens

14. Ich habe das Gefühl, dass ich in meiner Sportart eher nach meinem Geschlecht beurteilt werde, und nicht nach meinen eigentlichen Fähigkeiten.

nie - selten - manchmal - häufig - meistens

Bitte lesen Sie diese Information aufmerksam durch, bevor Sie mit dem Fragebogen fortfahren.

Im Anschluss werden Sie einige Statements mit Bezug auf Ihr persönliches Erleben im Sport finden.

Bitte bewerten Sie die Statements mithilfe der Auswahlmöglichkeiten ehrlich. Beziehen Sie sich dafür auf die Sportart, die Sie betreiben und angegeben haben.

15. Mir wurde öfter gesagt, ich hätte gut gespielt, obwohl ich vorher befürchtet habe, schlecht zu spielen.

nie / trifft gar nicht zu, selten, manchmal, häufig, meistens / trifft voll zu

16. Ich kann den Eindruck erwecken, dass ich ein(e) bessere(r) Spieler(in) bin, als ich wirklich bin.

nie / trifft gar nicht zu, selten, manchmal, häufig, meistens / trifft voll zu

17. Ich vermeide Bewertungen wenn möglich und habe Angst davor, von Anderen bewertet zu werden.

nie / trifft gar nicht zu, selten, manchmal, häufig, meistens / trifft voll zu

18. Wenn jemand meine Leistungen lobt, habe ich Angst, dass ich dessen Erwartungen an mich in Zukunft nicht mehr erfüllen kann.

nie / trifft gar nicht zu, selten, manchmal, häufig, meistens / trifft voll zu

19. Mir kommt es so vor, als hätte ich meinen Platz im Team nur, weil ich zufällig zur richtigen Zeit am richtigen Ort war oder die richtigen Leute kannte.

nie / trifft gar nicht zu, selten, manchmal, häufig, meistens / trifft voll zu

20. Ich habe Angst, dass Menschen, die mir wichtig sind, herausfinden könnten, dass ich nicht so gut bin, wie sie denken.

nie / trifft gar nicht zu, selten, manchmal, häufig, meistens / trifft voll zu

21. Ich erinnere mich häufiger an Situationen, in denen ich nicht gut gespielt habe, als an solche, in denen ich gut gespielt habe.

nie / trifft gar nicht zu, selten, manchmal, häufig, meistens / trifft voll zu

22. Ich erbringe nicht so gute Leistungen, wie ich es mir wünsche.

nie / trifft gar nicht zu, selten, manchmal, häufig, meistens / trifft voll zu

23. Ich habe das Gefühl, meine sportlichen Erfolge sind Ergebnis eines Fehlers oder Zufalls.

nie / trifft gar nicht zu, selten, manchmal, häufig, meistens / trifft voll zu

24. Es fällt mir schwer, Komplimente über meine sportlichen Leistungen oder Errungenschaften anzunehmen.

nie / trifft gar nicht zu, selten, manchmal, häufig, meistens / trifft voll zu

25. Ich habe das Gefühl, dass mein sportlicher Erfolg auf Glück zurückzuführen ist.

nie / trifft gar nicht zu, selten, manchmal, häufig, meistens / trifft voll zu

26. Ich bin enttäuscht über meine bisher erzielten Leistungen und Erfolge und denke, ich hätte mehr erreichen müssen.

nie / trifft gar nicht zu, selten, manchmal, häufig, meistens / trifft voll zu

27. Ich habe Angst, dass andere entdecken könnten, wie schlecht ich in einigen Aspekten bin.

nie / trifft gar nicht zu, selten, manchmal, häufig, meistens / trifft voll zu

28. Ich habe Angst, neue Herausforderungen nicht bewältigen zu können, obwohl ich diese in der Regel meistere, wenn ich es versuche.

nie / trifft gar nicht zu, selten, manchmal, häufig, meistens / trifft voll zu

29. Wenn ich gute Leistungen abgeliefert habe, und dafür Anerkennung erhalte, befürchte ich, diese Leistungen in der Zukunft nicht wiederholen zu können.

nie / trifft gar nicht zu, selten, manchmal, häufig, meistens / trifft voll zu

30. Wenn ich für meine sportlichen Leistungen viel Lob und Anerkennung erhalte, neige ich dazu, das Geleistete herunterzuspielen.

nie / trifft gar nicht zu, selten, manchmal, häufig, meistens / trifft voll zu

31. Ich vergleiche meine sportlichen Fähigkeiten mit meinen Mitspieler:innen und denke, dass sie besser sind als ich.

nie / trifft gar nicht zu, selten, manchmal, häufig, meistens / trifft voll zu

32. Ich mache mir Sorgen, nicht gut zu spielen, obwohl mein Umfeld zuversichtlich ist, dass ich gute Leistungen erbringen werde.

nie / trifft gar nicht zu, selten, manchmal, häufig, meistens / trifft voll zu

33. Wenn mir irgendeine Art von Anerkennung oder Beförderung bevorsteht, wie zum Beispiel einen Platz im Startteam zu erhalten, zögere ich, es anderen mitzuteilen, bis es tatsächlich geschehen ist.

nie / trifft gar nicht zu, selten, manchmal, häufig, meistens / trifft voll zu

34. Ich fühle mich schlecht oder entmutigt, wenn ich in Situationen, in denen es um das Zeigen von sportlicher Leistung geht, nicht „der/die Beste“ oder zumindest „ganz besonders gut“ bin.

nie / trifft gar nicht zu, selten, manchmal, häufig, meistens / trifft voll zu

35. Sie haben alle Fragen beantwortet, vielen Dank für Ihre Mühe! Können wir Ihre Daten in anonymer Form für wissenschaftliche Zwecke verwenden?

Ja, ich habe alle Fragen sinnvoll beantwortet. Meine Angaben können für die Auswertung verwendet werden.

Nein, ich wollte „nur mal gucken“, nehme zum wiederholten Mal teil oder möchte nicht, dass meine Angaben ausgewertet werden.

36. Haben Sie alle Aufgaben so ausgeführt, wie in den jeweiligen Instruktionen gebeten? Bitte antworten Sie auch hier ehrlich – Diese Antwort hat für Sie keine Konsequenzen!

Ich habe alle Aufgaben, wie in den Instruktionen verlangt, bewältigt.

Manchmal habe ich irgendetwas geklickt, weil ich unmotiviert war oder mich einfach nicht ausgekannt habe.

Ich habe häufig irgendetwas angeklickt, damit ich schnell fertig werde.

37. Konnten Sie den Fragebogen in Einem ausfüllen, ohne abgelenkt zu werden? Bitte antworten Sie auch hier ehrlich.

Ja, ich habe der Studie vollste Aufmerksamkeit geschenkt und sie in Einem durch gemacht.

Ich wurde durch meine Umwelt (Personen, Geräusche, etc.) einmal kurz abgelenkt.

Ich wurde durch meine Umwelt (Personen, Geräusche, etc.) mehrmals abgelenkt.

38. Falls Sie Interesse an den Ergebnissen dieser Studie haben, können Sie gerne Ihre E-Mail hier hinterlassen. Dies dient ausschließlich dazu, Ihnen die Ergebnisse nach Beendigung der Studie zukommen zu lassen – es werden hierdurch keinerlei Hinweise auf personenbezogene Daten gespeichert.

E-Mail-Adresse:

39. Möchten Sie zu dieser Befragung oder zum besseren Verständnis Ihrer Antworten noch etwas anmerken?

Ist Ihnen während der Teilnahme an dieser Befragung etwas negativ aufgefallen? Waren die Fragen an einer Stelle nicht klar oder war Ihnen die Beantwortung unangenehm? Bitte schreiben Sie kurz ein paar Stichworte dazu.

Letzte Seite

Vielen Dank für Ihre Teilnahme!

Sie können das Fenster nun schließen.

6.4. English Questionnaire

Welcome and thank you for your interest! Before you start the study, please read the following information and confirm your voluntary participation.

Research topic: Psychological experience factors in team sports

Purpose: This study is part of a research project at the University of Vienna. The head of the study is Giordana Turi under the supervision of Assoc. Prof. Dr. Peter Gröpel.

What is expected of you: You will take part in a study in which you will be asked to state your emotional state and experience in connection with your sport. To do this, you will answer various personal questions about yourself.

Expected duration: The entire study will take a maximum of 5 minutes.

Risks and benefits: Participants are not bound to any risks or benefits during the study.

Confidentiality: All personal information shared during the study will not be disclosed outside the research team on an individual level. After completion of the study, all participants will be anonymized. If the results of this study are published, they will only be published at an aggregate level with no possibility of attributing responses to the individuals who expressed them.

Voluntary participation: Participation in this study is voluntary. You are free to discontinue your participation at any point in this study without incurring any disadvantages

Contact information: If you would like to leave feedback or have any questions about the study (results), please contact: a11834838@unet.univie.ac.at

I hereby confirm that I have read and understood the terms and conditions of the study. I confirm my voluntary participation.

Yes

No

1. To begin with, we would like to ask you for some personal details. You are [Please choose] (gender)

2. How old are you?

I am [] years old.

3. Which country do you currently live in?

Germany

Austria

Switzerland

Other country:

4. What sport do you play?

Volleyball

Football/Soccer

None of the above.

5. How many times a week do you practice this sport? Please include training and games in your answer.

less than 3 times a week

3 times a week

4 times a week

5 times a week

more than 5 times a week

6. How many years have you been practicing your chosen sport?

less than 5 years

5 to 10 years

more than 10 years

7. What league do you play in? [Text]

☐

I don't know.

Please read this information carefully before continuing with the questionnaire.

Below you will find some statements that refer to your gender in the context of sport.

Please evaluate the statements honestly using the selection options. Please refer to your own gender and the type of sport you play and have indicated.

8. I am afraid that others think that I have much lower skills in my sport because of my gender.

never - rarely - sometimes - often - most of the time

9. When I play, I'm afraid that a bad performance will confirm that my gender is worse at my sport.

never - rarely - sometimes - often - most of the time

10. People around me think that my gender shouldn't be playing my sport because it's not masculine/feminine.

never - rarely - sometimes - often - most of the time

11. I have the feeling that I should not be good at my sport because of my gender.

never - rarely - sometimes - often - most of the time

12. I'm afraid that my environment will think that I won't perform well and be successful in my sport because of my gender.

never - rarely - sometimes - often - most of the time

13. During my games or practices, I'm afraid that if I don't perform well, I'm confirming a stereotype that my gender shouldn't be playing my sport.

never - rarely - sometimes - often - most of the time

14. I have the feeling that when it comes to my sport, I am evaluated based on my gender and not my actual abilities.

never - rarely - sometimes - often - most of the time

Please read this information carefully before continuing with the questionnaire.

Below you will find some statements relating to your personal experience in sport.

Please evaluate the statements honestly using the selection options. Please refer to the type of sport you play and have indicated.

15. I was often told that I had played well, even though I was afraid I would play badly.

never / not at all true, rarely, sometimes, often, mostly / very true

16. I can give the impression that I am a better player than I really am.

never / not at all true, rarely, sometimes, often, mostly / very true

17. I avoid evaluations if possible and have a dread of others evaluating me.

never / not at all true, rarely, sometimes, often, mostly / very true

18. When people praise me for something I've accomplished, I'm afraid I won't be able to live up to their expectations of me in the future.

never / not at all true, rarely, sometimes, often, mostly / very true

19. I sometimes think I obtained my present position in the team or gained my present success because I happened to be in the right place at the right time or knew the right people.

never / not at all true, rarely, sometimes, often, mostly / very true

20. I'm afraid people important to me may find out that I'm not as capable or good as they think I am.

never / not at all true, rarely, sometimes, often, mostly / very true

21. I tend to remember the incidents in which I didn't play well more than those in which I played well.

never / not at all true, rarely, sometimes, often, mostly / very true

22. I'm not performing as well as I would like.

never / not at all true, rarely, sometimes, often, mostly / very true

23. I have the feeling that my sports achievements are the result of some kind of error.

never / not at all true, rarely, sometimes, often, mostly / very true

24. It's hard for me to accept compliments about my sporting achievements or accomplishments.

never / not at all true, rarely, sometimes, often, mostly / very true

25. I feel my sporting success has been due to some kind of luck.

never / not at all true, rarely, sometimes, often, mostly / very true

26. I'm disappointed in my present accomplishments and think I should have accomplished much more.

never / not at all true, rarely, sometimes, often, mostly / very true

27. I'm afraid others will discover how much ability I really lack.

never / not at all true, rarely, sometimes, often, mostly / very true

28. I'm afraid that I may fail at a new challenge even though I generally do well at what I attempt.

never / not at all true, rarely, sometimes, often, mostly / very true

29. If I have performed well and received recognition for it, I have doubts that I can keep repeating that success.

never / not at all true, rarely, sometimes, often, mostly / very true

30. When I receive a lot of praise and recognition for my sporting achievements, I tend to discount the importance of what I've done.

never / not at all true, rarely, sometimes, often, mostly / very true

31. I often compare my ability to my teammates and think they may be more skilled than I am.

never / not at all true, rarely, sometimes, often, mostly / very true

32. I'm worried about not playing well, even though others around me have considerable confidence that I will do well.

never / not at all true, rarely, sometimes, often, mostly / very true

33. If I'm up for any kind of recognition or promotion, like getting a spot on the starting team, I hesitate to tell others until it's actually happened.

never / not at all true, rarely, sometimes, often, mostly / very true

34. I feel bad or discouraged if I'm not "the best" or at least "very special" in situations that involve athletic achievement.

never / not at all true, rarely, sometimes, often, mostly / very true

35. You have answered all the questions, thank you very much for your effort! Can we use your data in anonymous form for scientific purposes?

Yes, I have answered all questions correctly. My details can be used for the evaluation.

No, I just wanted to "have a look", am taking part again or do not want my details to be evaluated.

36. Did you carry out all the tasks as requested in the respective instructions? Please answer honestly here too – this answer has no consequences for you!

I completed all the tasks as requested in the instructions.

Sometimes I clicked on something because I was unmotivated or simply didn't know my way around.

I frequently clicked on something so that I could finish quickly.

37. Were you able to complete the questionnaire in one go without being distracted? Please answer honestly here too.

Yes, I gave the study my full attention and went through it in one go. I was briefly distracted by my surroundings (people, noises, etc.) once. I was distracted by my environment (people, noises, etc.) several times.

38. If you are interested in the results of this study, you are welcome to leave your e-mail here. This is solely for the purpose of sending you the results after the end of the study – no references to personal data will be stored.

E-mail:

39. Is there anything else you would like to say about this survey or to help us better understand your answers?

Did you notice anything negative during your participation in this survey? Were the questions not clear at any point or were you uncomfortable answering them? Please write down a few keywords.

Last Page

Thank you for your participation!

You may now close the window.

6.5. Abstract: German

Die vorliegende Studie untersuchte das Impostor-Phänomen (IP) und den Einfluss von Stereotype Threat (ST) bei Athletinnen und Athleten in wettkampforientierten Mannschaftssportarten, mit besonderem Fokus auf Athletinnen. Insgesamt nahmen 269 Athletinnen und Athleten (142 Frauen, 127 Männer) aus Fußball- und Volleyballvereinen an einer Online-Befragung teil. Die Teilnehmenden beantworteten adaptierte Versionen der *Clance Impostor Phenomenon Scale* (CIPS; Clance, 1985b) und der *Stereotype Threat at School Scale* (STaS; Bedyńska et al., 2021). Die statistischen Analysen umfassten *t*-Tests sowie mediationsanalytische Verfahren nach Hayes (2022). Die Ergebnisse zeigten, dass weibliche Athletinnen signifikant höhere Impostor-Werte berichteten als männliche Athleten. Zudem berichteten Fußballerinnen stärkeren Stereotype Threat und höhere Impostor-Ausprägungen als Volleyballerinnen. Eine Mediation zeigte, dass Stereotype Threat den Zusammenhang zwischen Sportart und Impostor-Phänomen bei Frauen erklärte. Die Ergebnisse deuten darauf hin, dass geschlechtsbezogene Stereotype zur Entstehung von Impostor-Gefühlen in maskulin konnotierten Sportarten beitragen. Zukünftige Forschung sollte die Befunde in unterschiedlichen kulturellen und sportlichen Kontexten replizieren und Möglichkeiten zur Förderung psychologischer Resilienz bei Athletinnen prüfen.

Schlagwörter: Impostor-Phänomen; Stereotype Threat; Athletinnen; Mannschaftssport; Geschlechterstereotype; Sportpsychologie; Leistungsangst