

THOMAS
MORE

McMaster
University 



COMMISSIONED BY ASOIF

Elite adult athlete health and safe sport experiences in rowing

Study into elite adult athlete experiences with harassment and abuse, injury, illness and mental health problems

February 2024

Table of Contents

1. BACKGROUND	4
1.1. Study objective	4
1.2. Research team	5
1.3. Studying harassment and abuse in sport	6
1.3.1. Defining interpersonal violence	6
2. METHODOLOGY	8
2.1. Research instrument	8
2.1.1. Socio-demographical and sport characteristics	8
2.1.2. Questions on physical and mental health	8
2.1.3. Questions on experiences of interpersonal violence	10
2.2. Questionnaire development	11
2.3. Study Implementation	11
2.3.1. Sampling	11
2.3.2. Ethical considerations	12
2.4. Statistical analyses	12
3. RESULTS	13
3.1. Sample description	13
3.2. Experiences with interpersonal violence perpetrated by peer athletes	14
3.2.1. Psychological violence by peer athletes	15
3.2.2. Physical violence by peer athletes	15
3.2.3. Sexual violence by peer athletes	16
3.3. Experiences with interpersonal violence perpetrated by authority figures	18
3.3.1. Psychological violence by authority figures	19
3.3.2. Physical violence by authority figures	20
3.3.3. Instrumental violence by authority figures	21
3.3.4. Sexual violence by authority figures	22
3.4. Reporting	24
3.5. Incidence of self-reported health problems	25
3.5.1. Reported physical health problems	25
3.5.2. Reported mental health problems	26
3.6. Interpersonal violence and links with physical and mental health	28
4. CONCLUSIONS	30
4.1. Main findings	30
4.2. Take-aways	32
5. REFERENCES	34

List of Tables

Table 1 Overview of the project team	5
Table 2 Physical health problems surveyed	8
Table 3 Mental health problems surveyed	9
Table 4 Overview of VTAQ items per type of interpersonal violence	10
Table 5 Characteristics of athletes included in the analysis	13
Table 6 Circumstances of experiences perpetrated by peer athletes	17
Table 7 Circumstances of experiences perpetrated by authority figures	23
Table 8 Correlations between physical and mental health complaints and interpersonal violence	28
Table 9 Linear regression analyses demonstrating the relationship between experiencing various forms of interpersonal violence and physical or mental health symptoms	29
Table 10 Main findings	30

List of Figures

Figure 1 Types of interpersonal violence (harassment and abuse) surveyed	7
Figure 2 Experience of interpersonal violence by peers	14
Figure 3 Experience of specific forms of psychological violence by peers	15
Figure 4 Experience of forms of sexual violence by peers	16
Figure 5 Experience of psychological, physical, sexual and instrumental violence by authority figures in sport	18
Figure 6 Experience of specific forms of psychological violence by authority figures in sport	19
Figure 7 Experience of specific forms of physical violence by authority figures in sport	20
Figure 8 Experience of specific forms of instrumental violence by authority figures in sport	21
Figure 9 Experience of specific forms of sexual violence by authority figures in sport	22
Figure 10 Access to a safe space or trusted person	24
Figure 11 Knowing where to go to report	24
Figure 12 Experience of physical complaints	25
Figure 13 Training/competing with a physical health complaint or a diagnosed injury in the last 12 months	26
Figure 14 Experience of mental health problems	26
Figure 15 Training/ competing with a mental health complaint or a diagnosed mental health disorder in the last 12 months	27

1. Background

1.1. Study objective

Following recent public disclosures from athletes regarding experiences of psychological, physical, sexual harassment, abuse, and neglect, prominent international sports bodies have taken decisive action to safeguard all sport participants.

Recognized as a **public health concern**, harassment and abuse requires a precise definition and measurement of its extent to effectively address risk factors and prevent its occurrence. While there is a growing body of literature on the prevalence of interpersonal violence in sports, the majority of studies concentrate on experiences prior to the age of 18. This leaves a gap in our understanding of such experiences in adult sport, as it is improbable to assume that exposure to harassment and abuse dissipates upon reaching the age of 18.

Notably, research indicates elevated rates of exposure among athletes competing at **the international level**, necessitating a focused investigation into the specific subgroup of adult athletes performing at the highest echelons of their respective sports.

Unlike studies measuring lifetime prevalence (i.e. experiences of harassment and abuse throughout one's life), this study employs a **12-month timeframe** (i.e. past year incidence). This approach allows us to gain insight into the **current exposure** of elite athletes, offering a more current perspective compared to the examination of experiences over the course of often-lengthy careers leading up to participation in world-class sporting events.

This project aims to thoroughly evaluate past year experiences and contextual factors around harassment, abuse, injuries, illnesses, and mental health challenges of elite athletes during selected World Rowing events in 2023. A pivotal aspect of this research involves the development of a tailored research instrument and the implementation of a recruitment methodology specifically designed for high-profile sporting events. The project is guided by three overarching goals:

1. **Assess the incidence and characteristics of elite athlete harassment and abuse:** The primary aim is to gain a nuanced understanding of the prevailing magnitude, characteristics, and contextual circumstances of harassment and abuse targeting elite athletes. This encompasses a thorough examination of their recent experiences with injuries, illnesses, and mental health issues.
2. **Develop, test and evaluate a new study methodology:** A pivotal focus of this initiative is the development, testing, and evaluation of a robust methodology tailored to measure harassment and abuse, along with related health issues, during high-profile sporting events across various Summer Olympic Sports. This entails refining and validating instruments to ensure their efficacy in capturing accurate and meaningful data.
3. **Inform sport safeguarding policies:** The ultimate objective is to equip the Association of Summer Olympic International Federations (ASOIF) and the participating International Federations (IFs) with timely and detailed information regarding elite athletes' recent exposures to harassment and abuse, as well as their health challenges. This information is intended to serve as a vital resource, empowering these organizations to enhance and refine their safeguarding strategies effectively.

1.2. Research team

The study was commissioned by the Association of Summer Olympic International Federations (ASOIF), and instigated by World Rowing. ASOIF contacted Professor Margo Mountjoy who developed a proposal and research methodology forward.

The research team is composed of two principal investigators, Profs. Mountjoy and Vertommen, supported by three research assistants at two research institutes: McMaster University in Canada, and Thomas More University of Applied Sciences in Belgium. Both research units have extensive experience in studying the prevalence and characteristics of harassment and abuse of athletes in elite sport settings.

The research core team is supported by the Steering Committee, consisting of representatives of ASOIF and World Rowing, the IF that initiated this project request.

Table 1 Overview of the project team

Role	Name	Organisation	Country
Principal Investigators	Prof. Dr. Margo Mountjoy	McMaster University	CAN
	Prof. Dr. Tine Vertommen	Thomas More University of Applied Sciences	BEL
Research assistants	Dr. Felien Laureys	Thomas More University of Applied Sciences	BEL
	Dr. Karolien Adriaens	Thomas More University of Applied Sciences	BEL
	Helena Verhelle	Thomas More University of Applied Sciences	BEL
	Geneviève McCallum	McMaster University	CAN
Steering Committee	James Carr	ASOIF	SUI
	Jeremy Foster	ASOIF	SUI
	Em. Prof. Dr. Sandra Kirby	World Rowing	CAN
	Dr. Lenka Dienstbach-Wech	World Rowing	GER
	Inas Hussein	World Rowing	EGY



1.3. Studying harassment and abuse in sport

1.3.1. Defining interpersonal violence

Violence, or harassment and abuse¹, constitutes a multifaceted and complex phenomenon, in and outside sport. Traditional or minimalist definitions tend to restrict its scope to physical force, neglecting broader contextual considerations of social relationships, non-physical harm—particularly psychological—and the prospect of unintended violent outcomes (Ray, 2011). These manifestations of violence can assume visible or insidious forms, rendering them challenging to perceive or acknowledge by both the instigator and the recipient. The impact of violent behaviours hinges not only on the overt nature of the conduct but also on various contextual and individual factors that may exacerbate the consequences.

The World Health Organization (WHO) defines violence as: “The intentional use of physical force or power, threatened or actual, against oneself, another person, or against a group or community, that either results in or has a high likelihood of resulting in injury, death, psychological harm, maldevelopment or deprivation.” The definition used by the WHO associates intentionality with the committing of the act itself, irrespective of the outcome it produces. Excluded from the definition are unintentional incidents (Krug et al., 2002, p. 5). In sport, examples of such ‘accidental’ violence are ligament tears or collision injury from body checking within the rules of the sport.

The introduction of the term “power,” alongside the expression “use of physical force”, widens the scope of a violent act and extends the traditional definition of violence to encompass actions stemming from power dynamics, such as threats and intimidation (Krug et al., 2002). The concept of the “use of power” also encompasses neglect or acts of omission, in addition to overtly violent acts of commission. Consequently, the phrase “the use of physical force or power” should be interpreted to encompass neglect, as well as various forms of physical, sexual, and psychological abuse, alongside acts of self-harm, including suicide and other self-abusive behaviours.

The World Health Organization (WHO) delineates the nature of violent acts across four categories: 1) physical; 2) sexual; 3) psychological; and 4) deprivation or neglect (Krug et al., 2002). Furthermore, the WHO classifies violence into three distinct categories: self-directed, interpersonal, and collective violence. For the purpose of this study, self-directed and collective violence have been excluded. Interpersonal violence encompasses a) familial and intimate partner violence and b) community violence. In the context of sport, we focus on interpersonal violence perpetrated by peer athletes and by authority figures. Possible authority figures include athletes’ parents, coaches, sport medicine physicians, physical therapists (physio, massage, chiropractor), team managers, technical officials, etc. In this study, violent experiences perpetrated by persons unknown to the athlete, such as spectators, were not explicitly surveyed.

¹ We recognize the use of ‘harassment and abuse’ in sport policy and practices in relation to safeguarding. However, due to the use of the measurement instrument in this study, we will use ‘interpersonal violence’ as the umbrella term to refer to all forms of athlete harassment and abuse perpetrated by peer athletes and authority figures in sport.

In addition to the three forms of interpersonal violence defined by the WHO, research by Vertommen et al. (2022), highlighted an additional form of violence specifically to competitive sport. **Instrumental violence** consists of both psychological *and* physical behaviours displayed by a coach that are performance related. The underlying common factor is the use of pressure, force, or power to limit the athlete’s life outside sport (friends and school), to hurt opponents, and to perform unhealthy or illegal acts in order to enhance performance, with the intention to increase athletic performance.

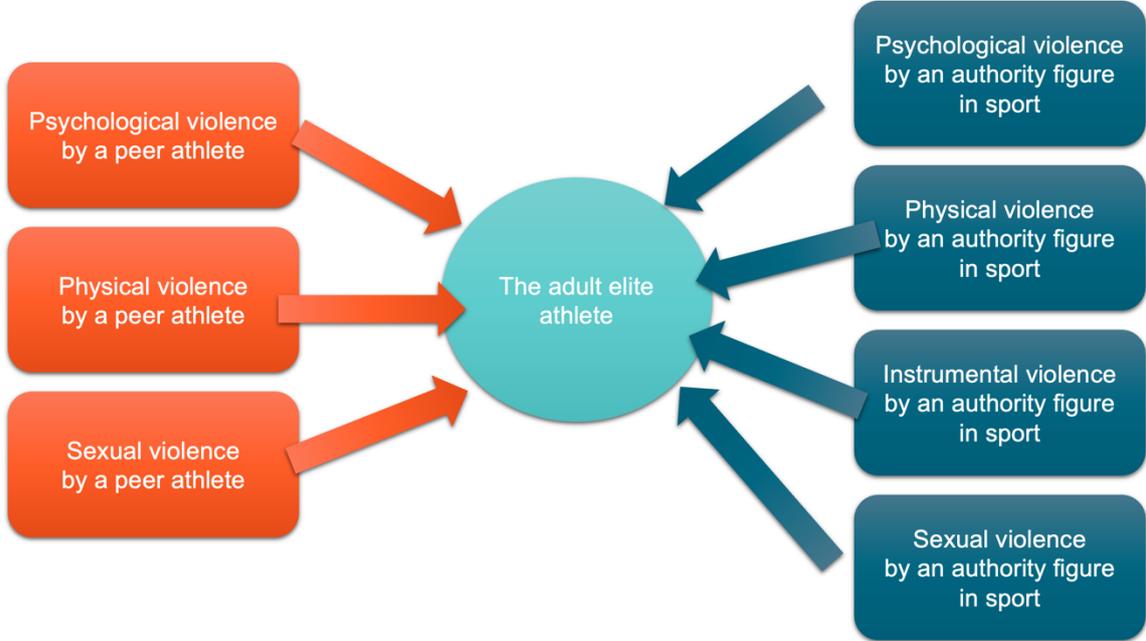


Figure 1 Types of interpersonal violence (harassment and abuse) surveyed

2. Methodology

2.1. Research instrument

For the purpose of this study, a self-report questionnaire consisting of three sections was developed: 1) socio-demographic and sport characteristics of the participants, 2) questions on physical and mental health over the past year, 3) questions on experiences with in-person and online interpersonal violence in sport over the past year, the circumstances, and their reporting behaviour. Targeted participants in this study were those adult athletes participating in IF-selected international events.

2.1.1. Socio-demographical and sport characteristics

Items asked at the start of the questionnaire included athlete age², category of competition (male, female, mixed event and able-bodied versus persons with disability competition), the country they represented during the event, and the country they live and train in.

2.1.2. Questions on physical and mental health

Based on a study by Mountjoy et al (2022), a selection of items surveying physical health (injury and illness) and mental health were included in the research instrument. Physical health problems were surveyed with 11 items and categorized in three groups: musculo-skeletal problems, infectious diseases, and non-infectious diseases.

Table 2 Physical health problems surveyed

Musculo-skeletal	Infectious diseases	Non-infectious diseases
Musculo-skeletal pain/complaint	Diarrhoea, nausea, vomiting	Headache, migraine
Musculo-skeletal injury	COVID-19	Menstrual pain/cramps in female athletes
	Flu, influenza, sinusitis	Asthma
		Allergy, e.g. hay fever
		Fatigue, lack of energy
		Heart palpitations

² Participants with an age below 18 years were excluded from the study and were directed to the end of questionnaire.

Mental health symptoms were surveyed with 23 items based on the International Olympic Committee’s (IOC) consensus statement on the surveillance of athlete mental health symptoms and disorders (Mountjoy et al., 2023). These symptoms can be categorized into four groups: anxiety-related, affective disorder related, risk taking, and ‘other’ problems. It is important to note that this study did not collect information on medically diagnosed mental health disorders, but rather recorded the self-reported symptoms of the study participants as recommended by the IOC statement.

Table 3 Mental health problems surveyed

Anxiety-related	Affective disorder-related*	Risk-taking	Other
Feeling anxious, nervous or on edge	Feeling down, depressed, hopeless	Gambling, betting	Eating problems
Inability to stop or control worries	Little interest or pleasure in doing things	Alcohol or drug misuse	Sleeping problems ³
Phobia, i.e. excessive fear of an object or situation	Hyperactivity / agitation	Excessive gaming behaviours	
Performance anxiety	Difficulties concentrating		
Panic attacks	Elation or euphoria for no reason and increased energy		
Urge to perform repetitive behaviours	Mood swings without extreme euphoria / elation		
	Irritability, anger, or tension with people		
	Aggressive behaviour against other people or objects (verbal or physical)		
	Social withdrawal		
	Psychosomatic problems		
	Thoughts or actions of non-suicidal self-harm		
	Suicidal thoughts, intentions or actions		

*Affective disorder = mood disturbances such as depression, dysthymia, mania, or bipolar disorder.

To measure the incidence rate over the past 12 months, the items were formulated as follows: “*In the past 12 months, have you experienced...?*”.

Both the physical and mental health sections of the questionnaire contained two follow-up questions on whether the athlete trained or competed *i)* with these complaints/injuries/symptoms, or *ii)* with a medically diagnosed injury or disorder.

³ We acknowledge that sleeping problems might be related to anxiety or affective disorders, or drug misuse. As this is outside the study’s scope, we chose to classify sleeping problems as other mental health problems.

2.1.3. Questions on experiences of interpersonal violence

The section on experiences with interpersonal violence by peers and authority figures in sport was based on a revised version of the Violence Towards Athlete Questionnaire (VTAQ). This questionnaire was developed by Parent and colleagues (Parent et al., 2019) and designed originally for adolescent athletes. For the purpose of this study, the questionnaire items were adapted to align with the context of adult athletes. For example, questions related to sexual violence experiences were modified to include the concept of 'lack of consent'⁴.

The VTAQ was further reduced from 70 to 33 items to reduce the overall questionnaire completion time and focus on those behaviours most relevant in high-performance sport settings.

Table 4 Overview of VTAQ items per type of interpersonal violence

	Perpetrated by peer athletes		Perpetrated by authority figures	
	n	Index behaviours	n	Index behaviours
Psychological	4	Insults, humiliations, threats, exclusion, reputational damage, damaged stolen belongings	5	Insults, humiliations, threats, exclusion, indifferent treatment, forced doping use, denial of medical care
Physical	2	Hitting, pushing, shaking, punching, kicking outside the rules of the game or off the field of play	3	Throwing objects at the athlete, hitting, punching, kicking, hitting with a hard object
Instrumental	0		3	Forced social isolation, forced training against medical advice, forced use of extreme weight-reducing practices
Sexual	8	Without consent: sexual remarks, behaviours, touching, kissing and penetration	8	Without consent: sexual remarks, behaviours, touching, kissing and penetration
Total	14		19	

Note: n = number of items included in the questionnaire

Participants were reminded of the 12-month timeframe by formulating the questions as follows: *"In the past 12 months, have you ever experienced?"*. Similar to the original VTAQ, athletes who reported an experience with a type of interpersonal violence were presented with follow-up questions to elaborate on the role of the perpetrator, timing, duration and location of the incident(s).

Additional to the original VTAQ, new items regarding reporting behaviours were added related to the athlete's readiness to disclose such experiences:

- 1) In case you feel uncomfortable or concerned, do you have access to a safe space or know a person you can trust and confide in?
- 2) Do you know who you could go to in your sport organisation, to report if you feel uncomfortable, or see something which makes you concerned for someone else's welfare?

⁴ In children, a lack of consent is not a prerequisite for sexual violence, as consent cannot be given under the age of sexual consent.

2.2. Questionnaire development

The first, English version of the adapted VTAQ was created by the core research team and presented to the steering committee for discussion. After minor adaptation, the new version was presented to Professor Sylvie Parent, the original author of the VTAQ. She approved this version for the use in a sample of adult elite athletes.

The online questionnaire, developed in QuestionPro, was **piloted** by a group of 10 test participants (aged 18 to 45 years old) who used a hypothetical scenario to test the questionnaire functionalities, duration, mobile device compatibility, comprehension etc. Small improvements in item wording were made thereafter.

At the request of World Rowing, the English questionnaire was then **translated** into Spanish, Portuguese, Japanese, Chinese, Russian and French. All translations were prepared by the research team and verified by a native speaker with knowledge on the topic.

2.3. Study Implementation

2.3.1. Sampling

As the instigator of the project, World Rowing played a pivotal role in both project development and instrument design phases from project inception. The study focused on four major World Rowing events:

1. European Rowing Championships (Bled, Italy, 25-28 May 2023)
2. World Rowing Cup II (Varese, Italy, 16-18 June 2023)
3. World Rowing Cup III (Lucerne, Switzerland, 7-9 July 2023)
4. World Rowing U23 Championships (Plovdiv, Bulgaria, 16-23 July 2023)

To facilitate the study's implementation at each event, a central contact person and on-field safeguarding officer were designated. The principal investigators, in preparation for data collection, conducted training sessions for the World Rowing representatives responsible for on-site implementation.

World Rowing's responsibilities extended to two key areas:

1. Promotional Material Development and Distribution:

- Targeting elite adult athletes, promotional materials (posters with QR codes, reminder emails, banners, etc.) were strategically placed at various event locations. In certain instances, safeguarding officers were on-site to engage with coaches and athletes personally, recognizing the efficacy of personal connections in recruitment.
- The questionnaire, facilitated through QuestionPro software, was accessible to athletes through QR codes or hyperlinks provided on promotional materials both online and in print. The questionnaire QR Code was also added on the accreditation cards allowing direct access of athletes to the questionnaire through their accreditations, and the link remained active for four weeks post the event conclusion to allow more time and flexibility for the questionnaire completion by the athlete at their convenience.

2. Communication and Briefing:

- World Rowing was tasked with briefing their coaches and adult athletes about the research through their member National Federations, and directly on-site to the athletes and coaches by the Event Safeguarding Officer and Organising Committee Safeguarding Office; and to the team managers during the team managers daily meetings.
- The questionnaire link remained open from two weeks before the event until four weeks following the event, offering flexibility for athletes to complete the questionnaire at their convenience, either from home or at the competition site.

The research team (principal investigators and research assistants) provided daily monitoring of data collection, including updates on response numbers and the geographical distribution of participants. This information was shared with the World Rowing contact person on-site, enabling the designated IF representative to effectively engage athletes in completing the questionnaire during the event. Recruitment strategies were approved by the Research Ethics Review Board for McMaster University (Hamilton Integrated Research Ethics Board - Project ID: 15852)

2.3.2. Ethical considerations

Given the sensitive nature of the questionnaire, considerable thought was given to the ordering of the questions while also ensuring that the athletes understood the different categories of experiences. The questionnaire asked first about socio-demographical information and sport characteristics, followed by physical and mental health, and subsequently, about experiences with harassment and abuse. In this way, study participants were offered neutral questions first, before being presented with more sensitive questions. In the questions related to interpersonal violence, a progression was made from peer-to-peer violence (psychological, physical and sexual violence) to violence by authority figures (psychological, physical, instrumental and sexual).

All information collected in this anonymized questionnaire is kept confidential. Athlete participation was voluntary following informed consent. World Rowing, National Federation delegates, and official referees/officials did not know who did or did not participate in this questionnaire, nor had access to the raw data.

A safeguarding officer and/or mental health support was available onsite if athletes had questions or concerns about the questionnaire. Contact information of the two principal investigators, the safeguarding officer and an international victim counselling helpline was made available in the questionnaire for athletes on multiple occasions, in case they wanted to talk or report.

The project received independent Research Ethical Approval from the [Hamilton Integrated Research Ethics Board](#) (Project ID: 15852).

2.4. Statistical analyses

The main goal of the research was to assess current incidence rates of interpersonal violence towards elite athletes. For this purpose, descriptive statistics and chi-square tests were used to describe and detect possible differences in prevalence between continents, male and female respondents, or between non-disabled and disabled athletes. Secondly, characteristics and circumstances of these experiences were also investigated by means of descriptive statistics. Differences between participants in male versus female events, and continent were tested with T-tests and chi-square tests.

As a secondary research question, we also investigated the relationship between interpersonal violence and physical/mental health issues. For this mean, sum scores were made for both interpersonal violence, mental health, and physical health problems. The relations were analysed by using correlations and linear regressions.

Whenever we use the term 'significant' in the report, this means that the difference described, e.g., between countries, participants in male versus female events, or the level of sport participation, is also a significant finding on the basis of statistical calculation procedures, with a p-value below .05. Due to the sample size, statistical procedures reveal differences between subsamples, which appear to be significant in a statistical sense, however, we focus on the differences that we consider relevant based on the statistics and the content and aim of our project. The statistical software package SPSS version 26 was used to analyse the data.

3. Results

3.1. Sample description

A total of 2673 athletes, of which 2660 were adults, participated in the four selected World Rowing events over the summer of 2023.⁵ During the four events, a total of 165 responses by rowers were collected. Eight athletes were excluded from the analysis due to being under 18 years of age. Study participants who did not complete the first VTAQ scale were also excluded from the analysis (n = 85).

A final sample of 72 athletes (28 females, 41 males) was achieved, representing a response rate of 3% of all athletes at all events combined⁶. Characteristics of the study participants are presented in Table 5.

Table 5 Characteristics of athletes included in the analysis

	Female	Male	Mixed team
N	28 (39%)	41 (57%)	3 (4%)
Age	26.9 □ 11.6	24.3 ± 4.8	39 ± 5.6
Continent (n)			
Asia	2	5	1
Europe	15	21	1
Africa	2	0	0
North America	5	7	0
South America	2	2	0
Oceania	1	2	0
Missing	1	4	1

Seventy-two athletes (28 female, 41 male) representing countries across Europe (56%), Asia (12%), North America (18%), South America (6%), Africa (3%) and Oceania (5%) were included in the final analysis.

The database included 6 para-athletes, who were included in the overall analysis together with non-disabled athletes due to the small sample size.⁷

⁵ We note possible duplication as athletes could participate in more than one event.

⁶ We note that the actual response rate might be a bit higher, due to possible duplication in the total number of athletes participating in the events.

⁷ Six athletes did not report their country of representation.

3.2. Experiences with interpersonal violence perpetrated by peer athletes

37 athletes (51%) reported experiencing some form of interpersonal violence by peers. Psychological violence was the most common (47%), followed by sexual violence (21%). There were no cases of physical violence reported by this cohort.

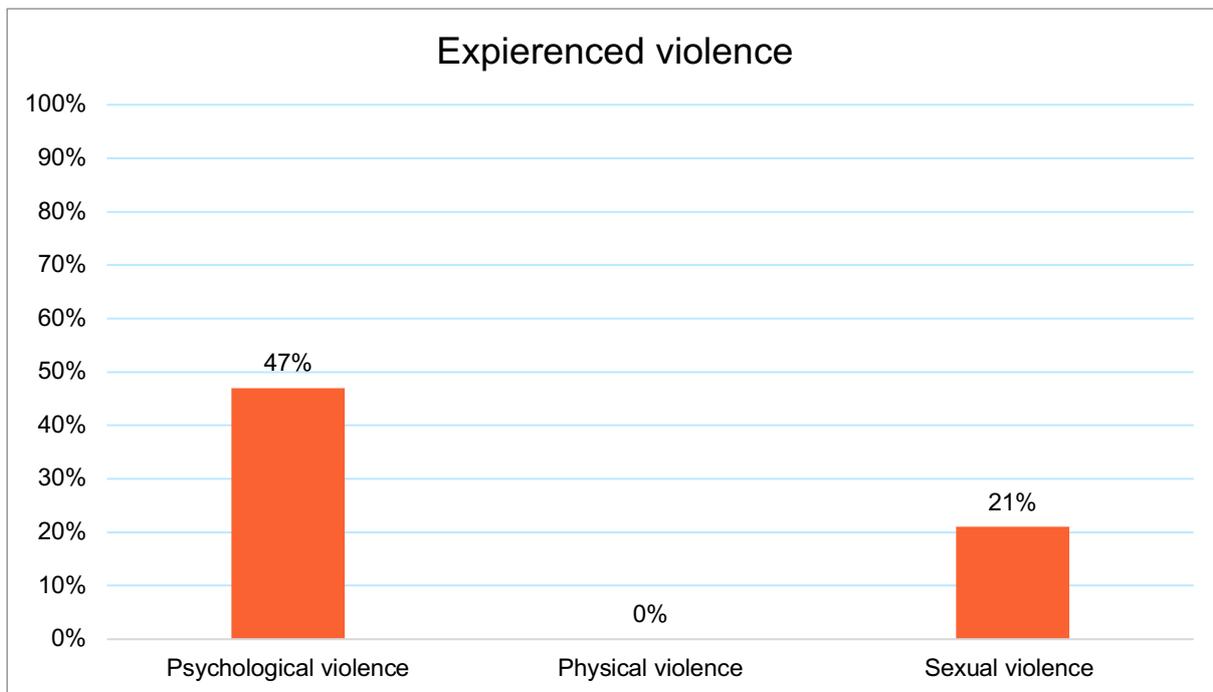


Figure 2 Experience of interpersonal violence by peers

Note: Orange bars represent the **percentages of athletes** experiencing a form of interpersonal violence in the last 12 months.

No statistical differences were found between continents, nor between participants in male versus female events.

3.2.1. Psychological violence by peer athletes

Within psychological violence, the most common form reported was reputational harm by spreading rumours or hurtful comments, experienced by 28% (n=20) of athletes. The least common form of psychological violence experienced was having had personal items stolen or broken, with 13% (n=9) of athletes reporting this form of violence. It is important that all listed items of psychological violence had been experienced at least once in this small group of athletes over the past 12 months.

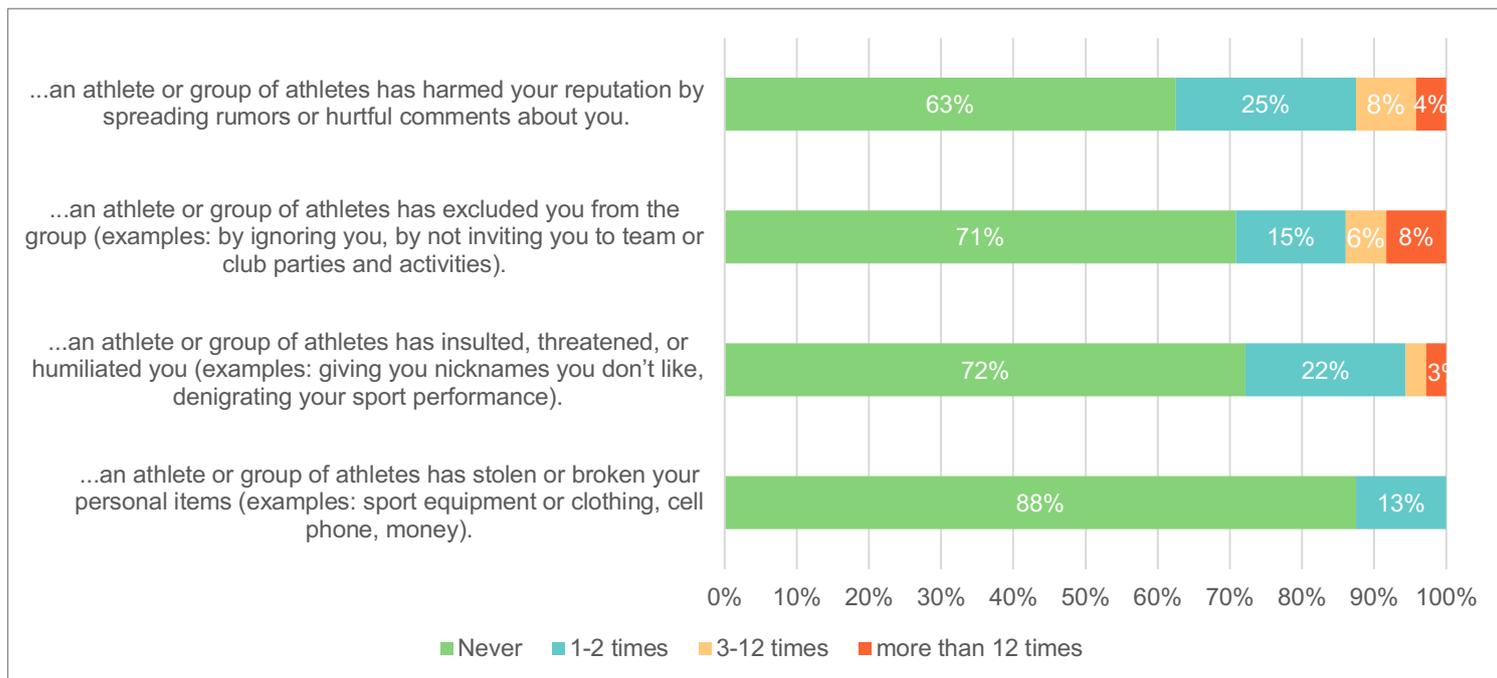


Figure 3 Experience of specific forms of psychological violence by peers

Over half of the time (54%), psychological violence by peers occurred at a sports venue, closely followed by incidents outside of the venue (37%) (see Table 6). Psychological violence was somewhat more common during the training phase, decreasing in frequency towards the competition phase.

While 28% of athletes experiencing this form of violence report that it did not influence them in any way, 72% of athletes expressed a negative impact: 28% of athletes reported that these experiences negatively affected them mentally. A smaller number of athletes reported negative consequences to their social life/relationships (23%), sports performance (14%), and physical health (7%).

Importantly, 11 athletes (38%) indicated that at time of the event, these experiences were still ongoing. While the researchers were not able to contact these athletes, due to the confidentiality of the study, the questionnaire provided relevant safeguarding services and helplines in- and outside the IF.

3.2.2. Physical violence by peer athletes

The athletes in this cohort did not report any incidents of physical violence by peer athletes in the past 12 months.

3.2.3. Sexual violence by peer athletes

The most common form of sexual violence by peers were online or face-to-face remarks about athlete’s sexual life, private life, or appearance (13% or n=8), with forced physical sexual relations (unwanted or forced touching of sexual nature) being the least common (0%).

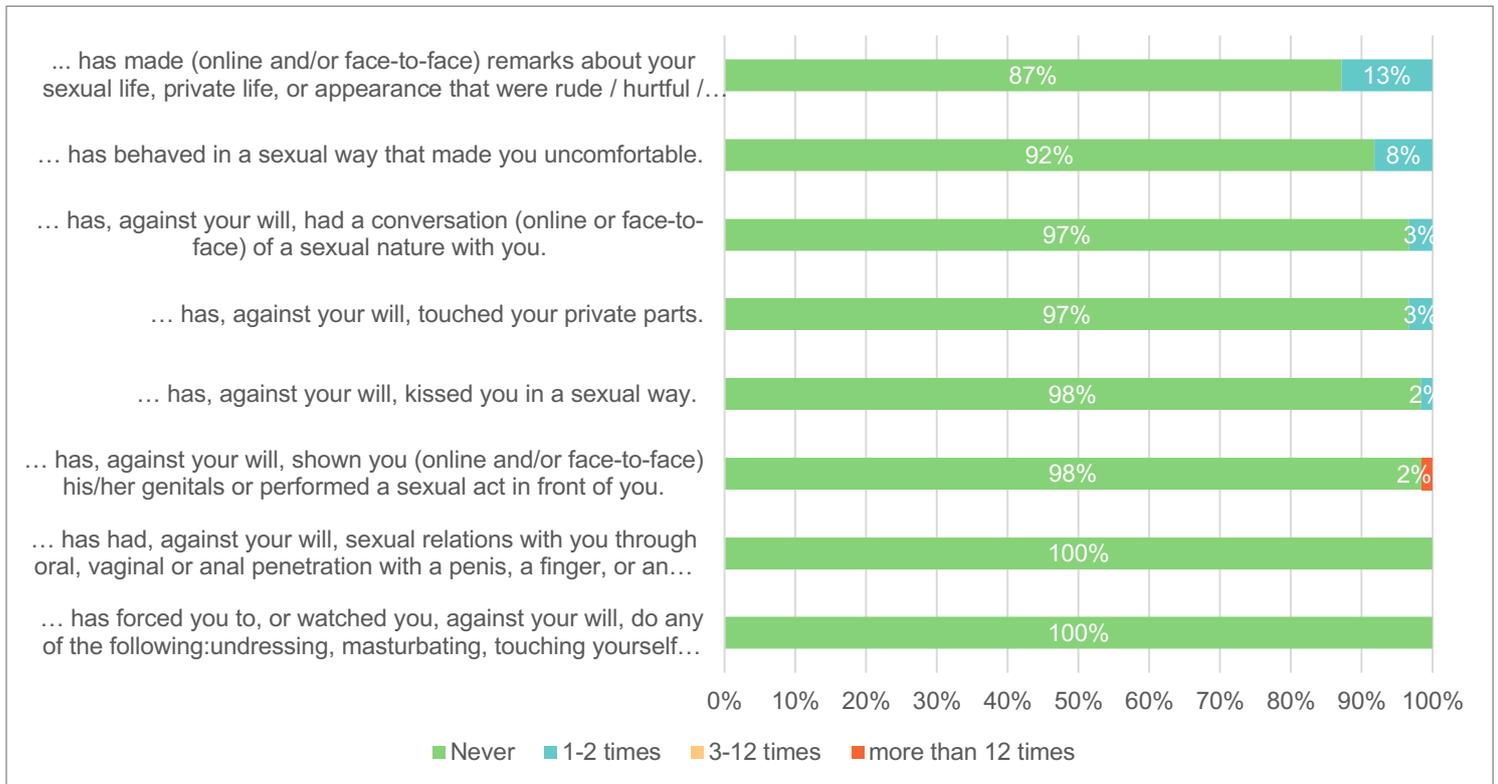


Figure 4 Experience of forms of sexual violence by peers

Most athletes reported that the incident(s) of sexual violence most commonly occurred at a sports venue (50% or n=5). An equal number (27% or n=4) reported that the experience did not have a negative influence, had a negative influence mentally, or had a negative influence on sports performance.

Importantly, two athletes indicated that, at time of the event, these experiences were still ongoing. While the researchers were not able to contact these athletes due to the confidentiality of this study, the questionnaire provided relevant safeguarding services and helplines within and outside the IF.

Table 6 Circumstances of experiences perpetrated by peer athletes

		Psychological (n)	Sexual (n)
Where did this happen?	At a sports venue	19	5
	Online	2	2
	Other	1	1
	Outside of a sports venue	13	2
When did this happen?	During the training phase	17	*
	During the pre-competition phase	12	
	During the competition phase	10	
	During the post-competition phase	7	
Did it have a negative impact on you?	No	12	4
	Yes, mentally	12	4
	Yes, on my sports performance	6	2
	Yes, physically	3	1
	Yes, socially	10	4
Is it still happening to you today?	No	18	9
	Yes	11	2

Note: As the number of athletes completing these questions is relatively low, ranging from 35 to 46 for psychological violence and n ranging from 10 to 15 for sexual violence), incidence is shown as in absolute numbers here (n).

**Due to a programming error in the online questionnaire, this specific sub question was not correctly shown to athletes who experienced sexual violence by peer athletes in the past year. Therefore, data are not shown here.*

3.3. Experiences with interpersonal violence perpetrated by authority figures

Twenty athletes (35%) reported experiencing some form of interpersonal violence by a person in a position of authority in the context of sport. Psychological violence was the most commonly reported form of interpersonal violence (28% or n=16), followed by instrumental (23% or n=13), sexual (16% or n=9), and physical violence (5% or n=3).

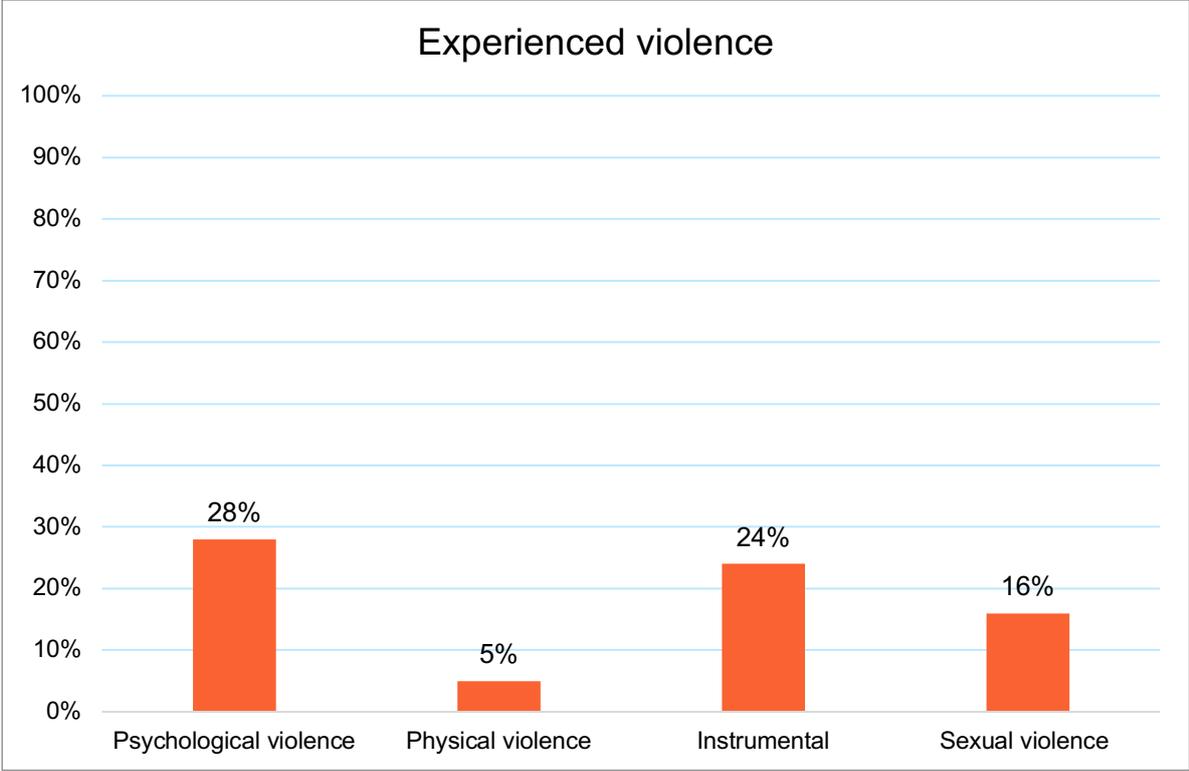


Figure 5 Experience of psychological, physical, sexual and instrumental violence by authority figures in sport

Note: Orange bars represent the percentages of athletes represent the number of athletes experiencing a form of interpersonal violence in the last 12 months.

No statistical differences were found between sexes or continents.

3.3.1. Psychological violence by authority figures

Within psychological violence by an authority figure, the most common form reported was indifference towards the athlete, experienced to some extent by 17% (n=10) of athletes. The least common form of psychological violence was refusal to give the athlete the necessary medical care, with 4% (n=2) of athletes reporting having experienced this form of violence.

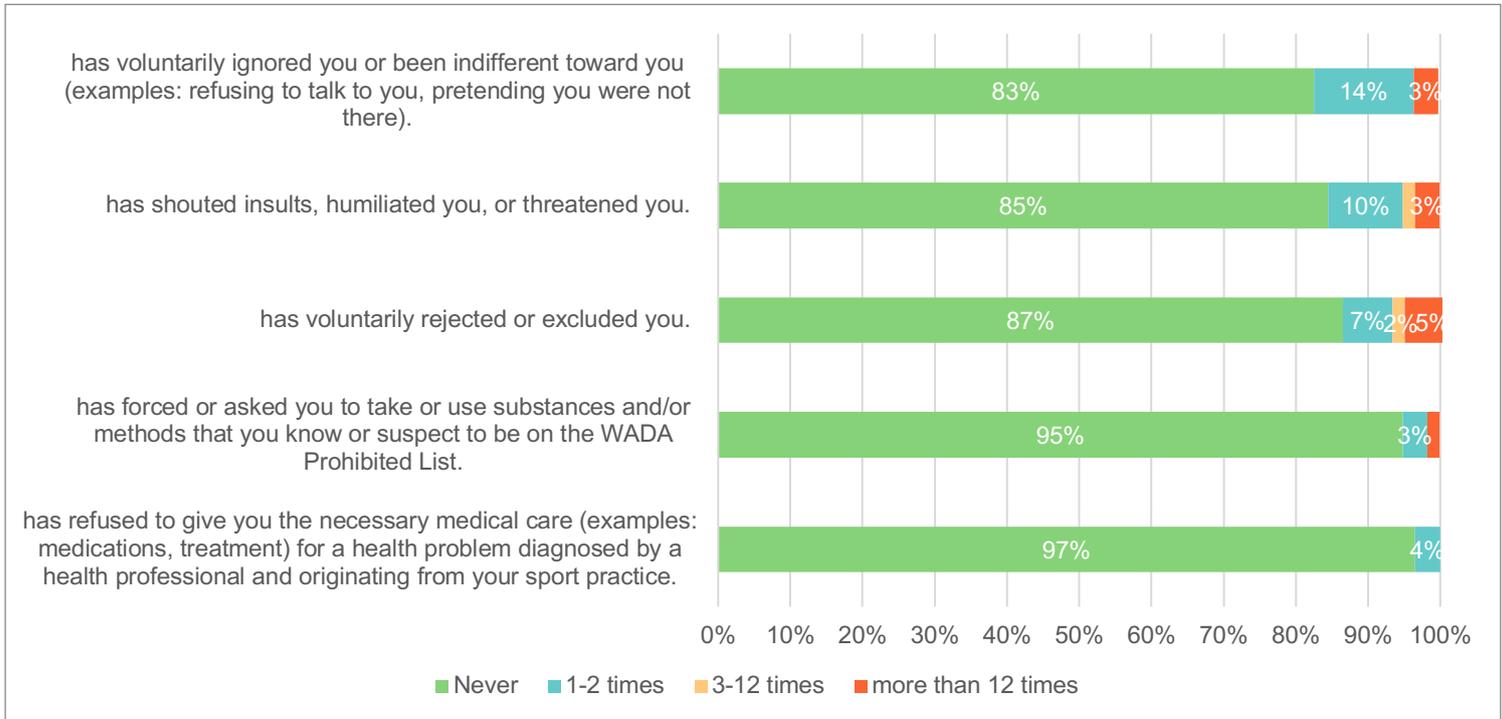


Figure 6 Experience of specific forms of psychological violence by authority figures in sport

Over half of the time, athletes reported that the perpetrator was a coach (53%). In most cases (86% of the time), the perpetrator was male (see Table 7).

The incident(s) happened outside a sports venue 52% of the time, with at a sports venue (24%) and online (14%) incidents being somewhat less common. Incidents were most common during the training phase, decreasing in prevalence towards the competition and post-competition phases.

Of these athletes, 12% reported that the incident did not affect them, with 23% reporting a negative impact on sports performance and 19% experiencing a negative social impact.

Importantly, 6 athletes indicated that at time of the event, these experiences were still ongoing. While the researchers were not able to contact these athletes, due to the confidentiality of the study, the questionnaire provided relevant safeguarding services and helplines in- and outside the IF.

3.3.2. Physical violence by authority figures

Physical violence by an authority figure was relatively uncommon, with the most prevalent form of physical violence being hitting, punching or kicking, or throwing an object (both forms reported by 4% or 2 athletes)⁸.

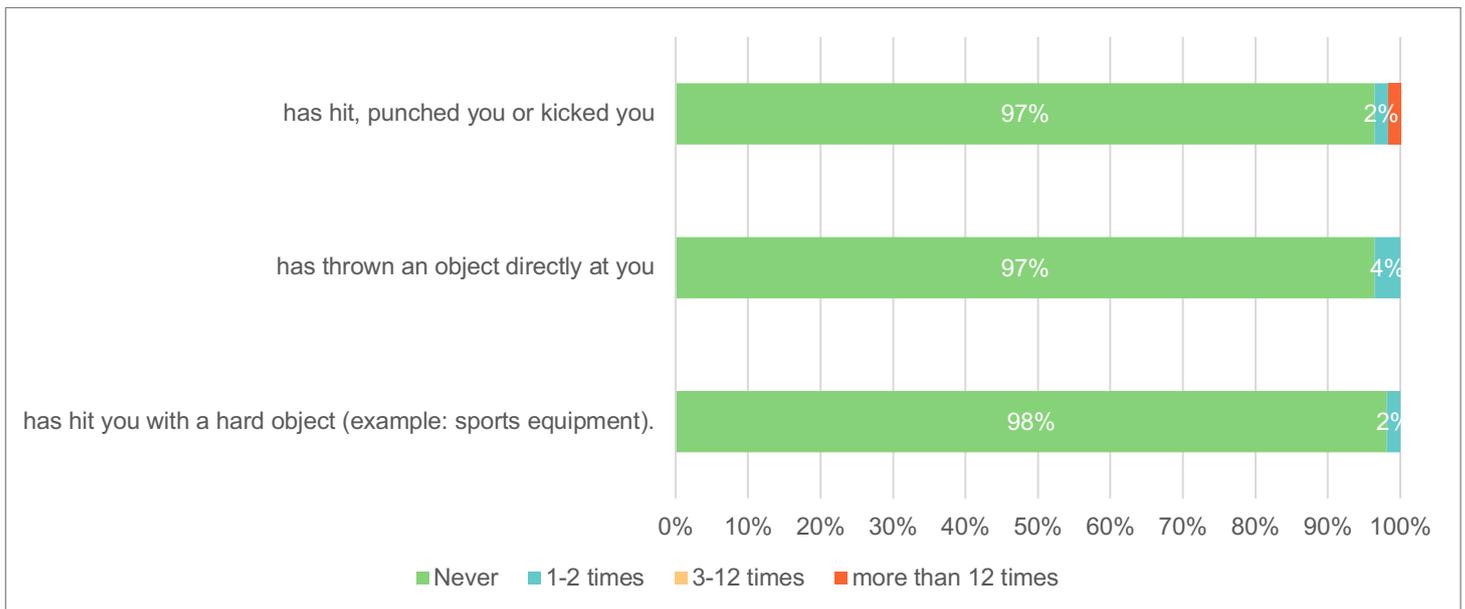


Figure 7 Experience of specific forms of physical violence by authority figures in sport

Response rates for follow up questions were low with only 1-3 responses per section; this makes extrapolation of outcomes difficult (see Table 7).

⁸ While the response rate is too low to quantify patterns, perpetrators were identified equally across various roles of authority figures.

3.3.3. Instrumental violence by authority figures

Instrumental violence by an authority figure was most commonly reported to be in the form of forcing the athlete to reach an ideal weight by unhealthy means (18% or 10 athletes), closely followed by forcing the athlete to train or compete against medical advice (16% or 9 athletes) and forcing the athlete to isolate from their social circles (14% or 8 athletes).

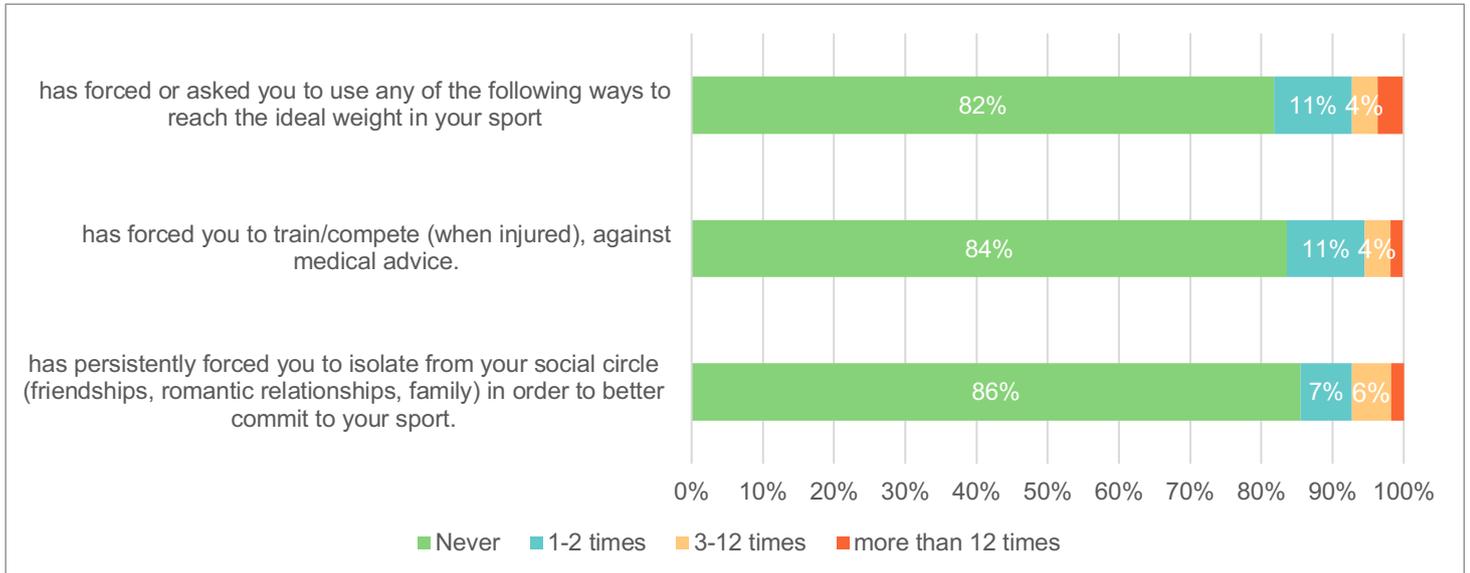


Figure 8 Experience of specific forms of instrumental violence by authority figures in sport

The perpetrator of instrumental violence was most often reported to be the athlete’s coach (47% of the time) and a male (82% of the time).

Athletes reported that this form of violence happened most often at a sports venue (53%).

Incidents were reported across all phases of the season with slightly higher prevalence during training and pre-competition phases.

These incidents of instrumental violence had negative effects across mental health (38%), social relations (21%), physical health (13%), as well as sports performance (29%).

Importantly, 8 athletes indicated that at time of the event, these experiences were still ongoing. While the researchers were not able to contact these athletes, due to the confidentiality of the study, the questionnaire provided relevant safeguarding services and helplines in- and outside the IF.

3.3.4. Sexual violence by authority figures

Sexual violence by an authority figure most commonly occurred in the form of online or face-to-face remarks about athlete’s sexual life, private life, or appearance (13% or 7 athletes), with other forms of sexual violence incidence ranging from 4 to 6% (or 2-4 athletes).

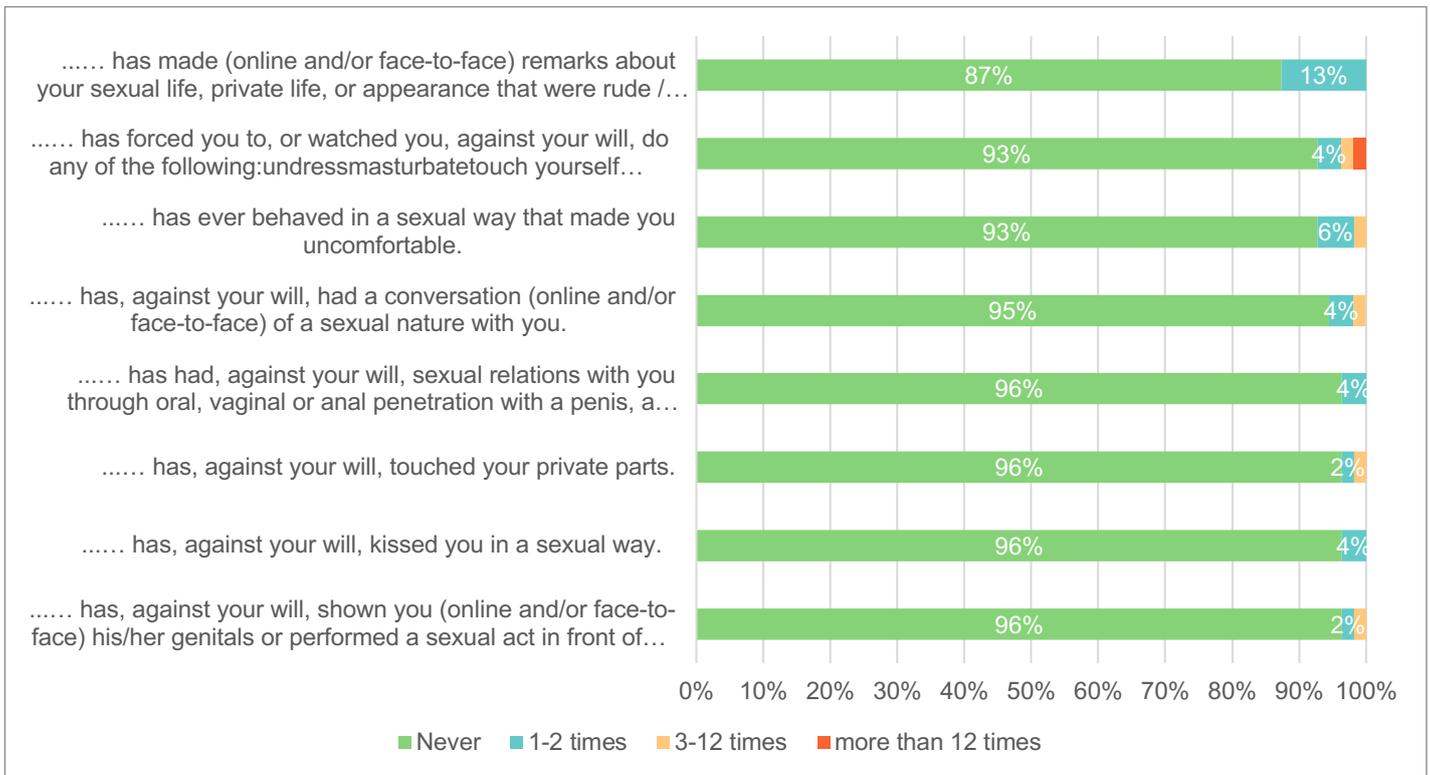


Figure 9 Experience of specific forms of sexual violence by authority figures in sport

Half of the athletes did not feel comfortable sharing the details of their perpetrator, with the other half reporting perpetration by members of the entourage, coach, and “other”. In 7 out of 8 cases, the perpetrator was a male.

Experiences of sexual violence by authority figures took place most often at a sports venue (50%) with less common locations being outside the sports venue and online. Incidents were most common during the pre-competition and training phases, with lower prevalence rates reported during competition and post-competition phases.

The most commonly reported negative effects of the incidents were related to mental health, reported by 45% of the respondents, followed by physical health and social relationships (18% each).

Importantly, 4 athletes indicated that at time of the event, these experiences were still ongoing. While the researchers were not able to contact these athletes, due to the confidentiality of the study, the questionnaire provided relevant safeguarding services and helplines in- and outside the IF.

Table 7 Circumstances of experiences perpetrated by authority figures

		Psycho logical (n)	Physic al (n)	Instrum ental (n)	Sexual (n)
Who did this to you?	Your coach (head or assistant, physical trainer)	10	1	7	1
	Para-medical and medical staff (physio, dietician, sports doc, psychologist...)	0	0	1	0
	Other in your entourage: administrators, managers, support staff, officials, referees...	4	0	3	2
	Parents	1	0	1	0
	An anonymous source online	0	0	0	0
	Other	0	1	0	1
	I do not feel comfortable sharing	4	1	3	4
What was their gender?	Man	12	2	9	7
	Woman	1	1	2	1
	Gender-diverse	1	0	0	0
Where did this happen?	Online	3	0	2	2
	At a sports venue (field, locker rooms...)	11	1	5	3
	Outside of the sports venue (parties, transport, at home/residence...)	5	1	8	5
	Other	2	1	0	0
When did this happen?	During the training phase	11	1	8	5
	During the pre-competition phase	9	1	8	6
	During the competition phase	7	1	6	2
	During the post-competition phase	4	0	3	1
Did it have a negative impact on you?	No	3	0	0	1
	Yes, mentally	10	3	9	5
	Yes, physically	2	1	3	2
	Yes, socially	5	0	5	2
	Yes, on my sports performance	6	0	7	1
Is it still happening to you today?	No	8	3	4	4
	Yes	6	0	8	4

Note: Prevalence is shown as numbers (n).

Importantly, as mentioned previously, a number of athletes indicated that at the time of the event, these experiences were still ongoing. While the researchers were not able to contact these athletes due to the confidentiality of the study, the questionnaire provided relevant safeguarding services and helplines in- and outside the IF.

3.4. Reporting

Two thirds of all athletes (66%) reported having access to a safe space or trusted person, with 13% reporting that they either do not have access or would not feel comfortable sharing and 21% not being sure about it.

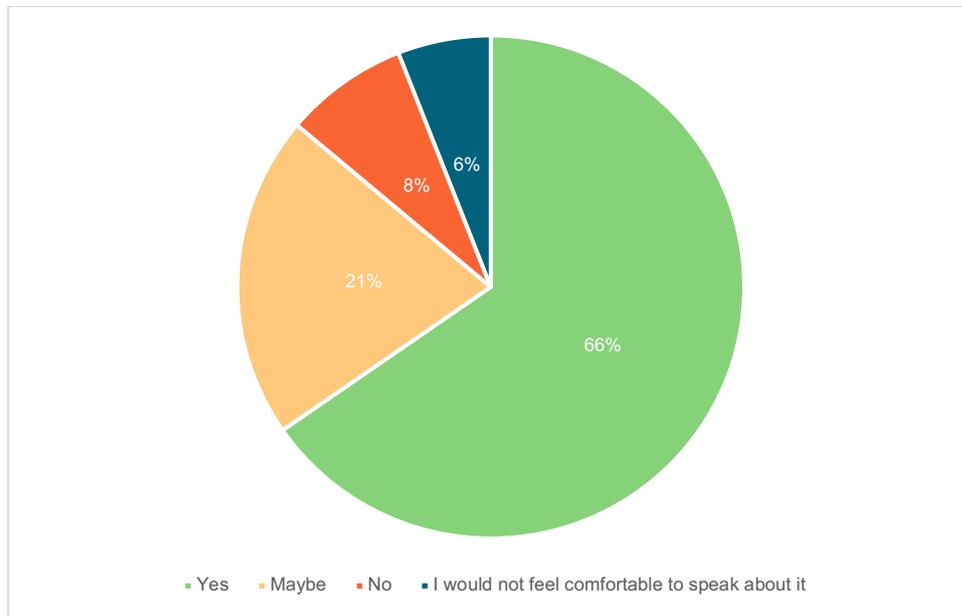


Figure 10 Access to a safe space or trusted person

Over half (53%) indicated awareness of the appropriate contact within their organization to report such incidents. However, 28% expressed uncertainty or would feel uncomfortable reaching out, while 19% remained unsure.

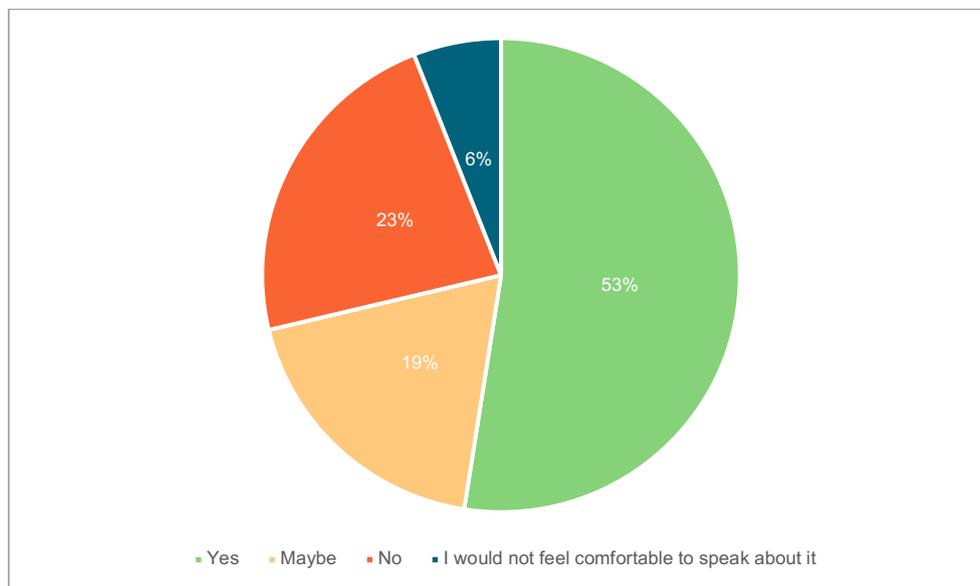


Figure 11 Knowing where to go to report

3.5. Incidence of self-reported health problems

Athletes were asked about a series of physical and mental health symptoms in the preceding 12 months. The questions have been grouped into three (physical health) and four (mental health) categories based on the type of complaint.

3.5.1. Reported physical health problems

Symptoms of non-infectious and infectious diseases as well as musculoskeletal injuries were reported by approximately 72% of the athletes. About 28% (n = 20) of this sample reported no physical health problems, while 43% (n = 31) reported problems related to infectious diseases, 39% (n = 28) related to musculo-skeletal problems and 60% (n = 43) related to non-infectious diseases.

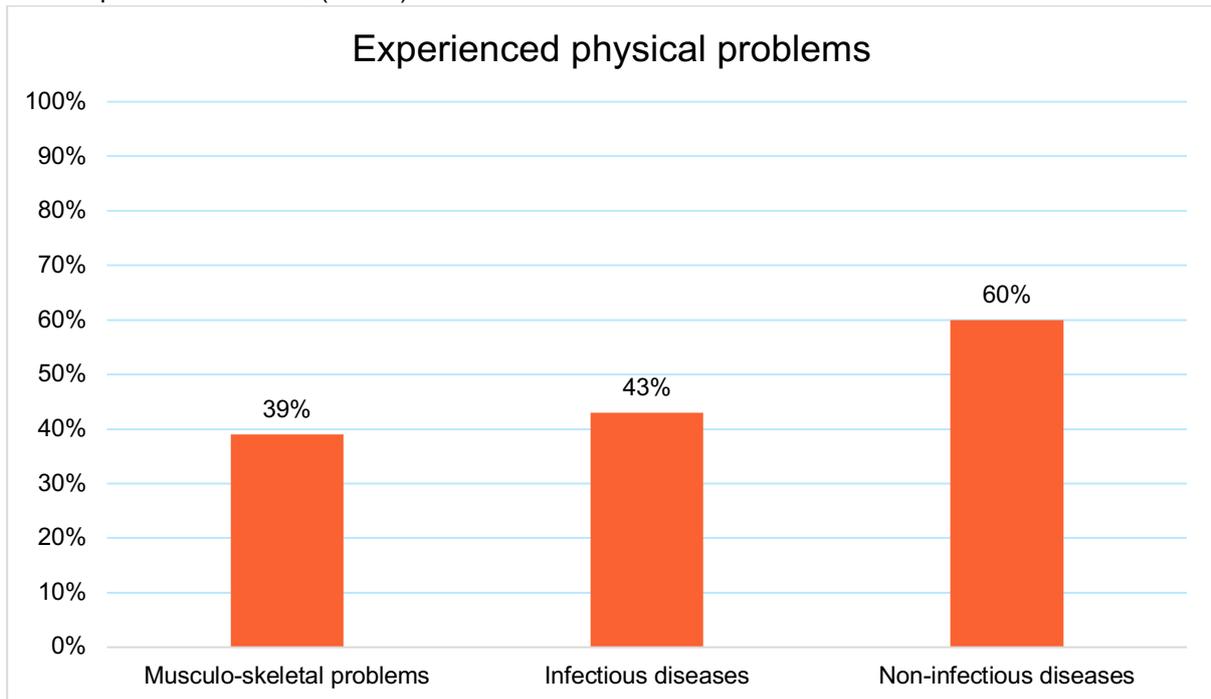


Figure 12 Experience of physical complaints

Note Orange bars represent the percentages of athletes experiencing physical health complaints in the last 12 month.

No statistical differences were found between sexes or continents.

Of those athletes who reported physical health symptoms, 20% said they very often or always trained with the complaint. When it comes to a medically diagnosed injury, 12% said they very often to always trained or competed with it.

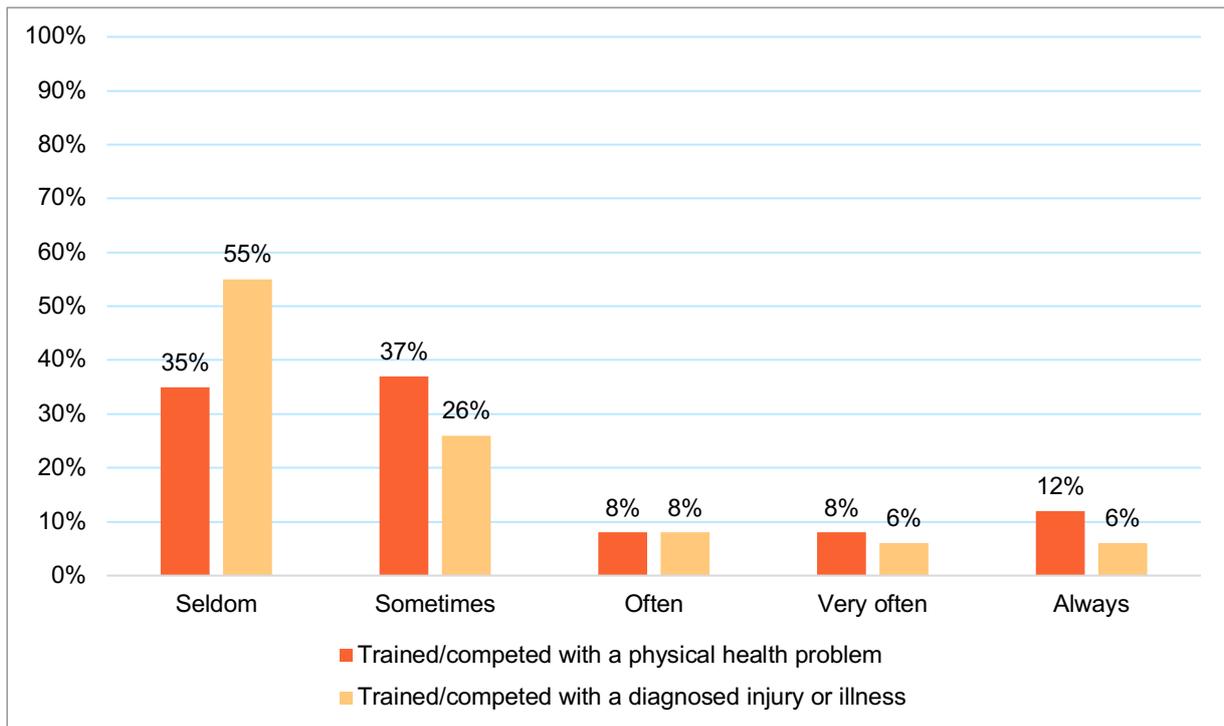


Figure 13 Training/competing with a physical health complaint or a diagnosed injury in the last 12 months

3.5.2. Reported mental health problems

Affective disorder related complaints (57%) and anxiety related complaints (54%) were the most common mental health experiences, followed by “other” (for example, sleep disturbances or eating disorders; 31%), with over a quarter (28%) reporting no mental health symptoms in the last 12 months⁹.

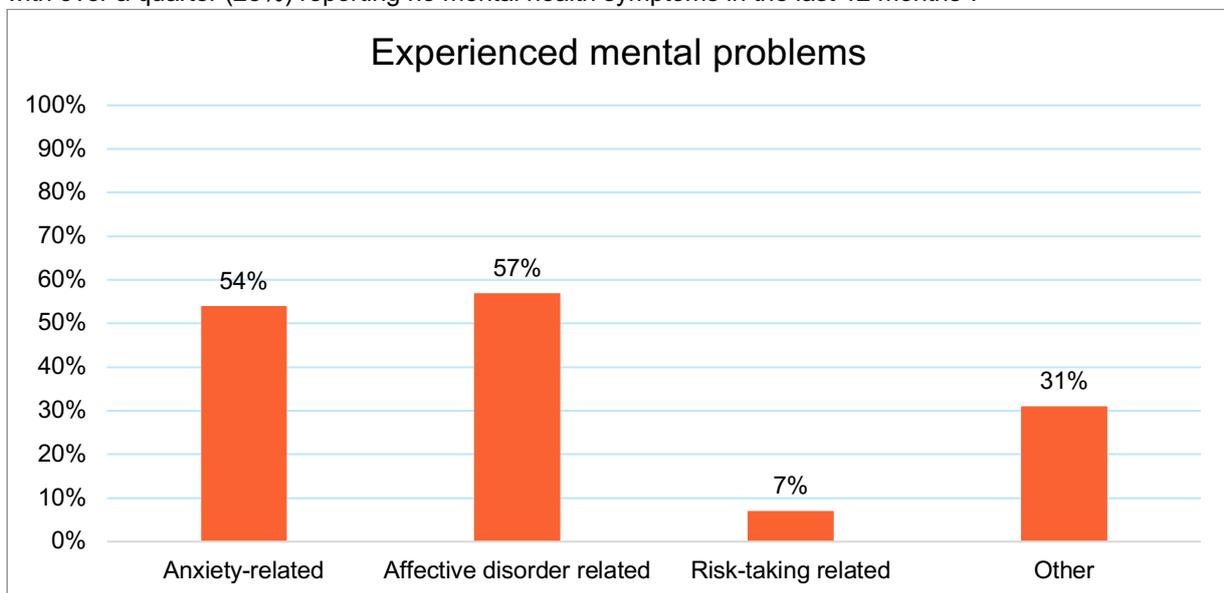


Figure 14 Experience of mental health problems

No statistical differences were found between participants in male vs female competition, or between continents.

⁹ It is important to note that we surveyed self-reported problems, and not official diagnoses of mental disorders. The diagnosis of a mental disorder requires time, severity, and functional impairment stipulations that were not collected in this study.

Of those athletes who reported a mental health symptom, 24% of athletes reported very often, or always having trained or competed with the complaint, while 28% said they seldom did. In case of a diagnosed mental health disorder, only 6% of athletes report always having trained or competed with it, with about 67% saying they seldom did.

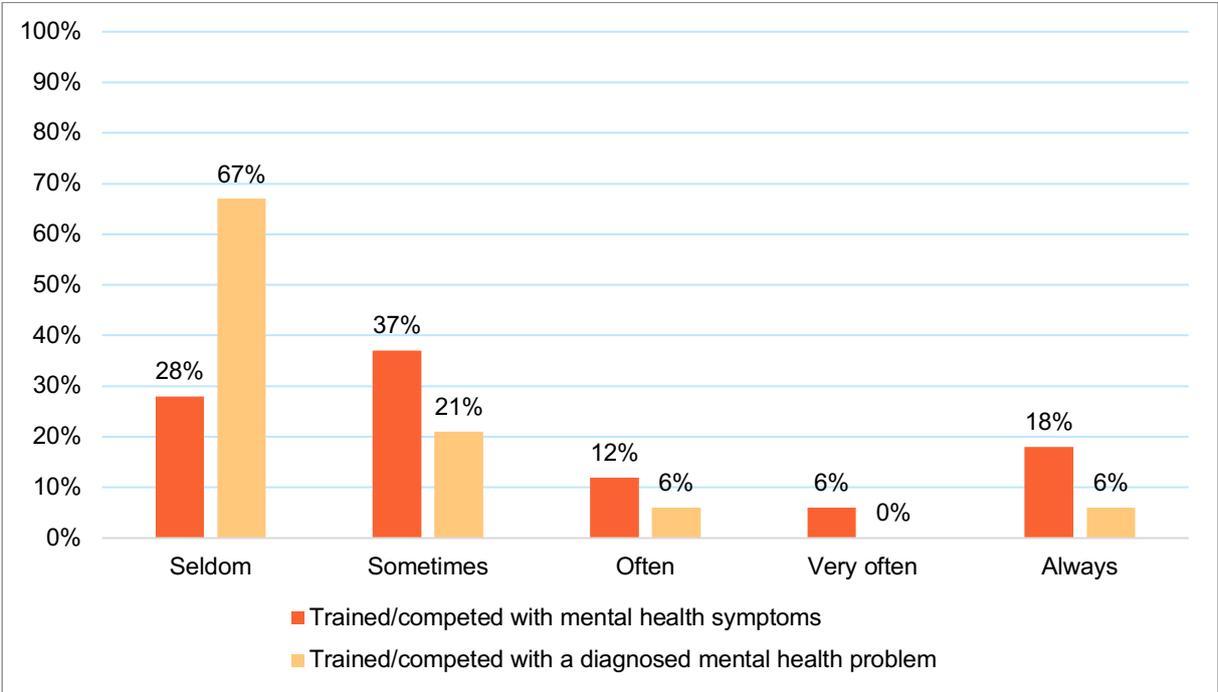


Figure 15 Training/ competing with a mental health complaint or a diagnosed mental health disorder in the last 12 months

3.6. Interpersonal violence and links with physical and mental health

The overall physical health complaints (both injury and illness) were found to be linked with mental health complaints (accumulation of all mental health symptoms), demonstrating the important relationship between physical health and mental health.

Interestingly and significantly, the overall VTAQ score was associated with both physical and mental health complaints. When an athlete experienced interpersonal violence by peer athletes, we also found an association with mental health and physical health. For interpersonal violence perpetrated by authority, the same results were found.

Furthermore, psychological, and physical violence perpetrated by peers/and authority was associated with both mental and physical health, while instrumental violence is only associated with mental health. No associations were found for sexual violence perpetrated by peers/and authority.

Table 8 Correlations between physical and mental health complaints and interpersonal violence

Variable 1	Variable 2	Pearson's correlation coefficient (r)*	p-value
Total VTAQ	Mental health	0.494	<0.001
	Physical health	0.350	0.003
IV by peers	Mental health	0.392	<0.001
	Physical health	0.379	0.001
IV by authority	Mental health	0.465	<0.001
	Physical health	0.259	0.49
Psychological violence	Mental health	0.531	<0.001
	Physical health	0.353	0.007
Physical violence	Mental health	0.345	0.009
	Physical health	0.377	0.004
Instrumental violence	Mental health	0.521	<0.001
	Physical health	0.209	0.126
Sexual violence	Mental health	0.246	0.072
	Physical health	0.208	0.132

Note: IV= interpersonal violence

*Pearson's correlation coefficient measures the strength of the relationships between two variables and is reported as a number between -1 and +1.

We further analysed if there was a link between mental health and physical health with interpersonal violence by means of a linear regression. Linear regressions determine a one-way relationship between variables, examining if experiencing interpersonal violence influences mental or physical health. All models and details can be found in Table 9.

We discovered robust links between experiences of interpersonal violence, measured by the VTAQ scales, and the occurrence of mental health problems. Essentially, when scores on the VTAQ scales (except for sexual violence) increase, athletes are more likely to report mental health problems. This pattern is similar when examining the relationship between experiences of interpersonal violence (except for instrumental

and sexual violence) and the occurrence of physical health problems. The higher the scores on the VTAQ scales, the more likely athletes are to report physical health problems.

For each of the models for both mental and physical health, we controlled for participants in male versus female events. Participation in male versus female events did not have a significant contribution in the models, meaning that the significant increases do not differ depending on participation in male versus female events.

Table 9 Linear regression analyses demonstrating the relationship between experiencing various forms of interpersonal violence and physical or mental health symptoms

Model No.	Model with dependent variable Mental health symptoms	Unstandardized coefficients	p-value
1.	Total VTAQ	0.386	< 0.001
2.	VTAQ Authority	0.465	< 0.001
3.	VTAQ Athlete	0.697	< 0.001
4.	Psychological IV	0.755	< 0.001
5.	Physical IV	2.478	0.009
6.	Instrumental IV	1.672	< 0.001
7.	Sexual IV	0.455	0.072
	Model with dependent variable Physical health symptoms	Unstandardized coefficients	p-value
1.	Total VTAQ	0.188	0.003
2.	VTAQ Authority	0.174	0.049
3.	VTAQ Athlete	0.465	0.001
4.	Psychological IV	0.335	0.007
5.	Physical IV	1.769	0.004
6.	Instrumental IV	0.438	0.126
7.	Sexual IV	0.253	0.132

Note: IV = interpersonal violence

4. Conclusions

The application of the study to elite athlete experiences with harassment, abuse, illness, injury and mental health in World Rowing revealed novel findings in this unique elite athlete population. Given the low response rate, the responding participants may not be representative of the entire elite rowing athlete population. However, the insights learned from the 72 responses provide valuable insight in the well-being of elite rowers, the nature of their current experiences of interpersonal violence and the impacts of these experiences.

4.1. Main findings

72 rowers completed the questionnaire, representing a 3% response rate.

One in two rowers surveyed experienced at least one form of interpersonal violence by peer athletes in the past year. Over one in three rowers surveyed in this study reported a past year experience with interpersonal violence by a person in a position of authority in the context of sport. Both for violence by peers and by authority figures, psychological forms of violence were most often reported.

Table 10 Main findings

The following table summarizes the experiences of rowers over the previous 12 months (incidence):

Experiences with interpersonal violence by peers	Experiences with interpersonal violence by authority figures
<p>Half reported experiencing harassment and abuse by peers with psychological violence being the most common (47%), followed by sexual violence (21%). Peer-to-peer harassment and abuse was more common than by authority figures in sport.</p>	<p>One third (35%) reported experiencing harassment and abuse by a person in a position of authority with psychological violence being most commonly reported (28%), followed by instrumental (23%), sexual (16%), and physical violence (5%).</p>
Psychological violence	
<ul style="list-style-type: none"> □ Reputational harm by spreading rumours or hurtful comments, as a form of psychological violence, was the most common form of psychological violence reported and was experienced by almost one third (28%) of respondents □ Psychological violence most often occurred at the sports venue, followed by incidents outside the venue and was more common during the training phase. □ Over two thirds (72%) indicated a negative impact from their experiences of harassment and abuse (mentally (28%), social life/relationships (23%), sports performance (14%) and physical health (7%). 	<ul style="list-style-type: none"> □ The most commonly reported form of psychological violence was indifference towards the athlete (17%) and the least commonly reported form was refusal to give the athlete necessary medical care (2%). □ Over half (53%) of the time, athletes reported that the perpetrator was a coach, and most often male in gender (86%). □ The incident(s) happened outside a sports venue most often (52%), followed by at a sports venue and online. They were most common during the training phase. □ Only 12% reported that the incident did not affect them, with approximately one quarter (23%) reported a negative impact on sports performance and one fifth (19%) experienced a negative impact on their social life.

Physical violence

<p>No reports of physical violence by peers were made.</p>	<ul style="list-style-type: none"> <input type="checkbox"/> Physical violence by an authority figure was relatively uncommon (only 2 athletes), with the most prevalent form of physical violence being hitting, punching, or kicking, or throwing an object
--	---

Instrumental violence

<p>Instrumental violence, by definition, is not perpetrated by peer athletes, only authority figures, therefore this field is purposefully absent of results.</p>	<ul style="list-style-type: none"> <input type="checkbox"/> Instrumental violence by an authority figure was most commonly reported to be in the form of forcing the athlete to reach an ideal weight by unhealthy means (18%), forcing the athlete train or compete against medical advice (16%), and forced social isolation (14%). <input type="checkbox"/> The perpetrators were most often reported to be the athlete’s coach (47%) and a male in gender (82%), occurring most often at a sports venue (53%) during all phases of the season. <input type="checkbox"/> These incidents had negative effects across mental health (38%), social relations (21%), physical health (13%), and sports performance (29%).
---	--

Sexual violence

<ul style="list-style-type: none"> <input type="checkbox"/> The most common form of sexual violence by peers were online or face-to-face remarks about athlete’s sexual life, private life, or appearance (13%). No forced physical sexual relations were reported. <input type="checkbox"/> Incidents occurred most frequently at a sports venue (50%). <input type="checkbox"/> An equal number reported that the experience did and did not have a negative influence on their mental or physical health, or their sports performance. 	<ul style="list-style-type: none"> <input type="checkbox"/> Sexual violence by an authority figure most commonly occurred in the form of online or face-to-face remarks about athlete’s sexual life, private life, or appearance (13%). <input type="checkbox"/> Half of the athletes did not feel comfortable sharing the details of their perpetrator, with the other half reporting perpetration by members of the entourage, coach, and “other”, most commonly men. <input type="checkbox"/> These experiences occurred most often at a sports venue (50%) during the pre-competition and training phases. <input type="checkbox"/> The most commonly reported negative impacts were related to mental health (45%), followed by physical health (18%) and social relationships (18%).
--	--

Online/Cyber Abuse

- Cyber abuse or online mechanisms were used to perpetrate sexual abuse by peers (13%) and authority figures (13%), as well as psychological abuse by peers (2%) and authority figures (14%).

Reporting

- Only two thirds (66%) of respondents reported having access to a safe space or trusted person, and one third (34%) said they did not have access or were unsure.
- Over half (53%) indicated awareness of the appropriate contact within their organization to report such incidents. However, 28% expressed uncertainty or would feel uncomfortable reaching out, while 19% remained unsure. These are concerning findings.

Physical and mental health status

- Almost three quarters (72%) of the rowers reported a physical complaint over the past 12 months. Non-infectious illness was the most common physical complaints (60%) followed by infectious illnesses (43%) and musculoskeletal injuries (39%).
- Over half (57%) of the study population reported affective related complaints (low mood) and anxiety related complaints (54%), while one third complained of sleep disturbances or an eating disorder/disordered eating behaviour (31%).
- Rowers with these health problems continued to train and compete throughout the past 12 months.

Relationship between physical/mental health and harassment and abuse

The associations between harassment and abuse and athlete physical and mental health are very important outcomes of this study, demonstrating the urgent need to address harassment and abuse in this cohort given the physical and mental health associations:

- The physical health complaints (injury and illness) were found to be linked with mental health complaints (i.e., an athlete with a physical health complaint was more likely to also have a mental health complaint, and vice versa).
- The overall score of harassment and abuse on the VTAQ was associated with both physical and mental health demonstrating the link between abuse and health outcomes.
- Experiencing harassment and abuse (both by peer athletes as well as by authority figures), except for sexual violence, was associated with higher reporting of mental health complaints.
- Experiencing harassment and abuse (both by peer athletes as well as by authority figures), except for instrumental and sexual violence, was associated with higher reporting of physical health complaints.

4.2. Take-aways

1. Even though the response rate in this study is relatively low, every single incident of harassment and abuse in sport is one too many. The findings show that harassment and abuse is indeed an existing problem in elite rowing.
2. Most concerningly, some rowers surveyed reported that the experiences of harassment and abuse were ongoing.
3. Psychological violence is the most common form of harassment and abuse experienced by this cohort of elite athletes over the past year.
4. Peer-to-peer interpersonal violence is more common than harassment and abuse by authority figures in this sample of rowers.
5. Experiencing harassment and abuse negatively influences rower's mental health, physical health, social relationships, and performance.
6. Over one quarter (28%) of the rowers surveyed were either unsure or did not know where to report or felt uncomfortable experiences of harassment and abuse. This is an alarming finding.
7. Over half of elite rowers surveyed suffered a physical complaint in the 12 months prior to the event and over half suffered symptoms of low mood and/or anxiety. Rowers continue to train and compete with these health complaints, as reported by the participants in this study.
8. Experiencing harassment and abuse by both peers and authority figures increased the odds of the rowers having both mental and physical complaints.
9. Psychological and physical violence perpetrated by peers/and authority were associated with both negative mental and psychical health, while instrumental violence is only associated with mental health.
10. Implementation of this questionnaire at World Rowing events was feasible, however changes in implementation strategy are warranted to realize a higher response rate. This may include implementation of the questionnaire at pre-event at training camps, and/or designating a researcher on-site who is solely responsible for athlete engagement to encourage participation.

-  Interventions to address the specific characteristics of harassment and abuse are needed.
-  Further investigation into the causes and circumstances of the physical and mental health symptoms would assist World Rowing in developing intervention strategies to mitigate these health concerns to improve athlete health and sports performance.
-  Ongoing monitoring/ surveillance of physical and mental health, as well as experiences of harassment and abuse are indicated to assess for effectiveness of interventions and to monitor for changing trends.

5. References

- Krug, E. G., Dahlberg, L. L., Mercy, J. A., Zwi, A. B., & Lozano, R. (2002). *World report on violence and health*. World Health Organization.
- Mountjoy, M., Junge, A., Bindra, A., Blauwet, C., Budgett, R., Currie, A., Engebretsen, L., Hainline, B., McDuff, D., Purcell, R., Putukian, M., Reardon, C. L., Soligard, T., & Goutteborge, V. (2023). Surveillance of athlete mental health symptoms and disorders: A supplement to the International Olympic Committee's consensus statement on injury and illness surveillance. *British Journal of Sports Medicine*, 57(21), 1351–1360. <https://doi.org/10.1136/bjsports-2022-106687>
- Mountjoy, M., Junge, A., Magnusson, C., Shahpar, F. M., Ortiz Lizcano, E. I., Varvodic, J., Wang, X., Cherif, M. Y., Hill, L., & Miller, J. (2022). Beneath the Surface: Mental Health and Harassment and Abuse of Athletes Participating in the FINA (Aquatics) World Championships, 2019. *Clinical Journal of Sport Medicine*, 32(2), 95–102. <https://doi.org/10.1097/JSM.0000000000000971>
- Parent, S., Fortier, K., Vaillancourt-Morel, M.-P., Lessard, G., Goulet, C., Demers, G., Paradis, H., & Hartill, M. J. (2019). Development and initial factor validation of the Violence Toward Athletes Questionnaire (VTAQ) in a sample of young athletes. *Society & Leisure*, 42(3), 471–486. <https://doi.org/10.1080/07053436.2019.1682262>
- Ray, L. J. (2011). *Violence & society*. London: Sage.
- Vertommen, T., Decuyper, M., Parent, S., & Paradis, H. (2022). Validation of the Dutch (Flemish) version of the Violence Towards Athletes Questionnaire (VTAQ). *Loisir et Société / Society and Leisure*, 1–19. <https://doi.org/10.1080/07053436.2022.2097381>



CONTACT

Tine Vertommen & Margo Mountjoy | Principal investigators

tine.vertommen@thomasmore.be

Tel. + 32 494 129 545

mmsportdoc@mcmaster.ca

Tel. +1 226 971 2940

