



Attention:

Tom Dielen

Secretary General World Archery

Lausanne, 21st March 2024

ASOIF Harassment & Abuse Pilot Study – World Archery

Dear Tom,

As you know there has been growing concern in recent years regarding athletes' experience of psychological, physical, sexual harassment, abuse and neglect in sport. Against that background, ASOIF has led a pilot study into elite adult athlete experiences with harassment and abuse in sport. The project would be guided by three overarching goals:

1. Assess the incidence and characteristics of elite athlete harassment and abuse:
2. Develop, test and evaluate a new study methodology: and
3. Inform sport safeguarding policies.

The ASOIF Council approved the initiative and the pilot study was finally conducted, in collaboration with Thomas More University, Belgium and McMaster University, Canada, during the course of 2023 with six participating IFs (World Archery, World Aquatics, World Rowing, World Rugby, IGF and ITF).

Following the conclusion of the project, it gives me great pleasure to send World Archery through the following two documents:

- Executive Summary.
- Final report into elite adult athlete health and safe sport experiences in archery.

I hope that the report provides you and the World Archery Executive Board with timely and detailed information regarding elite archers' recent exposures to harassment and abuse, as well as their health challenges. Hopefully the information will serve as a helpful resource to guide your athlete safeguarding strategy.

We are very grateful for the invaluable contribution of World Archery staff, particularly Siret Luik, who contributed their time and efforts throughout the project.

We have collectively learnt a great deal during the pilot study and discussions will take place over next steps.



May I suggest that you follow up with Dr. Margo Mountjoy and Dr. Tine Vertommen if you have any questions on the content of the report.

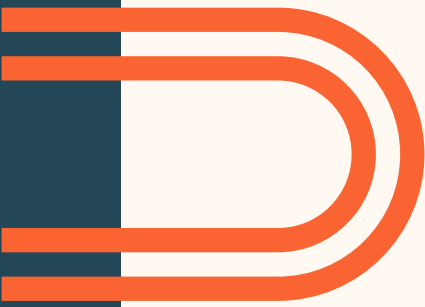
Thank you very much once again. We look forward to working with you again in future.

With very kind regards

James Carr
Deputy Executive Director

CC:

Francesco Ricci Bitti, President, ASOIF
Dr. Margo Mountjoy, AMSCG Chair, ASOIF
Dr. Tine Vertommen, Criminologist, Thomas More



ELITE ADULT ATHLETE HEALTH AND SAFE SPORT EXPERIENCES IN ARCHERY

Executive Summary

March 2024



PROJECT OBJECTIVES

In light of growing concern regarding athletes' experiences of psychological, physical, sexual harassment, abuse, and neglect, the World Archery Federation, in collaboration with ASOIF, took decisive action to measure the extent of the problem, as a first action to safeguard athletes through implementation of this pilot project.

This project aimed to evaluate elite archers' past year experiences and contextual factors around harassment, abuse, injuries, illnesses, and mental health challenges. The ultimate objective was to equip the World Archery Federation 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 the World Archery Federation to enhance and refine its athlete safeguarding strategies effectively.

METHODOLOGY

A self-report questionnaire was developed consisting of three sections:

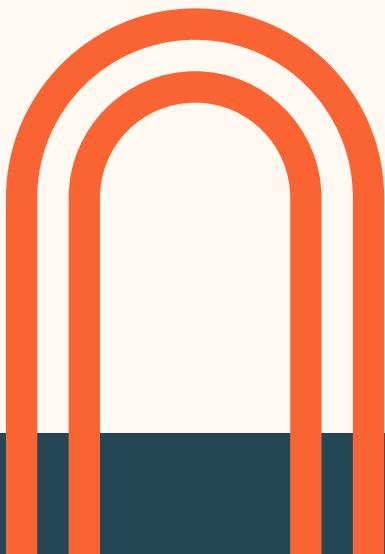
1. socio-demographic and sport characteristics of the participants;
2. questions on physical and mental health over the past year,
3. questions on experiences with in-person and online harassment and abuse in sport over the past year, the circumstances, and their reporting behaviour based on an internationally validated questionnaire (Violence Towards Athletes Questionnaire, Parent et al., 2019).

Four types of harassment and abuse were surveyed:

- psychological (e.g., insults, threats, humiliations);
- physical (e.g., hitting, pushing, punching);
- instrumental (e.g., forced weight-reducing practices, forced isolation, forced training against medical advice);
- sexual (e.g., sexual remarks, behaviours without consent).

Targeted participants were athletes (18y+) participating in the World Archery Championships 2023 held in Berlin, Germany (31 July – 6 August 2023), and the World Para Archery Championships 2023 held in Pilsen Czech Republic (17-23 July 2023).

In the unlikely event that the content of the questionnaire triggered concerns for the athlete, athlete support was available through the World Archery Event Safeguarding Officer, Organizing Committee Medical Services, World Archery Sports Medicine representatives on site, National Federation Medical Team and an anonymous helpline embedded in the questionnaire.



KEY RESULTS

A total of 172 archers completed the survey, representing a 23% response rate (94 (M) and 78 (F)).

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

Experiences with harassment and abuse by peer athletes	Experiences with harassment and abuse by authority figures
<ul style="list-style-type: none"> Half (52%) reported experiencing harassment and abuse by peers with psychological abuse being the most common (47%), followed by sexual abuse (18%). Peer-to-peer harassment and abuse was more common than by authority figures in sport. Female athletes (71%) reported more harassment and abuse than male athletes (29%). 	<p>Just less than one third (29%) reported experiencing harassment and abuse by a person in a position of authority with psychological abuse being most commonly reported (22%), followed by instrumental (8%), sexual (8%), and physical abuse (1%).</p>
Psychological abuse	
<ul style="list-style-type: none"> Being excluded from a group, as a form of psychological abuse, was the most common form of psychological abuse reported and was experienced by almost one third (29%) of respondents Over three quarters (83%) indicated a negative impact from their experiences of abuse (mentally (39%), social life/ relationships (22%), sports performance (18%) and physical health (5%). 19 athletes (32%) reported that the psychological abuse was ongoing at the time of the survey. 	<ul style="list-style-type: none"> The most commonly reported form of psychological abuse was indifference towards the athlete (17%). Over one quarter (28%) of the time, athletes reported that the perpetrator was a coach, and an equal number was a member of the entourage; and most often male (61%) Only 14% reported that the incident did not affect them, with approximately one third (37%) reported a negative impact on their mental health, 25% on their sports performance, and 18% on their social life, 17 athletes (55%) reported that the psychological abuse was ongoing at the time of the survey.
Physical abuse	
<ul style="list-style-type: none"> Only four reports of physical abuse by peers were made, and 2 athletes reported that it was ongoing at the time of the survey.* 	<ul style="list-style-type: none"> Physical abuse by an authority figure was relatively uncommon being reported by only 1% of the athlete cohort.*
Instrumental abuse	
<p>Instrumental abuse, 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"> 6% archers reported being forced to isolate themselves from their social circles 5% reported being forced to train or compete against medical advice. 6 athletes stated that the instrumental abuse was ongoing at the time of the survey.

Sexual abuse

- | | |
|--|---|
| <ul style="list-style-type: none"> • The most common form of sexual abuse 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. • Resulting from the sexual abuse, 14 athletes reported a negative impact to their mental health, 2 to their sports performance, and 2 to their physical health • At the time of survey, 10 athletes reported that the abuse was still ongoing. | <ul style="list-style-type: none"> • Sexual abuse 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 (6%). • 1% reported unwanted kissing and 1% reported sexual behaviours that made the athlete uncomfortable • One athlete stated that the sexual abuse was ongoing at the time of the survey |
|--|---|

*As the number of archers reporting physical abuse by peer players and authority figures was so low, further analysis of circumstances is not reliable and thus is not reported.

Online/Cyber abuse

- Cyber abuse or online mechanisms were used to perpetrate psychological (n=37) and sexual abuse by peers (n=7).
- For abuse perpetrated by authority figures, online mechanisms were reported for psychological (n=17), physical (n=1), instrumental (n=8) and sexual (n=4) abuse.

Reporting

- Over three quarters (82%) of respondents reported having access to a safe space or trusted person, 7% were either uncomfortable sharing or had no safe space. 11% were unsure.
- Two thirds (67%) indicated awareness of the appropriate contact within their organization to report such incidents. The remaining 15% unsure, 12% did not know, and 6% were uncomfortable to speak up.

Physical and mental health status

- Over three quarters (91%) of the archers reported a physical complaint over the past 12 months. Infectious illness was the most common physical complaint (56%) followed by three quarters (76%) reporting non-infectious illness, and one half reporting a musculoskeletal injury (48%).
- Over three quarters (85%) of the study population reported a mental health symptom in the last 12 months. Affective related complaints (low mood) (70%) anxiety related complaints (66%) were common, while 40% complained of other symptoms such as sleep disturbances or an eating disorder/disordered eating behaviours.
- Female archers reported more non-infectious, anxiety and low mood than males. Europeans had more non-infectious illnesses and mental health symptoms than archers from Asia or North America.
- One quarter of archers (26%) very often or always trained and competed with their physical and/or mental health symptoms

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), was associated with higher reporting of mental health as well as physical complaints.
- The higher the VTAQ scores (greater experiences with harassment and abuse), the higher the likelihood of both physical and mental health problems.
- Female archers had more physical and mental health symptoms with all types of harassment and abuse in comparison with male archers.

TAKE-AWAYS

1. 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 archery.
2. Most concerning, some archers reported that the experiences of harassment and abuse were ongoing.
3. Psychological abuse 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 abuse is more common than harassment and abuse by authority figures.
5. Experiencing harassment and abuse negatively influences archer's mental health, physical health, social relationships, and sports performance.
6. One third of the archers were either unsure or did not know where to report experiences of harassment and abuse.
7. Over 90% of elite archers suffered a physical complaint in the 12 months prior to the event and 85% reported experiencing mental health symptoms. Female archers experienced greater more physical and mental health symptoms than male archers.
8. Experiencing harassment and abuse by both peers and authority figures increased the odds of the archers having both mental and physical complaints.
9. The higher the VTAQ score (experience of abuse) increased the likelihood of having both physical and mental health problems.
10. Female archers had more physical and mental health symptoms associated with all types of harassment and abuse in comparison with male archers.
11. Implementation of this questionnaire at World Archery 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 Archery 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.

THOMAS
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COMMISSIONED BY ASOIF

Elite adult athlete health and safe sport experiences in archery

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

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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 Archery 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.

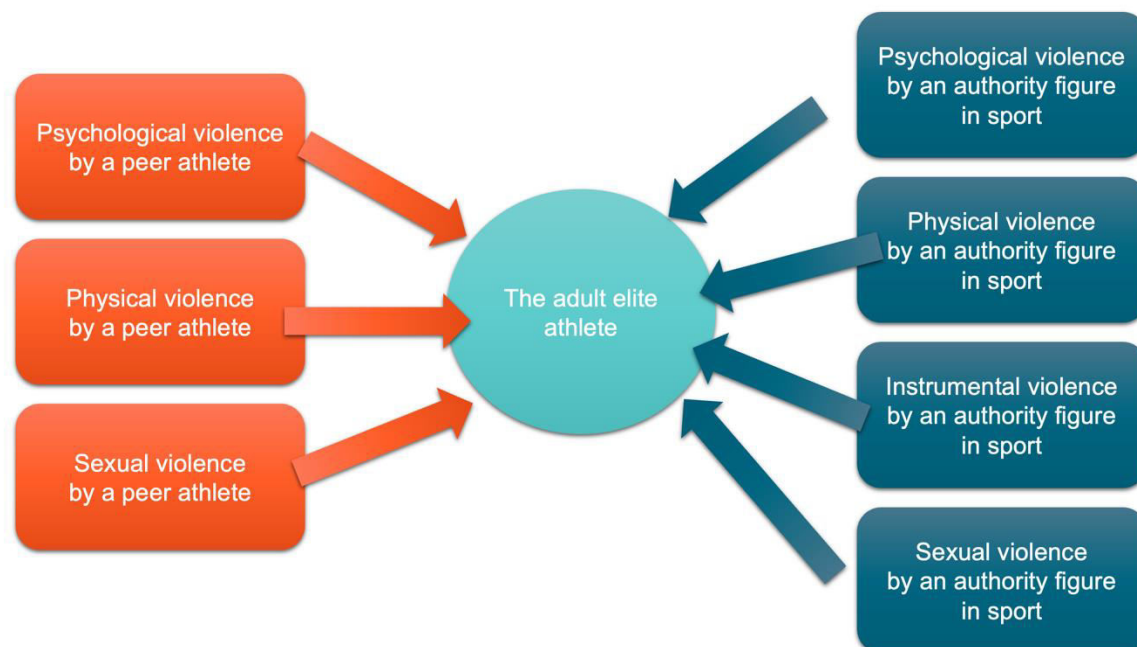


Figure 1 Types of interpersonal violence (harassment and abuse) surveyed

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 Archery, the English questionnaire was then **translated** into Arabic, Chinese, French, Japanese, Portuguese, Russian and Spanish. 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

The study focused on major World Archery events:

1. The World Archery Championships 2023 (Berlin, 31st of July to 6th of August 2023)
2. The World Para Archery Championships 2023 (Pilsen, 17th of July to 23rd of 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 Archery representatives responsible for on-site implementation.

World Archery's responsibilities extended to two key areas:

1. Promotional Material Development and Distribution:

- Targeting elite adult athletes, promotional materials (posters with QR codes, banners, etc.) were strategically placed at various event locations: information boards in the hotel lobby and in the dining area and transport pick up area in the venue. For the first half of the competition week, safeguarding officers were on-site to engage with coaches and athletes personally, recognizing the efficacy of personal connections in recruitment. These safeguarding officers were former athletes to improve recognition and familiarity with the cultural context.
- The questionnaire, facilitated through QuestionPro software, was accessible to athletes through QR codes or hyperlinks provided on promotional materials both online and in print.

2. Communication and Briefing:

- World Archery 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 meetings.
- The questionnaire link remained open for 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 updates of data collection, including updates on response numbers and the geographical distribution of participants. This information was shared with the World Archery 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 Archery, 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 781 athletes, of which 747 were adults, participated in the two selected World Archery events over the summer of 2023. During the event, a total of 275 responses by athletes were collected. Seven athletes were excluded from the analysis due to being under 18 years of age. Study participants who did not complete the health questions at the start of the survey (n=96) were also excluded from the analysis.

A final sample of 172 (78 females, 94 males) athletes was achieved, representing a response rate of 23% of all athletes at the event. Characteristics of the study participants are presented in Table 5.

Table 5 Characteristics of athletes included in the analysis

	Female event participant	Male event participant
N	78	94
Para-athlete (n)	6	15
Age (M, SD)	27.7 ±8.3	31.7 ± 10.5
Continent live & train (n)		
Asia	16	15
Europe	36	48
Africa	0	3
North-America	15	15
South-America	5	5
Oceania	1	5
Continent representing (n)		
Asia	15	15
Europe	36	45
Africa	1	4
North-America	15	15
South-America	5	5
Oceania	1	5

Overall, 172 athletes (78 females, 94 males) representing countries across Europe (50%), Asia (19%), North America (19%), South America (6%), Africa (3%) and Oceania (3%) were included in the final analysis⁵. The database included 21 para-athletes, who were included in the overall analysis together with athletes not classified as para-athlete due to the small sample size.

⁵ Five female participants and five male participants did not report in the country they represented.

3.2. Experiences with interpersonal violence perpetrated by peer athletes

Eighty-nine athletes (52%) reported experiencing some form of interpersonal violence by peers. Psychological violence was the most common (47%), followed by sexual violence (18%) and physical violence (3%).

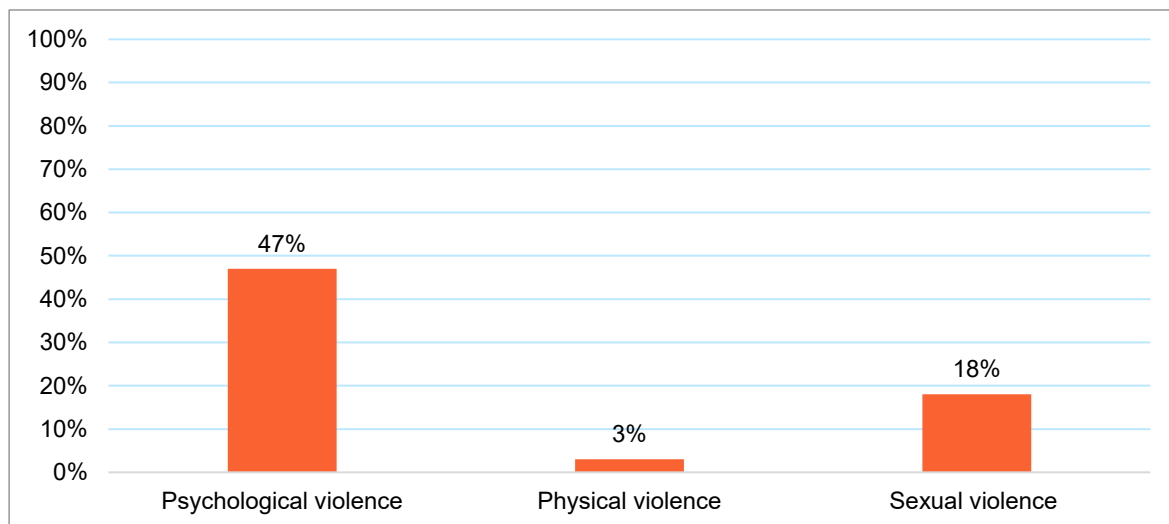


Figure 2 Experience of interpersonal violence by peers

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

Participants in female events (71%) reported more past year experiences with sexual violence, compared to participants in male events (29%; $p = <.05$). No differences were found for the other forms of violence, nor differences based on participants' continent.

3.2.1. Psychological violence by peer athletes

Within psychological violence, the most common form reported was being excluded from the group (29% or n = 50). The least common form of psychological violence was having had personal items stolen or broken with 3% (n=5) 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.

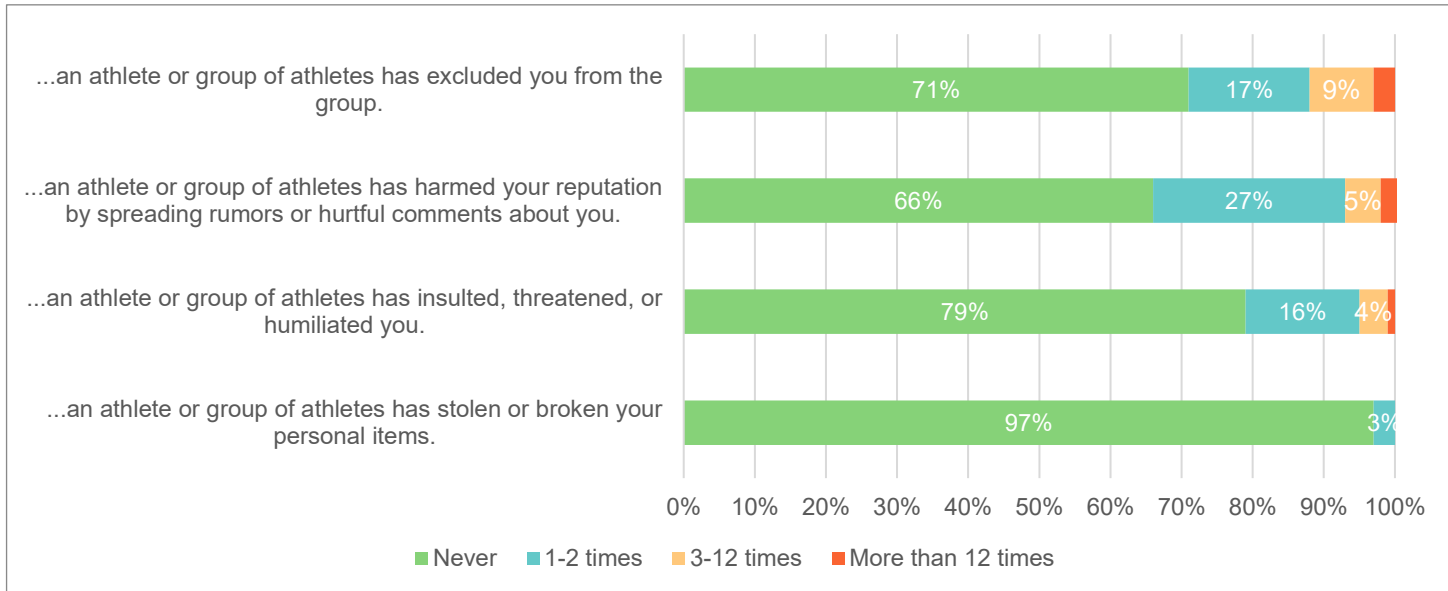


Figure 3 Experience of specific forms of psychological violence by peers

Most often, psychological violence by peers occurred at a sports venue (40%), closely followed by incidents outside of the venue (39%) (see Table 6). Psychological violence was most common during the training phase (30%), closely followed by all phases of the competition (range 21% - 26%).

While 17% of athletes experiencing this form of violence report that it did not influence them in any way, 83% of athletes expressed a negative impact: 39% of athletes reported that these experiences negatively affected them mentally, 22% reported negative consequences to their social life/relationships, 18% on their sports performance and 5% on their physical health.

Importantly, 19 athletes (32%) 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

Physical violence was rather rare among the participants in this study. Four athletes reported at least one experience with physical peer violence (see Figure 4).

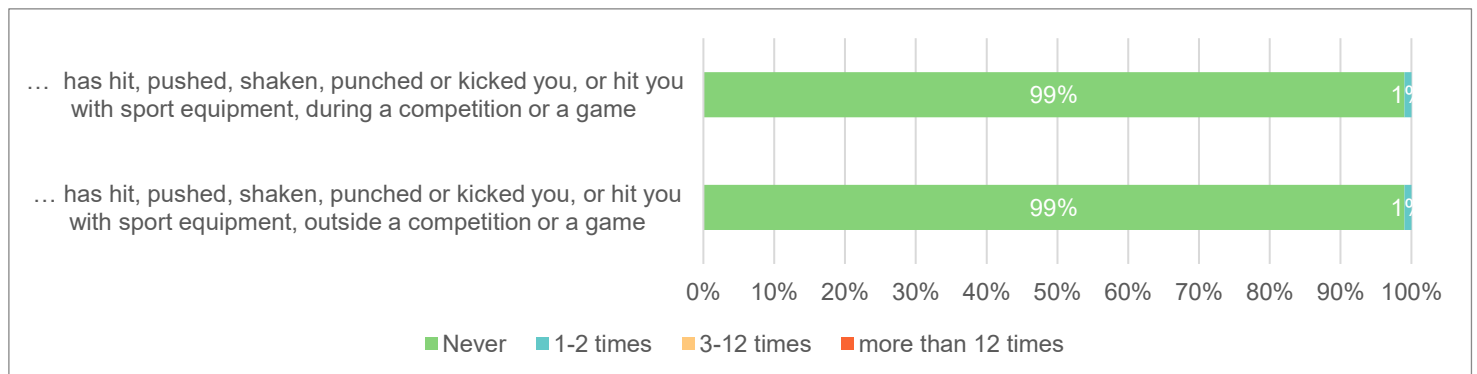


Figure 4 Experience of specific form of physical violence by peers

As the number of athletes reporting physical violence by peer athletes was low, further analysis into the locations of occurrence and impacts on the athletes is not reliable and thus is not reported (see Table 6).

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 the study, the questionnaire provided relevant safeguarding services and helplines in- and outside the IF.

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 an athlete's sexual life, private life, or appearance (13% or n= 25). Three of the presented behaviours were not experienced by athletes (see Figure 5).

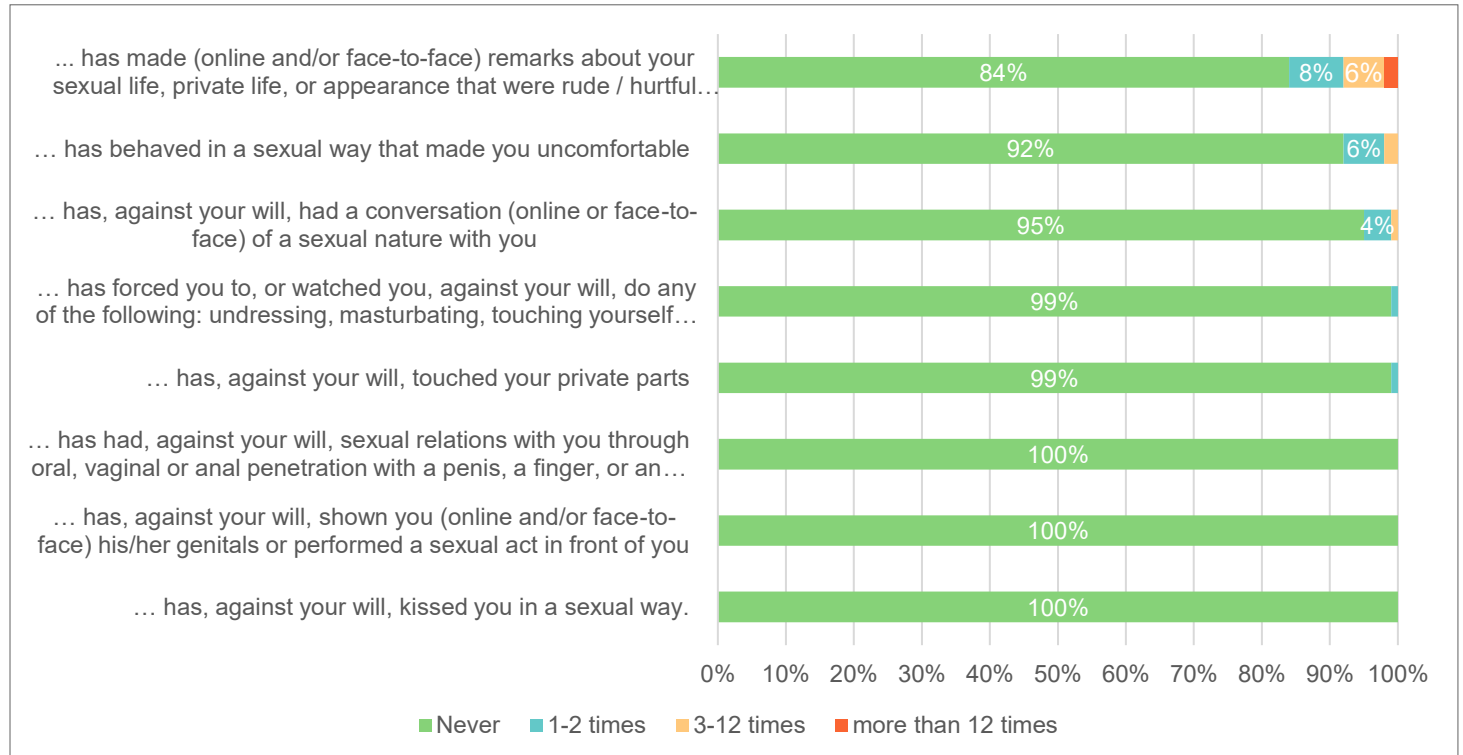


Figure 5 Experience of forms of sexual violence by peers

As the number of athletes reporting sexual violence by peer athletes was so low, further analysis into the locations of occurrence and impacts on the athletes is not reliable and thus is not reported (see Table 6).

Importantly, ten 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 within and outside the IF.

Table 6 Circumstances of experiences perpetrated by peer athletes

		Psychological (n)	Physical (n)	Sexual (n)
Where did this happen?	At a sports venue	39	3	9
	Online	13	0	7
	Other	7	0	3
	Outside of a sports venue	38	1	13
When did this happen?	During the training phase	38	3	*
	During the pre-competition phase	27	1	
	During the competition phase	33	2	
	During the post-competition phase	28	0	
Did it have a negative impact on you?	No	21	2	11
	Yes, mentally	49	1	14
	Yes, on my sports performance	23	1	2
	Yes, physically	6	2	2
	Yes, socially	28	1	4
Is it still happening to you today?	No	41	2	16
	Yes	19	2	10

Note: As the number of athletes completing these questions is relatively low, 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

Forty-four (29%) 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 (22% or n=34), followed by an equal occurrence of instrumental and sexual violence (8% or n=12). Physical violence was the least common form of violence (1%).

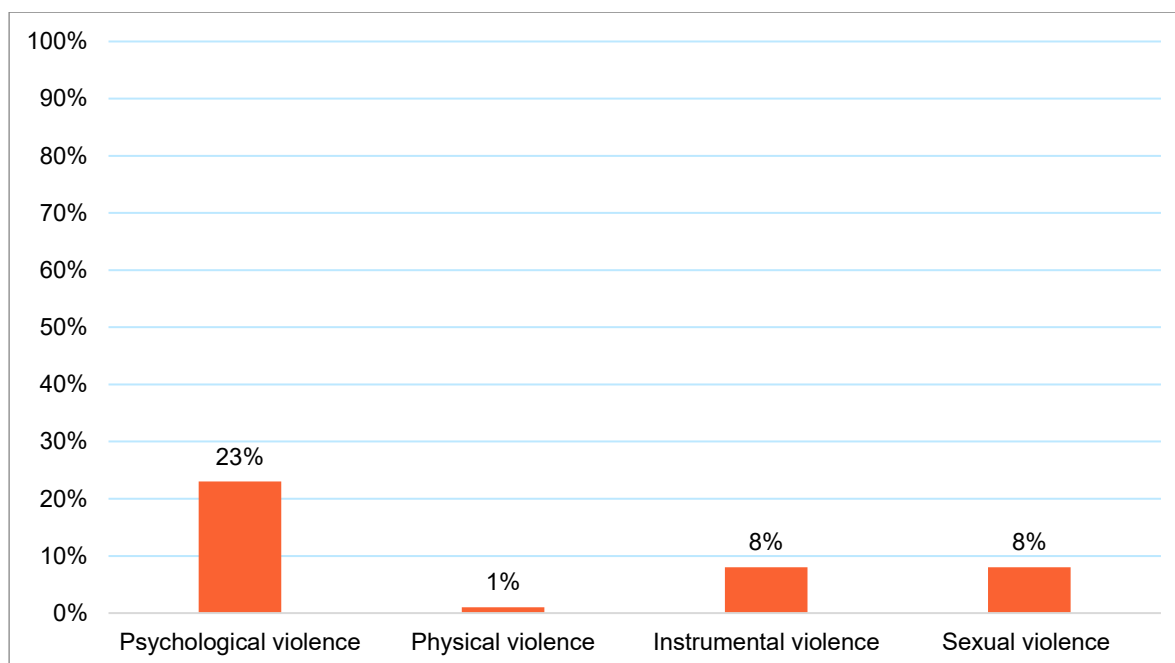


Figure 6 Experience of psychological, physical, instrumental and sexual violence by authority figures in sport

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 continents, nor between participants in male versus female events.

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% of the athletes. The least common form of psychological violence was refusal to give the athlete the necessary medical care, with 2% of athletes reporting having experienced this form of violence. Forcing or asking to take substances and/or perform methods that are suspected, did not happen to this cohort of athletes.

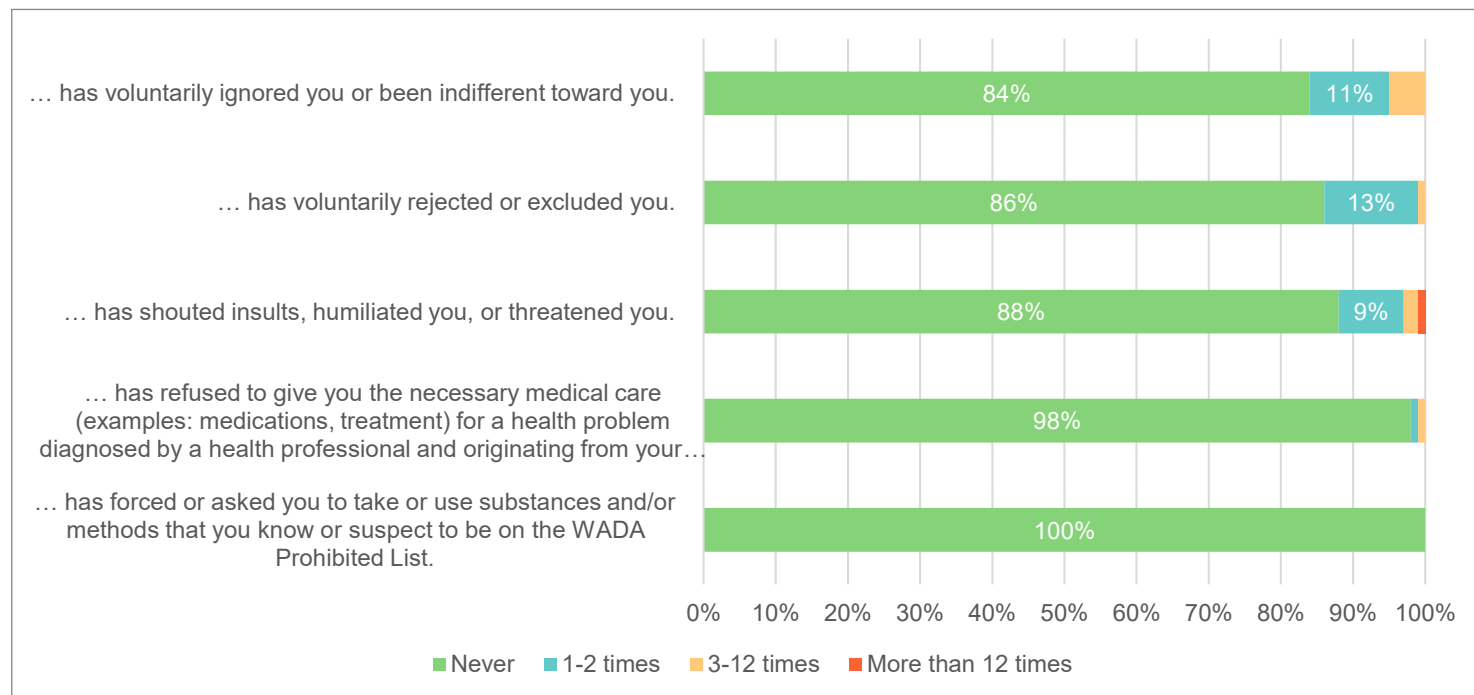


Figure 7 Experience of specific forms of psychological violence by authority figures in sport

Athletes reported different roles when identifying the perpetrator. In 28% of the cases, the perpetrator was the coach, and another 28% of respondents reported somebody else in their entourage as the perpetrator. In 25% of the cases athletes didn't feel comfortable sharing this information. In most cases (61% of the time), the perpetrator was a man (see Table 7).

The incident(s) happened outside a sports venue 50% of the time and 40% at the sports venue. Online incidents were less common (7%). These incidents happened during all possible phases.

Among these athletes, 14% reported that the incident did not affect them. However, 38% reported a negative mental impact, 25% a negative impact on their sports performance and 18% experienced a negative social impact.

Importantly, 17 athletes (55%) 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 only 1% experiencing throwing an object directly at them. The other forms were not reported by the athletes.

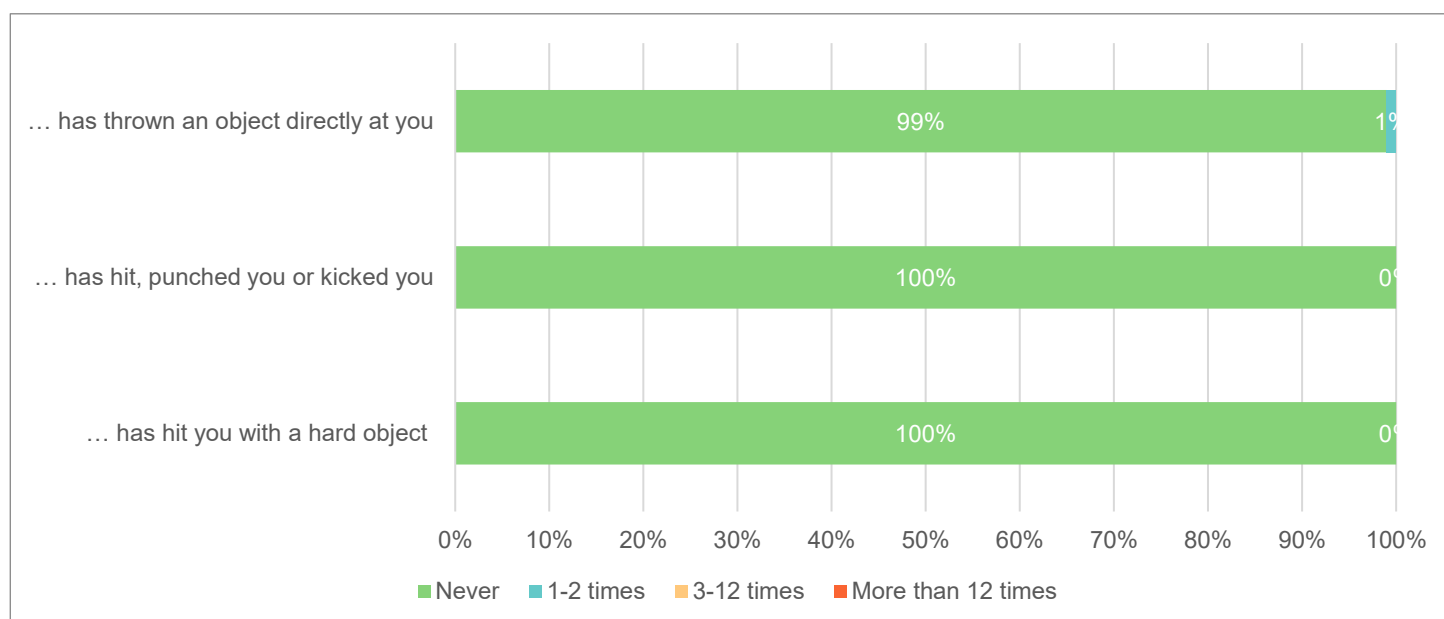


Figure 8 Experience of specific forms of physical violence by authority figures in sport

As the number of athletes reporting physical violence by authority figures was so low, further analysis into the gender of the perpetrators, locations of occurrence, and impacts on the athletes is not reliable and thus is not reported (see Table 7).

At the time of the event, none of these experiences were still ongoing.

3.3.3. Instrumental violence by authority figures

Instrumental violence by an authority figure was relatively infrequent. In 6% of the cases, athletes were being forced to isolate themselves from their social circles, and in 5% of the cases athletes were forced to train or compete against medical advice.

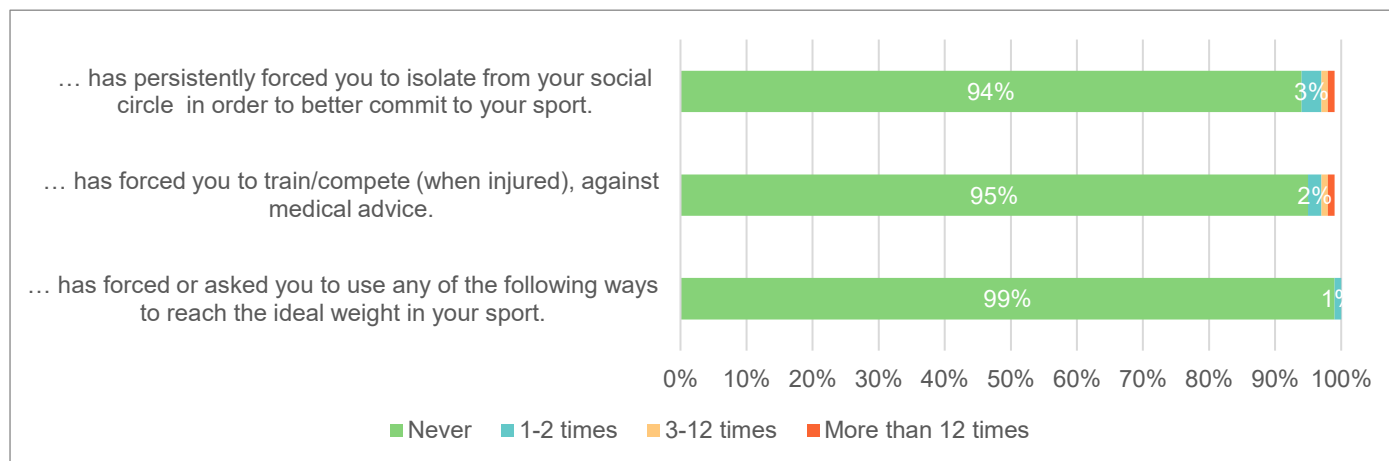


Figure 9 Experience of specific forms of instrumental violence by authority figures in sport

As the number of athletes reporting instrumental violence by authority figures was so low, further analysis into the gender of the perpetrators, locations of occurrence, and impacts on the athletes is not reliable and thus is not reported (see Table 7).

Importantly, six 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

Within sexual violence, most of the listed behaviours were not experienced by athletes. Three listed items were experienced by 1% to 6% of the athletes (see Figure 10); online or face-to-face sexual comments, unwanted kissing, and sexual behaviours that made the athlete uncomfortable.

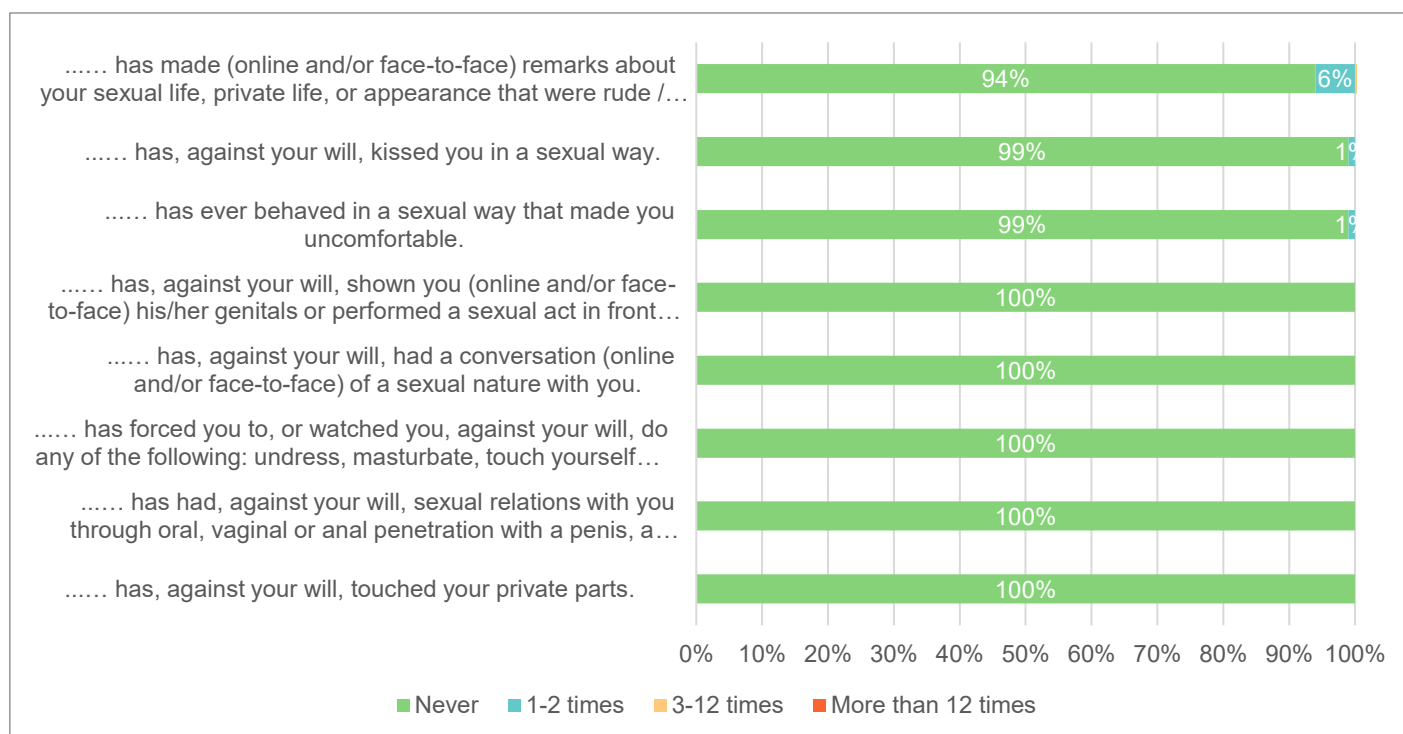


Figure 10 Experience of specific forms of sexual violence by authority figures in sport

As the number of athletes reporting sexual violence by authority figures was low, further analysis into the gender of the perpetrators, locations of occurrence, and impacts on the athletes is not reliable and thus is not reported (see Table 7).

Importantly, one athlete indicated that at time of the event, these experiences were still ongoing. While the researchers were not able to contact this athlete, 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)	11	0	5	2
	Para-medical and medical staff (physio, dietician, sports doc, psychologist...)	5	0	1	0
	Other in your entourage: administrators, managers, support staff, officials, referees...	11	1	4	3
	Parents	1	0	1	1
	An anonymous source online	1	0	0	0
	Other	1	0	0	0
	I do not feel comfortable sharing	10	0	3	4
What was their gender?	Man	22	1	9	6
	Woman	13	0	4	3
	Gender-diverse	1	0	0	0
Where did this happen?	Online	17	1	8	4
	At a sports venue (field, locker rooms...)	3	0	3	1
	Outside of the sports venue (parties, transport, at home/residence...)	1	0	0	0
	Other	21	0	0	5
When did this happen?	During the training phase	19	1	7	4
	During the pre-competition phase	13	0	5	1
	During the competition phase	16	0	7	5
	During the post-competition phase	12	0	4	3
Did it have a negative impact on you?	No	8	0	0	5
	Yes, mentally	21	1	9	3
	Yes, physically	14	0	7	0
	Yes, socially	3	0	3	0
	Yes, on my sports performance	10	0	2	1
Is it still happening to you today?	No	14	1	5	8
	Yes	17	0	6	1

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

Most athletes (82%) reported having access to a safe space or trusted person, with 7% reporting that they either do not have access or would not feel comfortable sharing, and 11% not being sure about it.

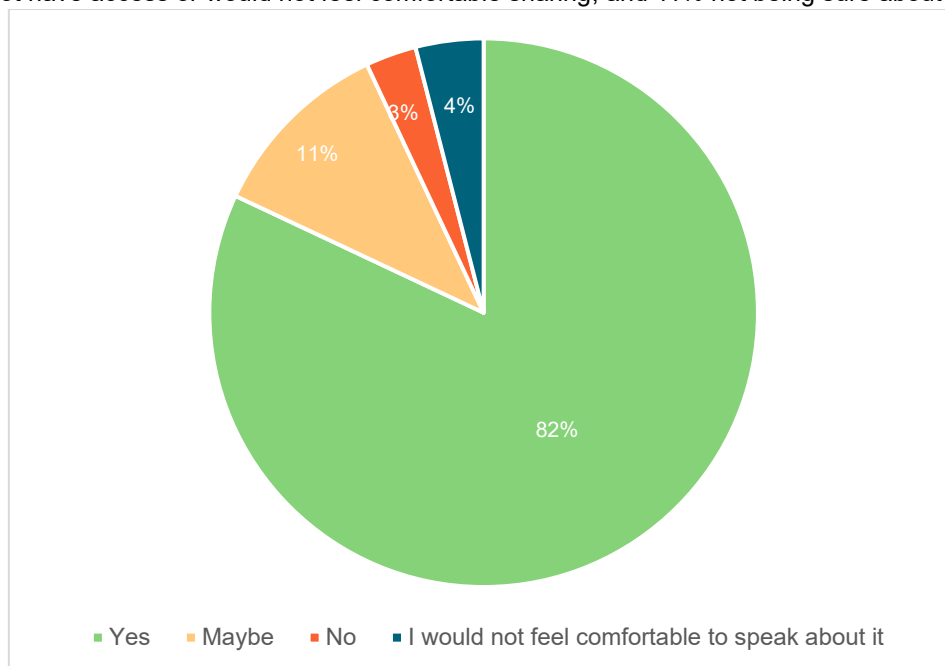


Figure 11 Access to a safe space or trusted person

The majority (67%) indicated awareness of the appropriate contact within their organization to report such incidents. However, 15% were not sure and 12% did not know where to go. The remaining 6% indicated they would not feel comfortable speaking up.

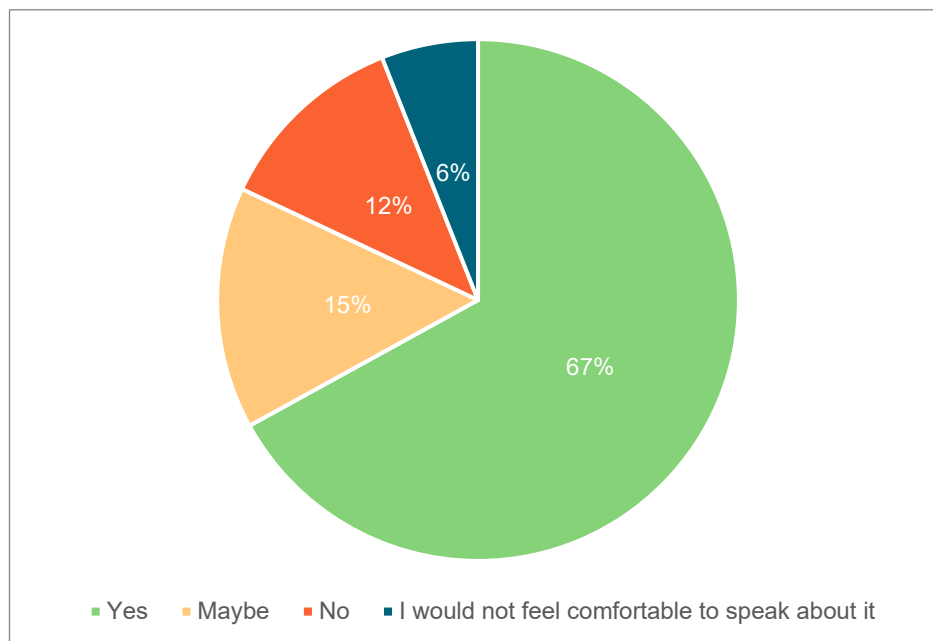


Figure 12 Knowing where to go to report

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

About 9% (n = 15) of this sample reported no physical health problems, while 56% (n = 96) reported problems related to infectious diseases, 48% (n = 82) related to musculo-skeletal problems and 76% (n = 130) related to non-infectious diseases.

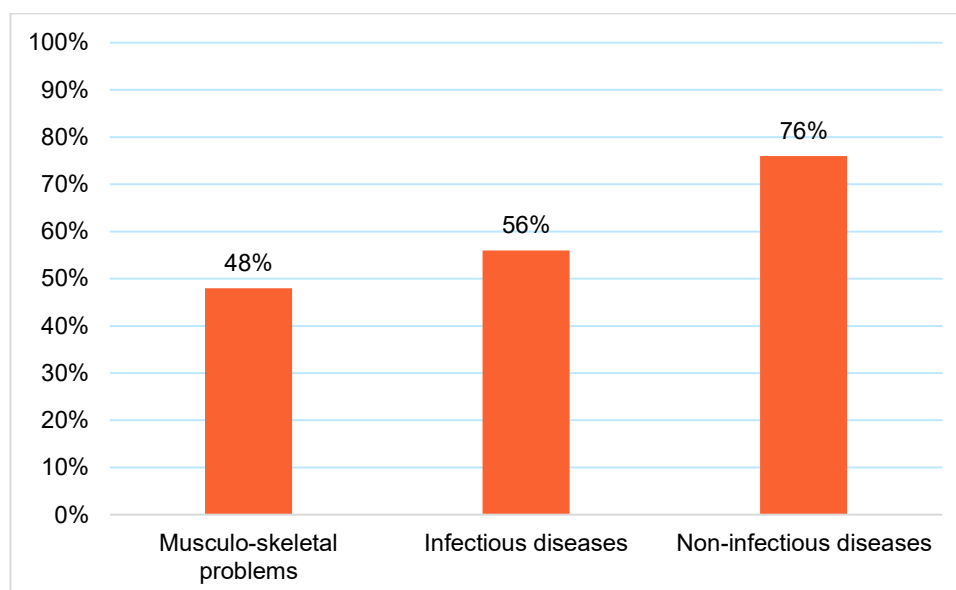


Figure 13 Experience of physical complaints

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

Statistical differences were found between participants in male versus female events. Athletes participating in the female events (53%) reported significantly more non-infectious diseases compared to the participants in the male events (47%; $p < 0.05$). When comparing between continents⁶, participants living in Europe (66%) reported significantly more non-infectious diseases compared to participants living in Asia (18%) and North America (17%; $p < 0.05$).

Of those athletes who reported physical health symptoms, 25% said they very often or always trained with the complaint. When it comes to a medically diagnosed injury, 14% said they very often to always trained or competed with it.

⁶ For these analyses, only participants from Asia, North America and Europe were included. The other continents could not be included because of the low representation.

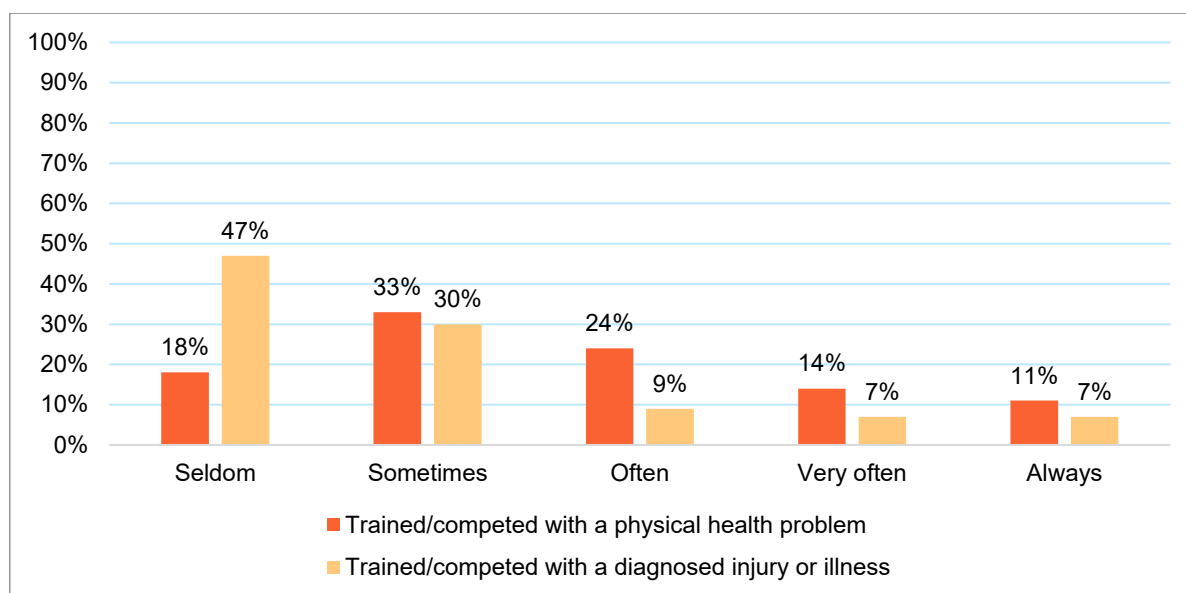


Figure 14 Training/competing with a physical health complaint or a diagnosed injury in the last 12 months

3.5.2. Reported mental health problems

Affective disorder related complaints (70%) and anxiety related complaints (66%) were the most common mental health symptoms, followed by “other” (for example, sleep disturbances or eating disorders; 40%), with only 15% reporting no mental health symptoms in the last 12 months⁷.

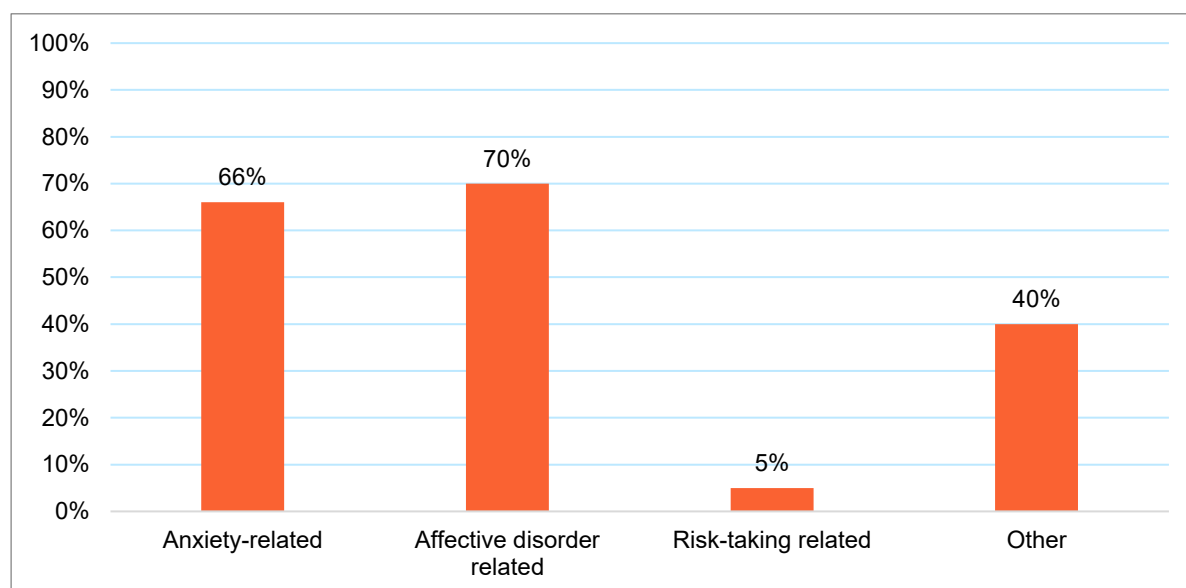


Figure 15 Experience of mental health problems

Statistical differences were found between participants in male versus female events. Athletes participating in the female events (56%) reported significantly more anxiety-related complaints compared to the participants in the male events (44%; $p < 0.001$). The same result was found for affective disorder

⁷ 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.

complaints ($p = 0.05$). When comparing between continents⁸, participants living in Europe (66%) reported significantly more anxiety-related complaints compared to participants living in Asia (17%) and North America (17%; $p < 0.05$). The same result was found for affective disorder complaints ($p = 0.05$).

Of those athletes who reported a mental health symptom, 26% of athletes reported very often, or always having trained or competed with the complaint, while 22% said they seldom did. In case of a diagnosed mental health disorder, 13% of athletes report always having trained or competed with it, with about 78% saying they seldom did.

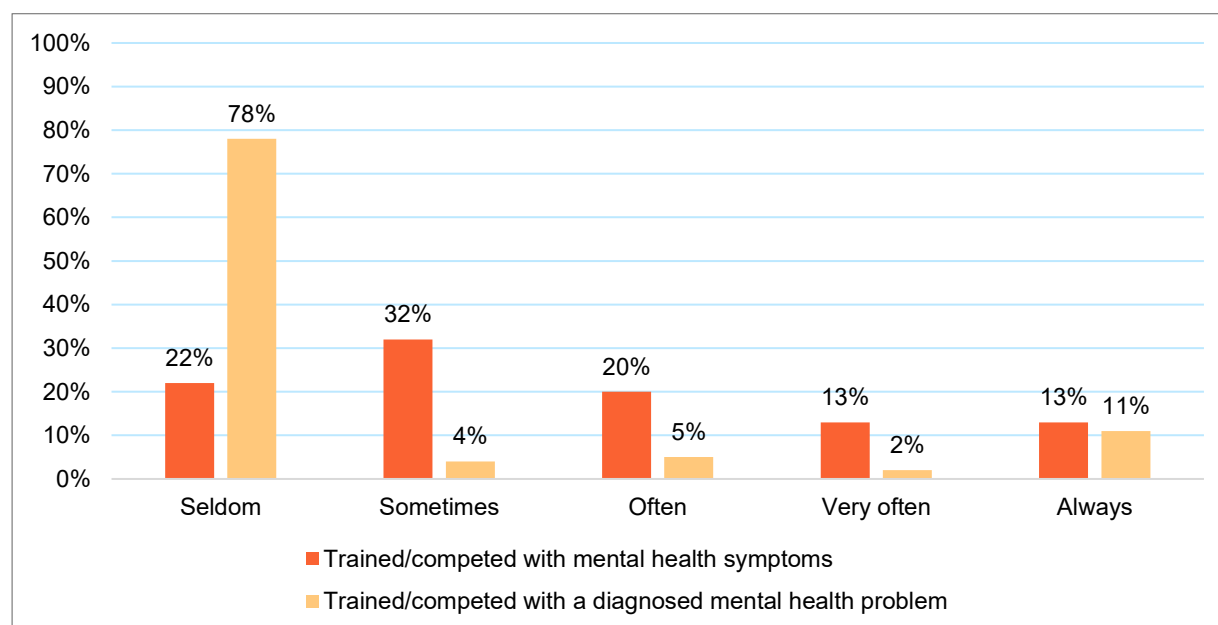


Figure 16 Training/ competing with a mental health complaint or a diagnosed mental health disorder in the last 12 months

⁸ For these analyses, only participants living in Asia, North America and Europe were included. The other continents could not be included because of the low representation.

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

Furthermore, only physical violence perpetrated by peers/and authority was not associated with both mental and physical health⁹. Other forms of violence were all associated with both mental and physical health.

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	Physical health	0.402	<0.001
	Mental health	0.530	<0.001
IV by peers	Physical health	0.385	<0.001
	Mental health	0.517	<0.001
IV by authority	Physical health	0.311	<0.001
	Mental health	0.406	<0.001
Psychological violence	Physical health	0.379	<0.001
	Mental health	0.495	<0.001
Instrumental violence	Physical health	0.232	<0.001
	Mental health	0.399	<0.001
Sexual violence	Physical health	0.344	<0.001
	Mental health	0.399	<0.001

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.

A link between experiences of interpersonal violence, and the occurrence of physical health problems was found. Essentially, when scores on the VTAQ scales (except for physical violence) increase, athletes are more likely to report physical health problems. This pattern is similar when examining the relationship between experiences of interpersonal violence (except for physical violence) and the occurrence of mental health problems. The higher the scores on the VTAQ scales, the more likely athletes are to report physical health problems.

⁹ We note here that physical violence was the least often reported form of interpersonal violence, resulting in a low number of participants. This might explain why no association was found between physical violence and athlete health.

For each of the different regressions for both mental and physical health, we also included participation in male versus female events. Athletes participating in female events reported a significantly more physical health symptoms regardless of the type of violence that was included in the regression. The same pattern was found for mental health problems.

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 Physical health symptoms	Unstandardized coefficients	p-value
1.	Gender	1.526	< 0.001
	Total VTAQ	0.322	< 0.001
2.	Gender	1.509	< 0.001
	VTAQ Authority	0.517	< 0.001
3.	Gender	1.461	< 0.001
	VTAQ Athlete	0.462	< 0.001
4.	Gender	1.452	< 0.001
	Psychological IV	0.450	< 0.001
5.	Gender	1.400	< 0.001
	Physical IV	1.267	0.126
6.	Gender	1.372	<0.001
	Instrumental IV	1.207	< 0.001
7.	Gender	1.332	< 0.001
	Sexual IV	0.777	< 0.001
	Model with dependent variable Mental health symptoms	Unstandardized coefficients	p-value
1.	Gender	1.944	< 0.001
	Total VTAQ	0.730	< 0.001
2.	Gender	2.045	< 0.001
	VTAQ Authority	1.127	< 0.001
3.	Gender	1.771	< 0.001
	VTAQ Athlete	1.100	< 0.001
4.	Gender	0.877	< 0.001
	Psychological IV	0.997	< 0.001
5.	Gender	2.105	< 0.001
	Physical IV	1.408	< 0.001
6.	Gender	2.043	< 0.001
	Instrumental IV	2.180	< 0.001
7.	Gender	1.850	0.001
	Sexual IV	1.632	< 0.001

Note: IV = interpersonal violence

4. Conclusions

The application of the study to elite athlete experiences with harassment, abuse, illness, injury, and mental health in archery revealed novel findings in this unique elite adult athlete population. Given the low response rate (23%), the responding participants may not be representative of the entire elite archery athlete population. However, the insights learned from the 172 responses provide valuable insight in the well-being of elite archers, the nature of their current experiences of interpersonal violence and the impacts of these experiences.

4.1. Main findings

172 archers completed the questionnaire, representing a 23% response rate.

Table 10 Main findings

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

Experiences with interpersonal abuse by peers	Experiences with interpersonal abuse by authority figures
<ul style="list-style-type: none"> Half (52%) reported experiencing harassment and abuse by peers with psychological abuse being the most common (47%), followed by sexual abuse (18%). Peer-to-peer harassment and abuse was more common than by authority figures in sport. Female athletes (71%) reported more sexual abuse than male athletes (29%). 	<p>Just less than one third (29%) reported experiencing harassment and abuse by a person in a position of authority with psychological abuse being most commonly reported (22%), followed by instrumental (8%), sexual (8%), and physical abuse (1%).</p>
Psychological abuse	
<ul style="list-style-type: none"> Being excluded from a group, as a form of psychological abuse, was the most common form of psychological abuse reported and was experienced by almost one third (29%) of respondents Psychological abuse most often occurred at the sports venue and was more common during the training phase. Over three quarters (83%) indicated a negative impact from their experiences of abuse: mentally (39%), social life/ relationships (22%), sports performance (18%) and physical health (5%). 19 athletes (32%) reported that the psychological abuse was ongoing at the time of the survey. 	<ul style="list-style-type: none"> The most commonly reported form of psychological abuse was indifference towards the athlete (17%). Over one quarter (28%) of the time, athletes reported that the perpetrator was a coach, and an equal number was a member of the entourage The gender of the perpetrator was most often male (61%). The incident(s) happened outside a sports venue Only 14% reported that the incident did not affect them, with approximately one third (37%) reported a negative impact on their mental health, 25% on their sports performance, and 18% on their social life, 17 athletes (55%) reported that the psychological abuse was ongoing at the time of the survey.

Physical abuse	
Only four reports of physical abuse by peers were made, and 2 athletes reported that it was ongoing at the time of the survey.	<ul style="list-style-type: none"> Physical abuse by an authority figure was relatively uncommon being reported by only 1% of the athlete cohort.
Instrumental abuse	
Instrumental abuse, by definition, is not perpetrated by peer athletes, only authority figures, therefore this field is purposefully absent of results.	<ul style="list-style-type: none"> 6% archers reported being forced to isolate themselves from their social circles 5% reported being forced to train or compete against medical advice. 6 athletes stated that the instrumental abuse was ongoing at the time of the survey.
Sexual abuse	
<ul style="list-style-type: none"> The most common form of sexual abuse 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. Incidents occurred most frequently at a sports venue (50%). Resulting from the sexual abuse, 14 athletes reported a negative impact to their mental health, 2 to their sports performance, and 2 to their physical health At the time of survey, 10 athletes reported that the abuse was still ongoing. 	<ul style="list-style-type: none"> Sexual abuse 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 (6%). 1% reported unwanted kissing and 1% reported sexual behaviours that made the athlete uncomfortable One athlete stated that the sexual abuse was ongoing at the time of the survey.

Online/Cyber Abuse

- Cyber abuse or online mechanisms were used to perpetrate psychological (n=13) and sexual abuse by peers (n=7).
- For abuse perpetrated by authority figures, online mechanisms were reported for psychological (n=17), physical (n=1), instrumental (n=8) and sexual (n=4) abuse.

Reporting

- Over three quarters (82%) of respondents reported having access to a safe space or trusted person, 7% were either uncomfortable sharing or had no safe space. 11% were unsure.
- Two thirds (67%) indicated awareness of the appropriate contact within their organization to report such incidents. The remaining 15% unsure, 12% did not know, and 6% were uncomfortable to speak up.

Physical and mental health status

- Over three quarters (91%) of the archers reported a physical complaint over the past 12 months. Infectious illness was the most common physical complaint (56%) followed by three quarters (76%) reporting non-infectious illness, and one half reporting a musculoskeletal injury (48%).
- Female archers reported more non-infectious illnesses than male archers, and European archers experienced more non-infectious illnesses than archers from Asia or North America.
- 25% said they very often or always trained with the complaint. When it comes to a medically diagnosed injury, 14% said they very often to always trained or competed with it.

- Over three quarters (85%) of the study population reported a mental health symptom in the last 12 months. Affective related complaints (low mood) (70%) anxiety related complaints (66%) were common, while 40% complained of other symptoms such as sleep disturbances or an eating disorder/disordered eating behaviours.
- Female archers had more anxiety and low mood than males. Europeans had more mental health symptoms than archers from Asia or North America.
- One quarter of archers very often or always trained and competed with their mental health symptoms




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), was associated with higher reporting of mental health as well as physical complaints.
- The higher the VTAQ scores (greater experiences with harassment and abuse), the higher the likelihood of both physical and mental health problems.
- Female archers had more physical and mental health symptoms with all types of harassment and abuse in comparison with male archers.

4.2. Take-aways

1. 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 archery.
2. Most concerning, some archers reported that the experiences of harassment and abuse were ongoing.
3. Psychological abuse 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 abuse is more common than abuse by authority figures.
5. Experiencing harassment and abuse negatively influences archer's mental health, physical health, social relationships, and sports performance.
6. One third of the archers were either unsure or did not know where to report experiences of harassment and abuse.
7. Over 90% of elite archers suffered a physical complaint in the 12 months prior to the event and 85% reported experiencing mental health symptoms. Female archers experienced greater more physical and mental health symptoms than male archers.
8. Experiencing harassment and abuse by both peers and authority figures increased the odds of the archers having both mental and physical complaints.
9. The higher the VTAQ score (experience of abuse) increased the likelihood of having both physical and mental health problems.
10. Female archers had more physical and mental health symptoms associated with all types of harassment and abuse in comparison with male archers.
11. Implementation of this questionnaire at World Archery 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 Archery 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

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