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# From Fitness to Fight: A cross-sectional analysis of associations between training motivation and injury prevalence in Muay Thai, K-1 and Kickboxing – Results of a nationwide Swiss survey

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## Keywords

Martial Arts, Athletic injuries, Mouth protectors, Motivation, Sex factors

## Abstract

Martial arts such as Muay Thai, K-1, and kickboxing carry a high risk of injury, particularly under conditions of intensive training and competition. This exploratory, cross-sectional study aimed to analyze the extent to which injury risk is associated with individual training motivation and whether this risk differs between training and competition contexts. A nationwide survey in Switzerland was conducted with N = 440 martial artists using a questionnaire that covered training motivation, injuries, mouthguard usage, and competition participation. A total of N = 419 participants were included in the final analysis. Of those surveyed, 65.4% reported having sustained at least one injury during training, with male athletes being significantly more affected than female athletes ($P < 0.001$). Individuals practicing martial arts as their primary occupation (93.8%, N = 30) and those who regularly participated in competitions (87.5%, N = 73) were particularly at risk. The most frequently injured body part during training was the leg (74.8%), whereas injuries to the head were most common during competitions (68.1%). Most injuries involved soft tissue damage. While 75% of participants reported using a mouthguard during training, only 11.5% used a professionally manufactured one. Dental injuries occurred across all groups, regardless of the type of mouthguard used. The results of this study indicate that injury risk was associated with training motivation, gender, and training intensity.

## Introduction

Martial arts such as Muay Thai, K-1, and kickboxing are popular and well-established in Switzerland, with over 5,400 registered practitioners as of 2025 (1). Many individuals view these sports as an effective means to stay physically fit, build strength, and enhance self-confidence (2). These disciplines involve intense physical contact and are associated with a significantly higher risk of injury compared to non-striking martial arts. By contrast, sports such as judo and taekwondo report notably lower injury rates (3). A previous study found that 79.2% of active Muay Thai and kickboxing athletes had sustained at least one facial injury (4). In addition to facial trauma, injuries to the teeth and jaw are also common. The incidence of dental injuries in Muay Thai and kickboxing has been reported at 23.5% (5). Although various studies have demonstrated that professionally manufactured mouthguards with adequate quality and fit can significantly reduce the risk of dental trauma (6, 7), only 31.5% of Muay Thai athletes reportedly use such protection (2).

Training motivation represents a psychological factor that may influence both the intensity and behavioral patterns of martial arts practice. In contrast to measurable parameters such as training frequency, competitive level or professional status, it reflects the underlying reason for engaging in the sport, whether for professional pursuit, physical fitness, everyday balance, competition or self-defense. Motivation may shape behavior through mechanisms such as training intensity, risk tolerance or adherence to protective measures. These pathways suggest that training motivation could serve as a relevant psychological predictor of injury, beyond purely physical exposure variables. The aim of this nationwide survey was to assess the association between training motivation and injury risk and to determine whether the prevalence of injuries differs between training and competition settings. Professional fighters may be at greater risk due to high training and competitive loads, whereas recreational athletes may face elevated risk due to inadequate technique and insufficient protective equipment.

## Materials and methods

This study was reviewed and approved by the Ethics Committee of Northwestern and Central Switzerland under approval number 2022-00552.

*The survey*

The survey was conducted over a period of 15 months, beginning in late May 2022. Based on a previous study, a revised questionnaire was developed and distributed in German to martial arts schools across Switzerland (8). The final version of the questionnaire was refined with expert input to ensure its quality. Although no formal validation study was conducted, the instrument was piloted with a sample of 5 martial artists to assess its clarity, feasibility, and relevance. At the time of data collection, all respondents were actively practicing Muay Thai, K-1, and/or kickboxing. The questionnaire comprised 18 items (Table 1).

**Table 1**. Questionnaire.

| | Question |
|---|---|
| 1 | Sex? |
| 2 | Age? |
| 3 | How long have you been training? |
| 4 | How often do you train per week? |
| 5 | What is your main reason for attending the training? |
| 6 | What protective clothing do you wear during training? |
| 7 | What type of mouthguard do you wear? |
| 8 | Have you already been injured during a training session? |
| 9 | Where did you get injured? |
| 10 | What type of injury? |
| 11 | How long did you have to take a break after your worst injury? |
| 12 | Do you participate in competitions? |
| 13 | In which competition category are you currently fighting? |
| 14 | What protective clothing do you wear during a fight? |
| 15 | Have you ever been injured during a fight? |
| 16 | Where did you get injured? |
| 17 | What type of injury? |
| 18 | How long did you have to take a break after your worst injury? |

Although Muay Thai, K-1, and kickboxing differ in their permitted techniques, they were analyzed as a single group. In most martial arts centers in Switzerland, these disciplines are not taught in strict separation. Many athletes train across styles, and training sessions frequently incorporate elements from all three disciplines. Grouping these combat sports therefore reflects actual training practices and allows for a more realistic analysis.

The first part of the survey collected data on gender, age, experience (categorized into three groups: < 3 years, 3-7 years, > 7 years), and training intensity (1× per week, 2-3× per week, > 3× per week). Training motivation was operationalized through self-reported primary reason for participation (categorized as main profession, fitness, everyday balance, competitions, self-defense, or other). The classification was developed pragmatically, based on the observed diversity within the Swiss martial arts community. While previous studies have focused primarily on competitive fighters, many individuals in Switzerland practice martial arts without actively competing, using it instead for physical fitness, everyday balance or self-defense. This categorization was not derived from a formal theoretical model but was designed to capture the most common and distinct reasons for participating in martial arts. The second section focused on the type of protective equipment used during training and whether the respondent had previously sustained any training-related injuries. The survey covered all injuries sustained from the onset of martial arts practice up to the time of questionnaire completion. This extended recall period may introduce recall bias. To mitigate this, the questionnaire employed clearly defined and specific questions regarding the type and location of injuries. It was further assumed that injuries of greater relevance or those requiring medical attention would be more likely to be accurately recalled and reported. Participants who reported injuries proceeded to the third part, which addressed the injured body region, the type of injury, and the duration of the resulting training interruption. Respondents without prior injuries skipped to the fourth section. The fourth part asked about competition experience and fighting category. Participants who did not compete concluded the survey at this point. The fifth and final section mirrored parts two and three but referred specifically to injuries sustained during competition.

*The evaluation*

Participants were categorized into five groups based on their primary training motivation: main profession, fitness, everyday balance, competitions, and self-defense. Descriptive statistics are presented as either means with standard deviations or frequencies with proportions, depending on the variable type. Descriptive statistics were provided by either mean (SD) or frequency (proportion). The corresponding significance tests like t-test, F-test or Fisher's exact and chi square test were indicated. Odds Ratios (OR) with 95% confidence intervals (CI) were calculated to quantify the association between training motivation and the occurrence of training-related injuries. A p-value <0.05 was considered as significant. Because of the explorative nature of the study no adjustment for multiple testing was performed. This methodological choice aligns with the aim of identifying patterns and generating hypotheses, rather than drawing confirmatory statistical conclusions. All analyses were calculated with the statistical program R version 4.2.2 (9).

## Results

A total of 440 martial artists participated in the present study. For the analysis, only those participants who selected a primary training motivation (excluding the “other” category) in question five were included, resulting in a final sample size of 419 individuals. The majority of respondents were male (64.2%, N = 269). In terms of training experience, 189 participants (45.1%) had been training for less than three years, 97 (23.3%) for three to seven years, and 133 (31.7%) for more than seven years. The most reported training frequency was two to three sessions per week (47.5%, N = 199).

Training motivation differed significantly between sexes (P = 0.002; Table 2). Overall, the most frequently reported reason for training was to improve physical fitness (33.9%, N = 142). However, a marked gender-specific difference emerged: women more frequently reported training to balance everyday life (34.7%, N = 52) compared to men (20.8%, N = 56), whereas men were more likely to train with the goal of participating in competitions (25.7%, N = 69 vs. 16.0%, N = 24).

**Table 2**. Differences between the sexes in training motivation, mouthguards and injuries suffered.

| | Male (%) | Female (%) | Total (%) |
|---|---|---|---|
| **Training motivation** | | | |
| Balance | 56 (20.8) | 52 (34.7) | 108 (25.8) |
| Main Profession | 26 (9.7) | 6 (4) | 32 (7.6) |
| Fitness | 86 (32) | 56 (37.3) | 142 (33.9) |
| Self-Defense | 32 (11.9) | 12 (8) | 44 (10.5) |
| Competition | 69 (25.7) | 24 (16) | 93 (22.2) |
| **Mouthguard** | | | |
| None | 39 (14.5) | 66 (44) | 105 (25.1) |
| Self-formed | 198 (73.6) | 68 (45.3) | 266 (63.5) |
| Dentist | 32 (11.9) | 16 (10.7) | 48 (11.5) |
| **Injuries** | | | |
| Training | 196 (72.9) | 78 (52) | 274 (65.4) |
| Competition | 51 (54.3) | 18 (56.2) | 69 (54.8) |

Of the respondents, 274 (65.4%) reported having sustained at least one injury during training. Men were significantly more affected than women (72.9%, N = 196 vs. 52.0%, N = 78; 95%CI: 0.27 - 0.61; P < 0.001). The risk of sustaining a training-related injury was markedly higher among individuals who regularly participated in competitions (OR = 3.20; 95%CI: 1.92 - 5.31; P < 0.001). The highest injury prevalence was observed among participants who practiced martial arts as their main profession (93.8%, N = 30), followed by those who regularly took part in competitions (78.5%, N = 73) (Table 3). Furthermore, injury risk was clearly associated with training motivation. Compared to those training for physical fitness (reference group), the odds of injury were significantly higher in athletes training as their main profession (OR = 10.66; 95%CI: 2.45 - 46.36; P < 0.001) and those training for competition (OR = 2.59; 95%CI: 1.43 - 4.71; P = 0.002). No significant differences were observed for individuals training for self-defense (OR = 1.24; 95%CI: 0.62 - 2.50; P = 0.600) or to balance everyday life (OR = 0.89; 95%CI: 0.54 - 1.47; P = 0.699).

**Table 3**. List of training motivation with years of experience and injury rate in training and competition.

| | Balance (%) | Main Profession (%) | Fitness (%) | Self-Defense (%) | Competition (%) | Total (%) |
|---|---|---|---|---|---|---|
| **Experience** | | | | | | |
| <3 Years | 49 (45.4) | 2 (6.3) | 78 (54.9) | 30 (68.2) | 30 (32.3) | 189 (45.1) |
| 3-7 Years | 28 (25.9) | 1 (3.1) | 31 (21.8) | 7 (15.9) | 30 (32.3) | 97 (23.2) |
| >7 Years | 31 (28.7) | 29 (90.6) | 33 (23.3) | 7 (15.9) | 33 (35.4) | 133 (31.7) |
| **Injuries** | | | | | | |
| Training | 60 (55.5) | 30 (93.8) | 83 (58.5) | 28 (63.6) | 73 (78.5) | 274 (65.4) |
| Competition | 9 (60) | 13 (72.2) | 6 (40) | 2 (50) | 39 (52.7) | 69 (54.8) |

For the purpose of analysis, the reported injury sites were categorized into four groups: lip, nose, eye, tongue, ear, tooth, jaw and cheekbone were classified as head injuries; leg, knee, and foot as leg injuries; arm, elbow, and hand as arm injuries; and the ribs were treated as a separate category (Table 4). Injury types were classified into three categories: soft tissue injuries (e.g., bruise, hematoma, strain, rupture, laceration), dental injuries (e.g., tooth displacement, tooth fracture, tooth loss), and bone fractures (Table 5). The legs were the most frequently injured body region during training (74.8%, N = 205). Head injuries were less common during training than in competition. The most affected areas included the nose (39.4%, N = 108), lip (32.5%, N = 89), and eye (28.8%, N = 79), followed by the tongue (13.5%, N = 37), ear (12.8%, N = 35), teeth (8.8%, N = 24), jaw (6.9%, N = 19), and cheekbone (5.1%, N = 14). The majority of injuries were soft tissue injuries (92.7%, N = 254). Bone fractures were reported in 52 cases (19%). Following their most severe injury, most affected individuals required a training break of one to six months (38.3%, N = 105).

**Table 4**. Injury localization in training and competition.

| | Head injury (%) | Leg injury (%) | Arm injury (%) | Rib (%) |
|---|---|---|---|---|
| **Training (N = 274)** | 166 (60.6) | 205 (74.8) | 138 (50.4) | 79 (28.8) |
| **Competition (N = 69)** | 47 (68.1) | 46 (66.7) | 16 (23.2) | 6 (8.7) |

**Table 5**. Type of injury in training and competition.

| | Soft tissue injury (%) | Fracture (%) | Tooth injury (%) |
|---|---|---|---|
| **Training (N = 274)** | 254 (92.7) | 52 (19.0) | 24 (8.8) |
| **Competition (N = 69)** | 59 (85.5) | 16 (23.2) | 6 (8.7) |

A total of 314 participants (75%) reported wearing a mouthguard during training. However, significantly more women than men did not wear a mouthguard (44.0%, N = 66 vs. 14.5%, N = 39; P < 0.001). No significant association was found between mouthguard use and the occurrence of dental injuries (P = 0.115). Among all participants, 24 (8.8%) reported a dental injury during training: 12 cases of tooth displacement (4.4%), 10 tooth fractures (3.7%), and 2 cases of tooth loss (0.7%). In competition, 6 participants (8.7%) sustained dental injuries, including 5 tooth displacements (7.2%) and 1 tooth fracture (1.5%). No cases of tooth loss were reported (0.0%). Due to the limited number of cases, no definitive conclusions could be drawn regarding the protective effectiveness of mouthguards. Nevertheless, dental injuries were observed across all categories of mouthguard use (none, self-formed, professionally manufactured) (Table 6).

**Table 6**. An overview of the mouthguard worn in cases of tooth injuries.

| | None (%) | Self-formed (%) | Dentist (%) | Total (%) |
|---|---|---|---|---|
| **Tooth injury** | | | | |
| Training | 5 (20.8) | 14 (58.4) | 5 (20.8) | 24 (8.8) |
| Competition | 0 (0.0) | 2 (33.3) | 4 (66.7) | 6 (8.7) |

Of the 419 martial artists included in the analysis, 126 (30.1%) had participated in competitions. Most competitors were male (74.6%, N = 94). Based on competition level, 31 athletes (26.6%) competed in professional category A, 57 (45.2%) in amateur category B, and 38 (30.2%) in beginner category C. More than half of the competitors (51.5%, N = 65) reported over seven years of training experience, and most trained more than three times per week (74.5%, N = 65). In total, 69 competitors (54.8%) reported having sustained at least one injury during a competition (Table 1). Head injuries were the most common in competition settings (68.1%, N = 47; Table 4), with the nose being the most frequently affected region (39.1%, N = 27), followed by the eye (37.7%, N = 26), lip (21.7%, N = 15), cheekbone (11.6%, N = 8), ear (10.1%, N = 7), tooth (8.7%, N = 6) jaw (7.2%, N = 5), and tongue (5.8%, N 4). The predominant type of injury was soft tissue damage (85.5%, N = 59; Table 5), and 21 athletes (30.4%) sustained a laceration, of whom 12 (57.1%) competed in professional category A. Most athletes required a training break of less than one month following a competition-related injury (43.5%, N = 30). Mouthguards were used by nearly all competitive athletes (97.6%, N = 123), and 6 competitors (8.7%) reported a dental injury despite wearing one. Due to the limited number of cases in certain subgroups, such as dental injuries, the statistical power to detect significant associations was limited. These results should therefore be interpreted with caution and considered exploratory in nature. No strong inferences can be drawn from these comparisons.

## Discussion

The findings of the present study suggest that Muay Thai, K-1, and kickboxing are associated with a high overall injury rate. Among the surveyed martial artists, 274 (65.4%) reported at least one training-related injury. Head injuries were reported by 166 respondents (60.6%) during training and by 47 respondents (68.1%) during competition. These values fall between those reported by Shirani et al. (4), who found that 79.2% of martial artists experienced at least one facial injury in boxing, Muay Thai, and kickboxing, and the findings of Polmann et al. (3), which indicated that 52.9% of all documented injuries in Muay Thai, K-1, and kickboxing involved the dentofacial region. Gartland et al. (8) also identified head and facial injuries as the second most common injury types in Muay Thai and kickboxing. While facial injuries were also prevalent in the current study, leg injuries were more dominant in training (74.8%, N = 205). In competition, the nose was the most frequently injured anatomical region (39.1%, N = 27), consistent with earlier research identifying the nose as the most commonly fractured bone in combat sports (4).

In both training (92.7%, N = 254) and competition (85.5%, N = 59), soft tissue injuries were the most common type of injury. Previous studies have shown similar results, indicating that soft tissue injuries are the predominant injury type in martial arts (8, 10, 11). According to Shirani et al. (4), lacerations occur in competitions at a rate of 69.2%, with 93.3% of these occurring in Muay Thai fights. The specific techniques used in Muay Thai, including the allowance of elbows and knees, contribute to the high prevalence of lacerations (11). In the present study, 21 participants (30.4%) reported suffering lacerations. However, the study did not specifically assess whether these injuries were related to the unique techniques employed in Muay Thai.

While one study reported no significant differences in injury patterns between male and female kickboxers (12), the present study found a significantly higher injury risk among men compared to women (72.9%, N = 196 vs. 52.0%, N = 78; $P < 0.001$). Injury frequency appeared to vary according to training motivation: individuals who participated in competitions (78.5%, N = 73) and those who practiced martial arts as their main profession (93.8%, N = 30) exhibited the highest injury rates. These findings are in line with previous research indicating that injury prevalence may be associated with growing competitive experience and training volume in Muay Thai and kickboxing (8). Not only the frequency of punches and kicks, but also the intensity and precision of their execution may influence injury risk in kickboxing (13). Furthermore, professional fighters are more likely than amateur athletes to sustain injuries particularly head injuries (8, 12).

Retrospective data also suggest that losing competitors are at higher risk of injury compared to winners (14).

The present study found out that amateur fighters (42.0%, N = 29) sustained nearly as many injuries as those in the professional category (39.1%, N = 27). This suggests that factors beyond competition experience, such as training intensity, fighting style, or protective behavior, may also influence injury frequency. Whether injuries were related to winning or losing a match was not assessed in this study. Consistent with previous findings (8), head injuries occurred predominantly among professional fighters (81.5%, N = 22) in the present sample. Interestingly, the lowest competition-related injury rate was observed among beginners (18.8%, N = 13), which stands in contrast to the results of Gartland et al. (10). In their study, novice competitors were found to be at significantly higher risk of injury, potentially due to lower levels of physical fitness or technical proficiency.

The risk of dental trauma is elevated across all contact sports (15). In Muay Thai and kickboxing, the incidence of tooth and jaw injuries has been reported at 23.5%, with teeth involved in 50.8% of cases (5). Wearing a mouthguard can help reduce the risk of orofacial injuries (16). In the present study, 75% of participants (N = 314) reported using a mouthguard during training, although significantly fewer women than men did so (44.0% vs. 14.5%, $P < 0.001$). A majority of respondents (63.5%, N = 266) used self-formed mouthguards, while only 11.5% (N = 48) used professionally manufactured ones. Due to the low number of dental injuries observed, no statistically robust conclusions could be drawn regarding the protective effect of mouthguards in this sample. However, existing evidence suggests that ill-fitting mouthguards may not only be ineffective but can even exacerbate injuries (17), or, if defective, contribute to mandibular fractures (18). Although no statistically significant association between mouthguard type and dental injuries was observed in this study, the overall number of cases was too small to detect reliable differences. Therefore, the lack of significance should not be misinterpreted as evidence of equivalence. Given the high severity and irreversibility of dental trauma and considering existing research demonstrating superior protection from professionally manufactured devices, their use should still be recommended as a precautionary measure. In Muay Thai specifically, only 31.5% of athletes use a professionally made mouthguard that provides adequate protection (2). When properly fitted and of sufficient quality, a professional mouthguard can significantly reduce the risk of dental and orofacial trauma (6, 7). To ensure optimal protection, such mouthguards must fulfill several criteria: they should cover and protect soft tissues, absorb and dissipate impact energy, cushion external forces, and maintain a safe distance between the upper and lower jaws (20, 21). Nevertheless, due to the unpredictable nature of force and impact in martial arts, even when executing identical techniques, injuries may still occur despite the use of professional mouthguards (19).

In summary, injuries in Muay Thai, K-1, and kickboxing are frequent and appear to be associated with training intensity and competitive level. The results suggest an association between higher training volumes, competitive involvement and increased injury reporting. Moreover, training motivation, experience level, and gender appear to be relevant factors associated with injury prevalence in these combat sports. Given the high rate of injuries, especially head injuries, observed in this study, the consistent use of appropriate protective equipment, especially headgear, should be recommended. Similarly, although the majority of participants reported using mouthguards, the relatively low usage of professionally manufactured ones highlights the need for improved education and clear guidelines regarding their use. Professionally fitted mouthguards should be preferred over self-formed variants, as they offer superior fit and protection.

This study has several limitations that must be acknowledged. Most notably, no data were collected on specific injury mechanisms such as punches, kicks, elbows or knees. This limits the interpretation of injury patterns and prevents differentiation between technique-related and accidental trauma. Moreover, all data were self-reported and retrospective, which introduces the risk of recall bias, particularly for minor or older injuries. The voluntary nature of survey participation may also have led to selection bias, as individuals with injury experience might have been more inclined to participate. In addition, although Muay Thai, K-1, and kickboxing differ in their technical profiles and competition rules, they were analyzed collectively. This decision was based on overlapping athlete participation and the need to ensure sufficient statistical power, but it may have masked discipline-specific trends.

Given these limitations and the exploratory, cross-sectional design of the study, the reported associations should not be interpreted as causal. Future research should include prospective longitudinal designs and differentiate between specific injury mechanisms to support the development of targeted prevention strategies and sport-specific protective equipment.

## Conclusions

This study explored injury patterns in Muay Thai, K-1, and kickboxing and their potential associations with individual training motivation, based on a nationwide survey. A total of 440 martial artists participated, with 419 included in the final analysis. The results suggest that reported injuries may vary according to training motivation, intensity and experience. Overall, 65.4% of participants reported having sustained at least one injury during training. Higher proportions of injuries were observed among individuals practicing martial arts as their main profession (93.8%) or regularly participating in competitions (78.5%). Men reported injuries more frequently than women (72.9% vs. 52%). Leg injuries were most commonly reported during training (74.8%), while head injuries predominated in competition (68.1%). In both contexts, soft tissue injuries were the most frequently observed injury type (92.7% during training; 85.5% during competition). Mouthguard usage was high during training (75%) and competition (97.6%), but most athletes used self-formed types, and only a small proportion reported using professionally manufactured devices.

Given the exploratory and cross-sectional nature of the study, these findings should be interpreted as descriptive associations only. Nonetheless, they may help to generate hypotheses for future prospective research and support future exploration of targeted prevention strategies in martial arts.

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## Zusammenfassung

*Einleitung*

Muay Thai, K-1 und Kickboxen gehören zu den kontaktintensivsten Kampfsportarten und haben ein hohes Verletzungsrisiko. Die Trainingsmotivation steht in engem Zusammenhang mit der Trainingsintensität und dem Risikoverhalten, was das individuellen Risikoprofil beeinflussen könnte. Ziel dieser Arbeit war es, das Verletzungsrisiko in Abhängigkeit der Trainingsmotivation und weiteren Faktoren wie Geschlecht und Erfahrung im Muay Thai, K-1 und Kickboxen in der Schweiz zu analysieren. Da Kampfsportarten in der Schweiz nicht nur wettkampforientiert betrieben werden, sondern auch zur Fitness, zum Alltagsausgleich oder zur Selbstverteidigung, wurden in dieser Studie bewusst unterschiedliche Trainingsmotive berücksichtigt.

*Material und Methoden*

Im Zeitraum von 15 Monaten, Mai 2022 bis August 2023, wurde eine Umfrage mittels eines Fragebogens durchgeführt. Der Fragebogen umfasste 18 Fragen zu den Bereichen Geschlecht, Trainingsmotivation, Erfahrung, Zahnschutz, Verletzungslokalisation und -art, Dauer der anschliessenden Trainingspausen und Teilnahme an Wettkämpfen. Eingeschlossen wurden ausschliesslich Sportler/-innen aus der Schweiz, die zu diesem Zeitpunkt Muay Thai, K-1 oder Kickboxen ausübten. Der Fragebogen wurde vorab in einer Pilotgruppe von 5 Personen getestet, um Verständlichkeit und Anwendbarkeit sicherzustellen. Die Teilnehmer/-innen wurden für die Auswertung anhand ihres Haupttrainingsmotivs in fünf Gruppen eingeteilt: Hauptberuf, Fitness, Alltagsausgleich, Wettkämpfe oder Selbstverteidigung.

*Resultate*

Insgesamt nahmen 440 Personen an der Befragung teil, von denen 419 in der Analyse berücksichtigt wurden. Die häufigsten Trainingsmotive waren Fitness (33.9 %), Alltagsausgleich (25.8 %) und Wettkampfteilnahme (22.2 %). 274 (65.4 %) gaben an, mindestens eine Verletzung im Training erlitten zu haben. Männer waren häufiger betroffen (72.9 % vs. 52 %, P <0.001). Diejenigen, die den Sport als Hauptberuf ausüben wiesen die höchste Verletzungsrate auf (93.8 %), gefolgt von Wettkämpfer/-innen (78.5 %). Im Training traten vorwiegend Beinverletzungen (74.8 %) auf und im Wettkampf vor allem Kopfverletzungen (68.1 %). Ein Zahnschutz wurde im Training von 75 % und im Wettkampf von 97.6 % getragen. Es kam in beiden Gruppen zu Zahnverletzungen (8.8 % Training; 8.7 % Wettkampf). Zwischen der Art des Zahnschutzes und der Häufigkeit von Zahnverletzungen bestand kein signifikanter Zusammenhang, was vermutlich auf die geringe Fallzahl zurückzuführen ist.

*Diskussion*

Die Ergebnisse zeigen, dass die Trainingsmotivation ein relevanter Einflussfaktor für das Verletzungsrisiko im Muay Thai, K-1 und Kickboxen sein könnte. Kampfsportler/-innen mit leistungs- oder wettkampforientierter Motivation zeigten höhere Verletzungsraten, möglicherweise bedingt durch häufigeres und intensiveres Training. Aufgrund des Querschnittsdesigns lassen sich keine kausalen Rückschlüsse ziehen. Die Ergebnisse sollten als deskriptive Assoziationen interpretiert werden. In dieser Studie wurden keine detaillierten Informationen zu spezifischen Verletzungsmechanismen oder zum Schweregrad der Verletzung erhoben, was direkte Vergleiche mit anderen Studien erschwert. Zudem beruhen alle Angaben auf retrospektiver Selbstauskunft, wodurch ein Erinnerungsbias nicht ausgeschlossen werden kann. Zusätzlich wurde bei der Umfrage keine Differenzierung zwischen Muay Thai, K-1 und Kickboxen vorgenommen was dazu beigetragen hätte die Einflussfaktoren auf das Verletzungsrisiko im Kampfsport detaillierter zu erfassen.

## Résumé

*Introduction*

Le Muay Thai, le K-1 et le kickboxing font partie des arts martiaux les plus intensifs en contacts et sont associés à un risque élevé de blessures. La motivation à l'entraînement est étroitement liée à l'intensité de la pratique et au comportement à risque, pouvant ainsi influencer le profil individuel de vulnérabilité aux blessures. L'objectif de cette étude était d'analyser l'incidence des blessures en fonction de la motivation à l'entraînement ainsi que d'autres facteurs tels que le sexe, l'équipement de protection et l'expérience dans la pratique du Muay Thai, du K-1 et du kickboxing en Suisse. Contrairement à d'autres études centrées exclusivement sur les athlètes de compétition, ce travail prend en compte une grande variété de profils pratiquant le sport à des fins récréatives, professionnelles ou personnelles.

*Matériels et méthodes*

Une enquête a été menée sur une période de 15 mois, entre mai 2022 et août 2023, à l'aide d'un questionnaire standardisé. Celui-ci comprenait 18 questions portant sur le sexe, la motivation à l'entraînement, l'expérience, l'utilisation de protection dentaire, la localisation et le type de blessure, la durée des interruptions d'entraînement qui ont suivi ainsi que la participation aux compétitions. Seuls les athlètes résidant en Suisse et pratiquant activement le Muay Thai, le K-1 ou le kickboxing au moment de l'étude ont été inclus. Le questionnaire a été préalablement testé auprès d'un groupe pilote de 5 personnes afin d'en garantir la clarté et l'applicabilité. Pour l'analyse des résultats, les participants ont été répartis en cinq groupes selon leur principale motivation à l'entraînement : activité professionnelle principale, condition physique, équilibre quotidien, participation aux compétitions ou autodéfense.

*Résultats*

Au total, 440 personnes ont participé à l'enquête, dont 419 ont été retenues pour l'analyse. Les motivations à l'entraînement les plus fréquemment citées étaient les suivantes : l'amélioration de la condition physique (33,9 %), l'équilibre dans la vie quotidienne (25,8 %) et la participation aux compétitions (22,2 %). Parmi les répondants, 274 (65,4 %) ont déclaré avoir été blessés au moins une fois lors de l'entraînement. Les hommes étaient plus fréquemment touchés que les femmes (72,9 % contre 52 %, P < 0,001). Les athlètes exerçant ce sport comme profession principale présentaient le taux de blessure le plus élevé (93,8 %), suivis par les compétiteurs (78,5 %). Les blessures survenaient principalement au niveau des jambes pendant l'entraînement (74,8 %) et au niveau de la tête lors des compétitions (68,1 %). Une protection dentaire était utilisée par 75 % des participants durant l'entraînement et par 97,6 % lors des compétitions. Des blessures dentaires ont été rapportées dans les deux groupes (8,8 % à l'entraînement ; 8,7 % en compétition). Aucun lien statistiquement significatif n'a pu être établi entre le type de protège-dents utilisé et la fréquence des blessures dentaires, ce qui peut s'expliquer par le faible nombre de cas observés.

*Discussion*

Les résultats de cette étude montrent que la motivation à l'entraînement pourrait représenter un facteur associé au risque de blessure dans les disciplines du Muay Thai, du K-1 et du kickboxing. Les pratiquants motivés par la performance ou la compétition ont signalé un taux de blessure plus élevé, ce qui pourrait s'expliquer par une fréquence et une intensité d'entraînement accrues. Compte tenu du caractère transversal et exploratoire de l'étude, les associations observées doivent être interprétées avec prudence et ne permettent pas de tirer des conclusions causales. Par ailleurs, l'ensemble des données repose sur des auto-déclarassions rétrospectives, ce qui n'exclut pas la présence de biais de mémoire. Cette étude ne fournit pas de données détaillées sur les mécanismes spécifiques des blessures ni sur leur gravité, ce qui limite les comparaisons directes avec d'autres travaux. En outre, aucune distinction n'a été faite entre les trois disciplines, bien qu'elles présentent des différences techniques notables. Cette décision méthodologique visait à garantir une puissance statistique suffisante, mais elle pourrait avoir masqué certaines tendances spécifiques à chaque sport.

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