

**Understanding Training Load in Golf:
A Survey of Swing Coaches, Performance Practitioners and Medical Staff**

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Abstract

The present study aimed to investigate the current opinions and practices of golf coaches, performance practitioners and medical staff working in golf, on the topic of monitoring training load in the sport. A cross-sectional, explorative survey was undertaken which included specific questions for each sub-group using a combination of Likert scale and 'Yes' or 'No' questions. A total of 89 practitioners completed the survey with 23 being golf coaches, 35 being performance practitioners, and 31 being medical practitioners. Results showed that virtually all technical coaches and support staff practitioners agreed on the importance of monitoring training load in golf. However, our findings identified a noticeable gap between what is current opinion and what is actually done in day-to-day practice, relating to training load monitoring in the sport. While the majority of coaches and practitioners are in agreement with the value of assessing load in golf, the number that actually monitor and collect data relating to this is substantially lower. Therefore, further consideration and research is undoubtedly required on this topic to help inform and change current practice in golf.

Key Words: Golfers; Intensity; Volume; Cumulative Load.

Introduction

Training load has been described as the input variable (e.g., aerobic exercise, anaerobic exercise, resistance training) that is manipulated to elicit a desired training response (11). Training load can be classified as external or internal depending on whether we refer to the work being performed (external) or the impact on the individual (internal), respectively (22). Typical monitoring systems quantify external and internal loads through a variety of metrics (7), and these can be measured both directly or indirectly. Direct measurement allows for the internal or external work to be objectively measured while indirect measurement uses a surrogate or subjective metric to infer the work being performed or the impact of said work. For example, global positioning systems (GPS) vests worn by athletes, are a direct measure of the external work performed (e.g., distance ran), while a functional neuromuscular test such as a countermovement jump (CMJ) is classified as an indirect measure of the impact of the external load that has been previously performed, when aiming to detect changes over time. While these metrics are currently well utilised in team sports (9,15,19, 42), there is notably less information on individual sports such as golf.

Unlike most team sports, professional and elite amateur golf has no clearly defined off-season unless a golfer chooses to take a break from competing (2), which means the competitive season is long for most players. For example, in 2024, the DP World Tour hosted 44 tournaments in 24 different countries, which spanned across five continents. While professional tournaments are held over four days (Thursday to Sunday), most golfers arrive at an event on Monday or Tuesday of that week in order to begin their pre-tournament routine (10). Tournaments are held in different locations each week resulting in long periods of travel, differing times zones and climates, along with the added impact of living from hotel to hotel or often house-sharing with other members of their inter-disciplinary team (13). Naturally, performing under these varied lifestyle conditions poses significant challenges; however, getting consistent sleep, maintaining a healthy diet, and having a consistent high-quality fitness regime are paramount to any athlete's performance and wellbeing (31).

Aside from the aforementioned lifestyle factors, the physical impact the golf swing has on the body must also be considered. Hosea and Gatt (21) demonstrated that the compressive forces acting on the spine may exceed 7000 Newtons (N), when swinging a driver, fairway wood or long iron. For a male player weighing 80 kg, this would equate to nearly nine times their body mass. More recently, Dale and Brumitt (12) showed that peak compression forces during a full

back swing were 7.6 ± 0.4 times body mass, and still 7.0 ± 0.5 times body mass with a shortened back swing. Further to this, with professional golfers performing approximately 2000 swings during a single tournament week (33), the cumulative physical strain on a golfer's body is almost certainly far more extensive than most perceive it to be. Therefore, it is not surprising that 56.6% (amateur) and 73.5% (professional) of golfers will sustain some form of injury over the course of their time playing golf (39), with the most frequent cause of injury being the sheer volume of repetitive practice (16,17,20,27,28). Physical preparation has been shown to not only increase performance by increasing ball speed (5), but also reduce injury (6,29,37,38). However, with the physical work performed within the gym also adding to the cumulative weekly load of a golfer, monitoring becomes an even more important component of trying to find an appropriate balance of practice and physical training, in an attempt to concurrently optimize performance and mitigate against the risk of injury.

Very little research has been done to date on training load and golf specifically. Langdown et al. (25) reported practice volumes of young golfers who were part of a regional or national golf squad, over an 11-month period. On average over a given month, male players hit 1077 ± 773 long game shots and 792 ± 624 short game shots, compared to females who hit 997 ± 750 for their long game and 727 ± 632 for their short game. Of note, the standard deviation showcases a vastly individualised approach to the amount of volume youth players are practicing. Williams et al. (40) published a content validity and feasibility study of a golf-specific load monitoring tool. With advisement from industry professionals in golf and academic experts in training load, 21 items (e.g., duration of time spent practicing, shot range [distance], shot type, hit rate, on course practice, to name a few), were included in the monitoring tool from a list of 36 items. Agreement from experts had to reach over 78% in order to establish content validity. The tool was then used by 13 high-level amateur male golfers for a 28-day period to assess its feasibility. Results showed that as long as it took < 5 -minutes to input data, golfers were willing to engage in using the monitoring system. There was also feedback that using an app-based approach instead of a spreadsheet design may also enhance compliance. Interestingly, levels of agreement were high for duration of "time spent" practicing (73.7%) and "hit rate" (78.9%), whilst the actual number of "balls hit" had poor levels of agreement (26.3%). Despite this, only a small group of amateur male golfers were recruited for this study and considering the length of the competitive golf season, 28 days reflects a relatively short period.

Given this distinct lack of meaningful information relating to training load in golf, a logical starting point was to first try and comprehend what practitioners working in the sport deemed

important to investigate, serving as a guide for where to start on this topic. With this in mind, the present study aimed to investigate the current opinions of golf coaches, performance practitioners and medical practitioners working in golf, on the topic of monitoring training load in the sport. It also aimed to gather information on the current practices of these sub-groups in order to identify the gaps between opinion and practice.

Methods

Experimental Approach to the Problem

A cross-sectional, explorative survey was designed to investigate the current opinions and practices of golf coaches (PGA professionals), performance practitioners (e.g., strength and conditioning coaches, sport scientists, nutritionists, etc.), and medical practitioners (e.g., doctors, physiotherapists, osteopaths, chiropractors, etc.) working within golf, on the topic of training load in the sport. The survey opened on the 14th August 2023 and closed on the 31st December 2023. This time frame allowed for the maximum number of participants to complete the survey in their own time with data collection over the Autumn and Winter months when the competitive golf season is typically a little less congested.

Subjects

The inclusion criteria for subjects consisted of golf coaches who were members of the PGA, strength and conditioning coaches, sports scientists, nutritionists, medical doctors, physiotherapists, osteopaths, and chiropractors who work within the sport of golf. A demographic of our subject pool and their experience in the sport is shown in Figure 1. Ethical approval was obtained from the *** deleted for peer review *** research and ethics committee at *** deleted for peer review *** (Ethics Application No: 25608).

Procedures: Survey

The survey was developed on Momentive (online survey platform) and used a bespoke design after consultation with industry experts. This consultation process was initially performed using a shared Microsoft Word document with a provisional list of questions to all co-authors. After three group meetings, a consensus was reached on the wording and structure of each

question. A key piece of information that all co-authors agreed upon was the recommendation of specific questioning for each cohort group. With the exception of general participant information, this approach was taken because it was agreed that a bespoke set of questions for each group would provide a more meaningful set of responses, ensuring that certain groups weren't responding to questions that do not fall under the remit of their practice. A convenience sample was recruited through social media platforms (e.g., X [formerly Twitter] and LinkedIn), and also direct communication through email to individuals working within professional golf across the three professional categories (i.e., golf coaches, performance practitioners and medical staff). This approach was taken owing to some of the co-author team working in these cohort groups in professional golf, in an attempt to achieve a balanced representation within the sample. Responses were collected after written informed consent was obtained and all answered questions were anonymised for data analysis. All participants completed the same first four questions regarding general participant information in section 1, after which the survey utilised 'skip logic technology' to ask each group of participants specific questions around training load in golf, that were more akin to their day-to-day jobs in the sport. These questions used a combination of Likert Scale questions regarding training load metrics within golf, Yes/No responses regarding current practices used, and all groups were offered a final comment box for any open-ended responses they wanted to include at the end of the survey. Options for the Likert scale questions included: i) Strongly Agree, ii) Agree, iii) Neither Agree nor Disagree, iv) Disagree, and v) Strongly Disagree. Consequently, four distinct areas were the result of applying this structure in the survey:

- *General Participant Information:* This section provided information regarding the participants' profession, standard of player that they have worked with, time spent working in golf, and level of education.
- *Current Opinions for Monitoring Training Load in Golf:* This section focused on establishing the current opinion of training load monitoring in golf, using Likert scale questioning between the three sub-groups.
- *Current Practices for Monitoring Training Load in Golf:* This section aimed to identify the gaps between the opinions of the three sub-groups and current good practice.
- *Other Comments:* A final text box enabled participants to add any additional comments regarding the survey content or general thoughts on monitoring training load in the sport of golf.

Statistical Analysis

To analyse participant responses, manifest content analysis was used to provide an in-depth insight into the research (24). This form of analysis is based on the premise that text can serve as a valuable and comprehensive insight into a particular phenomenon (23), with the primary purpose to analyse the text data collected via the ‘Other Comments’ responses. Consequently, frequency analysis with percentage of responses was undertaken resulting in the following categories being subsequently developed:

- Monitoring training load can improve performance.
- Monitoring training load can reduce injury and/or illness.
- Golf coach responses to training load questions.
- Performance practitioners responses to training load questions.
- Medical practitioners responses to training load questions.
- Yes/No answers regarding current practices for each sub-group.

Following this, participant responses within the ‘Other’ comments were used to develop a thematic analysis based on the process put forward by Naeem and Ozuem (32). The total responses were collected, keywords analysed, and then developed into subsequent themes. To convey the scale of percentages associated with participant responses, the qualitative terms were assigned: < 30% = minority; ~30% = approximately a third; ~50% = approximately half; 55-74% = majority; ≥ 75% = most; 100% = all respondents, as per previous research (34,35).

Results

General Participant Information

A total of 89 practitioners completed the questions for this section with 23 (26%) being golf coaches, 35 (39%) being performance practitioners and 31 (35%) being medical practitioners. A full breakdown of the responses relating to general participant information can be seen in Figure 1, with questions being asked about: i) their primary profession, ii) how long they have been working in that role in golf, iii) the level of golfer they worked with, and iv) their highest level of formal education.

***** Insert Figure 1 about here *****

Figure 1. General participant information for golf coaches, performance practitioners (e.g., strength and conditioning coaches or sports scientists), and medical practitioners (e.g., doctors or physiotherapists).

Current Opinions for Monitoring Training Load in Golf

For each type of practitioner, specific questions were asked pertaining to training load in golf in order to gain insight into what they believed to be important from a monitoring perspective. The reader should note though, that some participants skipped certain questions out of choice, resulting in fluctuating numbers from each cohort of practitioner type, throughout the remainder of the survey.

When golf coaches were asked if monitoring training load can help to improve performance, 9 (50%) strongly agreed and 9 (50%) agreed. When they were asked if monitoring training load could help to reduce injury and/or illness, 12 (67%) strongly agreed and 6 (33%) agreed. When performance practitioners were asked if monitoring training load can help to improve performance, 20 (64%) strongly agreed, 10 (32%) agreed, and 1 (3%) was neutral. When they were asked if monitoring training load could help to reduce injury and/or illness, 20 (64%) strongly agreed and 11 (35%) agreed. When medical practitioners were asked if monitoring training load can help to improve performance, 18 (72%) strongly agreed and 7 (28%) agreed. Finally, when they were asked if monitoring training load could help to reduce injury and/or illness 20 (80%) strongly agreed and 5 (20%) agreed. A summary of these responses can be viewed in Figure 2.

***** Insert Figure 2 about here *****

Figure 2. Responses from the three groups of practitioners regarding their beliefs surrounding training load and its importance for both performance and injury risk.

Golf Coaches

When golf coaches were asked if monitoring the number of balls hit during a practice session is important, 4 (22%) strongly agreed, 9 (50%) agreed, and 5 (28%) neither agreed nor disagreed (neutral). When asked if they monitored the time a player spends on the range is

important, 5 (28%) strongly agreed, 9 (50%) agreed, and 4 (22%) were neutral in their opinion. When asked if they monitored the rate that shots were hit was important, 2 (11%) strongly agreed, 11 (61%) agreed, and 5 (28%) were neutral. When monitoring whether the environmental temperature was important for golfers, 1 (5%) strongly agreed, 7 (39%) agreed, and 10 (55%) were neutral. When asked if monitoring the time of day players practiced was important, 2 (11%) strongly agreed, 6 (33%) agreed, 9 (50%) were neutral, and 1 (5%) disagreed. When asked if monitoring which club is used to hit shots is important, 5 (28%) strongly agreed, 10 (55%) agreed, and 3 (17%) were neutral. A summary of these data is presented in Figure 3.

Performance Practitioners

For performance practitioners, 22 (71%) strongly agreed, 6 (19%) agreed, and 3 (10%) neither agreed nor disagreed (neutral) that monitoring work done in the gym is important. When asked what specifically they do monitor that was associated with training load (noting that multiple options were possible), 24 (77%) used RPE, 21 (68%) used a measure of lower body power, 20 (64%) used a measure of lower body strength, 17 (55%) used a measure of upper body strength, 16 (52%) monitored sleep, 12 (39%) utilised a recovery questionnaire, 11 (35%) used a measure of upper body power, 6 (19%) used HRV and 2 (6%) selected “Other”. When asked if monitoring the warm-up activities of a golfer is important, 9 (29%) strongly agreed, 16 (52%) agreed, 5 (16%) were neutral, and 1 (3%) disagreed. In answer to whether monitoring both sleep quantity and quality is important, 11 (35%) strongly agreed, 17 (55%) agreed, and 3 (10%) gave a neutral response. When asked if the nutritional and hydration intake of a golfer is important to monitor, 13 (42%) strongly agreed, 14 (45%) agreed, and 4 (13%) were neutral. When asked if monitoring the menstrual cycle of a female player is important to monitor, 9 (29%) strongly agreed, 17 (55%) agreed, and 5 (16%) were neutral. When asked if it is important to monitor stages of maturation in youth golfers, 16 (52%) strongly agreed, 11 (35%) agreed, and 4 (13%) were neutral. These data are shown in Figure 4.

Medical Practitioners

When medical practitioners were asked if monitoring days missed due to injury was important, 18 (72%) strongly agreed, 6 (24%) agreed, and 1 (4%) provided a neutral response. When asked if recording a golfer’s injury history is important, 21 (84%) strongly agreed and 4 (16%) agreed.

In response to whether monitoring the time and type of practice a golfer does is important, 13 (52%) strongly agreed, 10 (40%) agreed, and 2 (8%) were neutral. Finally, when asked about whether monitoring the volume and type of practice a golfer does during their injury rehabilitation journey, 18 (72%) strongly agreed, 6 (24%) agreed, and 1 (4%) gave a neutral response. These data are shown in Figure 5.

*** Insert Figures 3-5 about here ***

Figure 3. Responses from golf coaches relating to their opinions on the importance of monitoring training load in golf.

Figure 4. Responses from performance practitioners relating to their opinions on the importance of monitoring training load in golf.

Figure 5. Responses from medical practitioners relating to their opinions on the importance of monitoring training load in golf.

Current Practices for Monitoring Training Load in Golf

Golf Coaches

When coaches were asked if they recorded the number of balls hit during a session, 9 (50%) answered yes. When asked if they record the time spent practicing, 11 (61%) answered yes. When asked if they record the rate shots that were hit during a practice session, 5 (28%) responded yes. When asked if they record the club being used to hit shots 11 (61%) answered yes. When asked if they record the time of day players practice and compete, 5 (28%) responded yes. When asked if they record the environmental temperature players practice and compete in, 3 (17%) answered yes. Results for these responses are presented in Figure 6.

Performance Practitioners

When asked if they quantify work done in the gym, 28 (90%) answered yes. When asked if they quantify warm-up activities, 15 (48%) answered yes. When asked if they measure sleep quality and/or quantity, 20 (64%) answered yes. When asked if they monitor the nutritional and

hydration intake of their golfers, 12 (39%) answered yes. When asked if changes in performance were monitored during the menstrual cycle in female golfers, 9 (29%) answered yes. When asked if the stages of maturation are quantified in youth golfers, 18 (58%) answered yes. When asked if any golf specific metrics (e.g., club head speed) are used to help golfers adhere to a certain intensity of practice, 13 (42%) answered yes. Results for these responses are shown in Figure 7.

Medical Practitioners

When asked if days of training and competition missed due to injury are recorded, 16 (64%) answered yes. When asked if a formal record of a golfer's injury history is kept, 21 (84%) answered yes. When asked if the technical coach is liaised with when treating a golfer, 16 (67%) answered yes. When asked if the time spent practicing and type of practice is recorded, 6 (24%) answered yes. When asked if the type and volume of practice a golfer performs during rehabilitation from an injury is recorded, 16 (64%) answered yes. Finally, when asked if any golf specific metrics (e.g., club head speed) are used to help players adhere to a certain intensity of practice, 12 (48%) answered yes. Results for these responses are shown in Figure 8.

*** Insert Figures 6-8 about here ***

Figure 6. Responses from golf coaches relating to questions on current practices of monitoring training load in golfers.

Figure 7. Responses from performance practitioners relating to questions on current practices of monitoring training load in golfers.

Figure 8. Responses from medical practitioners relating to questions on current practices of monitoring training load in golfers.

Open Ended Responses

The final question of the survey allowed participants to provide any additional comments that they deemed relevant to this topic, which may not have been covered in questioning. Consequently, these comments were separated into the existing three sub-groups with four comments provided by golf coaches, four from performance practitioners, and five from

medical practitioners. A thematic analysis was performed with the relevant points consisting of:

- *Individualisation*: Tracking a player's requirements should be individual-specific and done on a case-by-case basis.
- *Education*: Ensuring players are educated on the basic principles of training load monitoring and its relevance for their health and performance.
- *Practical Applications*: How data pertaining to a player's training load can be collected without detrimentally impacting their performance or the other functions of a golf coach, performance or medical practitioner.
- *Lack of Information*: Needing to understand what metrics are important to measure and how these may impact players are not fully understood due to a distinct lack of research in this area.

Discussion

The aim of the present study was to undertake a survey of technical coaches and support staff practitioners in golf, to evaluate their knowledge of monitoring training load and to gain insights on the current practices used for monitoring training load in the sport. When golf coaches, performance and medical practitioners were asked if monitoring training load can help to improve performance and reduce injury or illness, 99% and 100%, respectively, agreed with these statements. This indicates that virtually all technical coaches and support staff practitioners agree on the importance of monitoring training load in golf. However, our findings indicate that this does not entirely translate to what is done in practice. In addition, owing to the structure of the survey, four distinct sub-sections were evident in the results: 1) General Participant Information, 2) Current Opinions of Training Load in Golf, 3) Current Practices of Training Load in Golf and, 4) Other Comments from the participants. However, when discussing our findings, greater context is provided by discussing both opinions and current practices together. Therefore, the following will combine the evaluation of opinions and practices for each sub-group, providing greater clarity on whether golf coaches and practitioner opinions, are matched to their current practices.

Golf Coaches

Figures 3 and 6 show the results of the current opinions and practices of golf coaches, respectively, in relation to training load, which portrays a clear gap between what coaches believe to be important and what is actually done in practice. The questions surrounding 'time of day' and 'environmental temperature' were the only factors that did not reach over 50% agreement within this sub-group, indicating the other proposed factors in this survey were generally well accepted. Our findings showed that 72% of coaches agreed that the number of balls hit was important to measure, but only 50% measured this in practice, whilst 78% of coaches agreed time spent practicing was important to monitor, with 61% measuring this in practice. Further to this, 83% of coaches indicated monitoring which club was being used in practice was an important consideration, whilst 61% monitored this. One explanation for the gap between opinion and practice here is the fact that golf coaches are typically focused on a player's swing technique and how this translates to the desired shot outcome in order to provide appropriate internal or external focused cues (41). Consequently, if coaches are also measuring or calculating additional data, it may distract them from what is considered to be their primary reason for being with the player. However, with launch monitors recording the number of shots hit during a practice session, the club used (assuming it has been programmed accordingly), this does ensure that such data can be captured automatically during practice sessions (1,4,26). In contrast, 72% of coaches agreed it was important to monitor shot rate, but only 28% answered yes to doing this in practice. This may indicate that there are some feasibility issues around recording this, which in turn, indicates that perhaps further investigations are required to determine the best ways of doing this effectively for coaches and players. This view is also echoed in a particular comment left by one of the golf coaches who suggested, that despite its benefits, monitoring training load in golfers can be challenging and time consuming, which in turn, is one of the reasons they use Whoop with their players. However, readers should note that while technologies like Whoop provide 'a solution of sorts', levels of agreement between Whoop and gold standard methods (e.g., polysomnography) range widely from 51-95%, depending on the variable in question (30).

Performance Practitioners

Results from this sub-group are shown in Figures 4 and 7, respectively. Ninety percent of performance practitioners agreed that monitoring work done in the gym and during golf practice sessions was important. This was one of the few metrics where there was equal

agreement between opinion and practice indicating that if there is high value in measuring a metric, the group would be more likely to follow through and do this in practice. Established methods of recording work done may also explain the high carry over from opinion to practice with rate of perceived exertion (RPE), lower body strength, and lower body power being the most commonly used measures. Monitoring the work done during the warm-up was the only area of golf performance that over 80% of practitioners did not agree with, with 68% agreeing it was important to monitor and only 48% doing this in practice. This is somewhat surprising given the volume of published literature in the last 10-15 years on this topic in golf (14). There were large gaps shown between the importance of monitoring: hydration and nutrition status (opinion = 87%, practice = 39%), menstrual cycle (opinion = 84%, practice 29%) and maturation (opinion = 87%, practice = 58%). Within this sub-group, it could be said there is a greater level of education and comprehension within the area of training load as demonstrated in the answers to question four of the survey, given it is commonly used in routine monitoring practices of athlete populations (3,18), but with limited evidence of how such measures are applied in golf. Finally, within the specific comments, there was a clear indication that performance practitioners felt this area needed developing, starting with educating players on the key aspects of training load, in addition to its benefits from a long-term perspective.

Medical Practitioners

The data shown in Figures 5 and 8, displays the gaps between opinions and practices of medical practitioners, respectively. All metrics regarding training load had an opinion rate of over 90% agreement with the exception of the use of golf-specific metrics (e.g., clubhead speed). For this question, large differences between opinion and practice was seen which may be explained by limited access to the player while working on the range or course. Medical practitioners are unlikely to have the same amount of contact time with a healthy player throughout a season as a golf coach or a performance practitioner. This may mean they are reliant on the player to feedback on these variables or to get data from the performance practitioner. An example of this is the high opinion (92%) on the importance of measuring the time and type of practice a golfer makes and the low number (24%) of medical practitioners that actually measure this. As the medical practitioner would not normally be present in the gym or on the range, they would then be recording this data from a secondary source such as the player or performance practitioner. When looking at the gap between the volume and type of practice during injury

rehab, this gap is less with 96% believing it is important and 64% doing this in practice. Again, this can be explained by the fact that the medical practitioner is likely to be more involved with the athlete during their return-to-play journey. This is also supported by the 92% agreement in the importance of liaising with the technical coach during the rehabilitation of a golfer. Recording the days missed through injury or illness had a high opinion rate of 96%, but again, with only 64% doing this in practice. On the professional tour, golfers may not all be present at each event, therefore being able to record this accurately may have its challenges for medical staff. Recording the injury history of golfers had a 100% opinion rate, which seems like a non-negotiable aspect of monitoring for a medical practitioner, but surprisingly only 84% indicated they recorded this in practice. This type of data is ‘industry standard’ for medical practitioners (8); thus, it is surprising to see 16% of medical practitioners not following through on such a critical part of the injury monitoring process. However in practice, all health professionals would claim to take notes for an individual they have consulted with. On a professional tour (e.g., PGA Tour or DP World Tour), these same health professionals typically look after the full ‘tour’ of players, so provide reactive care to situations that emerge. Naturally, some health professionals work with individual or smaller groups of players and may be better placed to perform proactive illness and injury surveillance, charting injuries sustained away from the events.

Limitations

Despite the novelty of this research, some limitations must be acknowledged. Firstly, each subgroup of practitioners were asked somewhat different questions. Although we see this as a strength of the present study, it does make it challenging to compare findings between groups, given each had their own bespoke set of questions, which were felt to be most appropriate for their job role. That said, future survey-based research may wish to undertake a Delphi study design, which would enable a more consistent approach to both answers and subsequent interpretations. Second, given that participants were from a variety of different countries, it must be acknowledged that practice may differ between different geographical regions. For example, what practitioners and coaches monitor in the UK or Europe (where the majority of participants were from) may well be different to the average practitioner in the USA or Japan. Third, we must also acknowledge the potential for self-reporting bias with surveys of this nature. However, given the collective sample size recruited in the present study ($n = 89$), this

should aid in reducing the impact of any existing bias from particular individuals. Finally, and not so much a limitation of this study design *per se*, but it is clear that some aspects of monitoring what golfers do has clearly defined roles for these sub-groups (e.g., injury management for medical practitioners). In contrast, other areas may have some degree of overlap (e.g., use of launch monitor data by both golf coaches and performance practitioners). With this in mind, future practice and scientific investigations into monitoring and understanding load management in golf, likely require all types of coaches and practitioners working together, to ensure that the most important questions are being asked, and for some of the associated challenges of data collection to be overcome.

Practical Applications

The findings from this survey have identified a noticeable gap within the current opinions and practices of training load monitoring for golf coaches and performance and medical practitioners. While the majority of coaches and practitioners are in agreement with the value of training load and the specific metrics proposed to be required to measure this within golf, in practice, the number that actually monitor these values is substantially lower. Practically applied suggestions can seemingly relate to two key areas: practice and research.

From a practice standpoint, and although a somewhat simple set of suggestions, practitioners may wish to consider quantifying aspects of golf practice such as: time spent on the range, number of balls hit (and with which clubs), and shot rate. Further to this, given golfers are often required to compete in different climates, there may also be some use to subjective measures such as rate of perceived exertion, especially in hot and humid climates, which may elicit a different response from players compared to cooler locations. From a research standpoint, future empirical investigations should aim to better understand the biomechanical and loading demands of golfers. Whilst some studies have investigated the ground reaction forces during the golf swing, comprehending how the magnitude of these forces varies between clubs and how these values correspond to a player's maximal force production capability (e.g., during an isometric mid-thigh pull) would provide greater context as to the link between forces experienced during the swing and a player's physical capacity. It is our suggestion that these research ideas are practical suggestions given the widespread use of force plates in strength and conditioning testing, in recent years.

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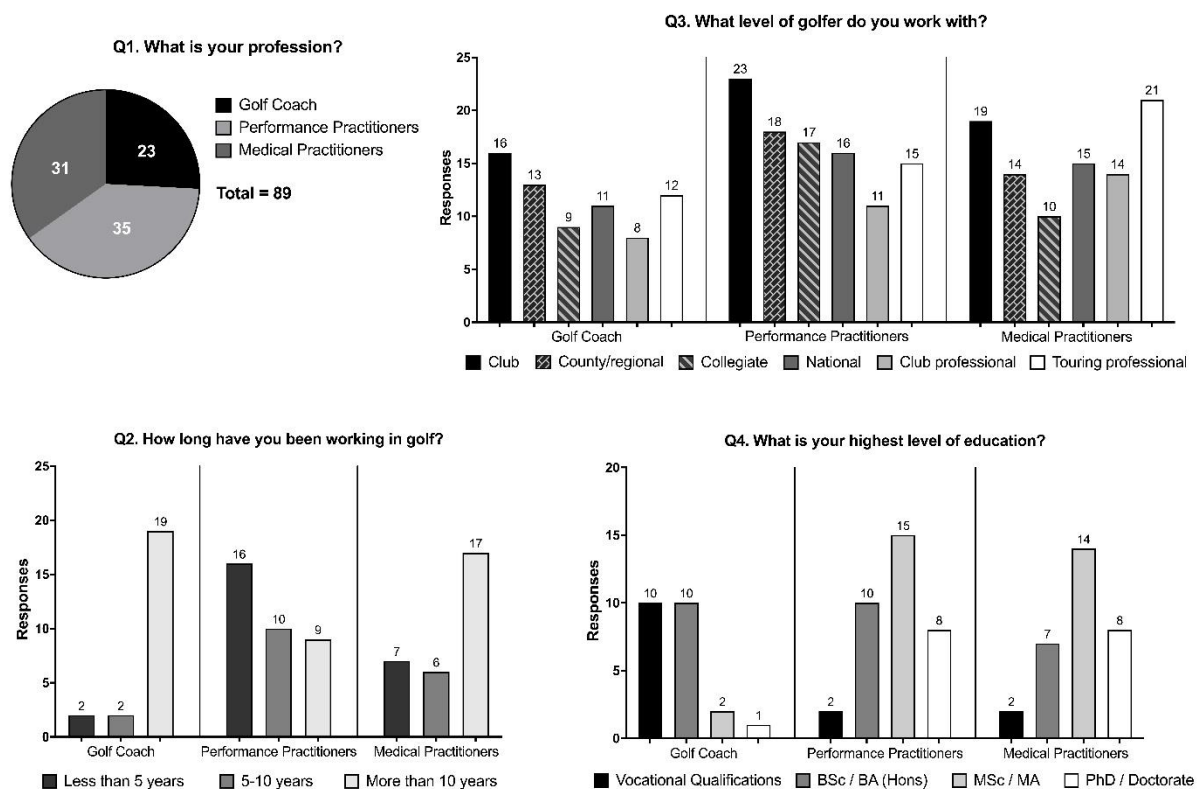


Figure 1. General participant information for golf coaches, performance practitioners (e.g., strength and conditioning coaches or sports scientists), and medical practitioners (e.g., doctors or physiotherapists).

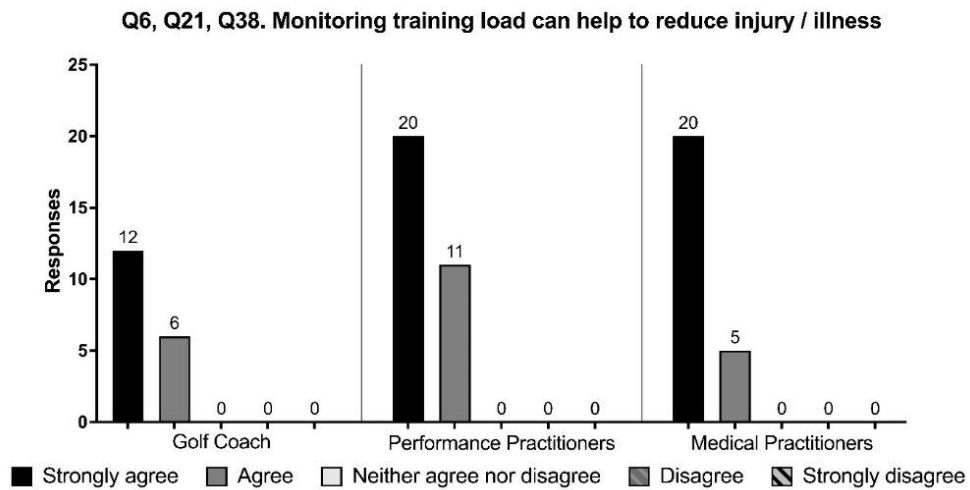
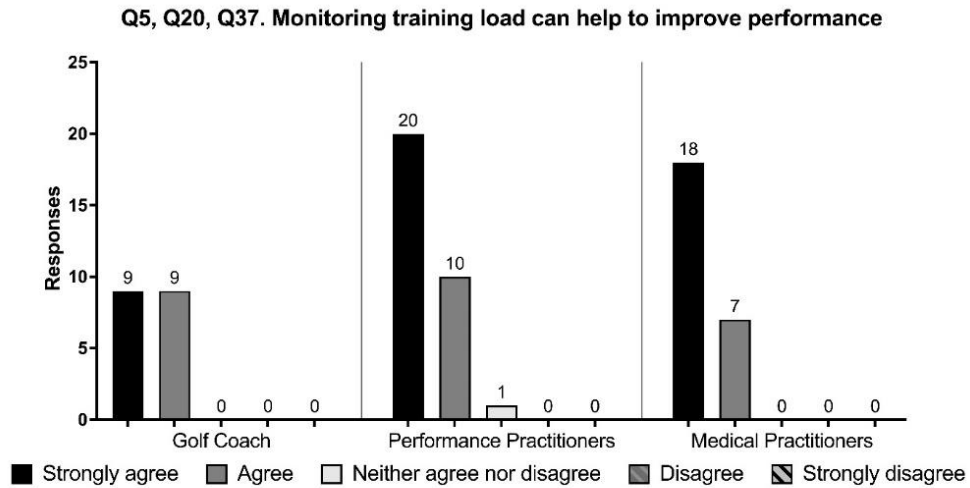


Figure 2. Responses from the three groups of practitioners regarding their beliefs surrounding training load and its importance for both performance and injury risk.

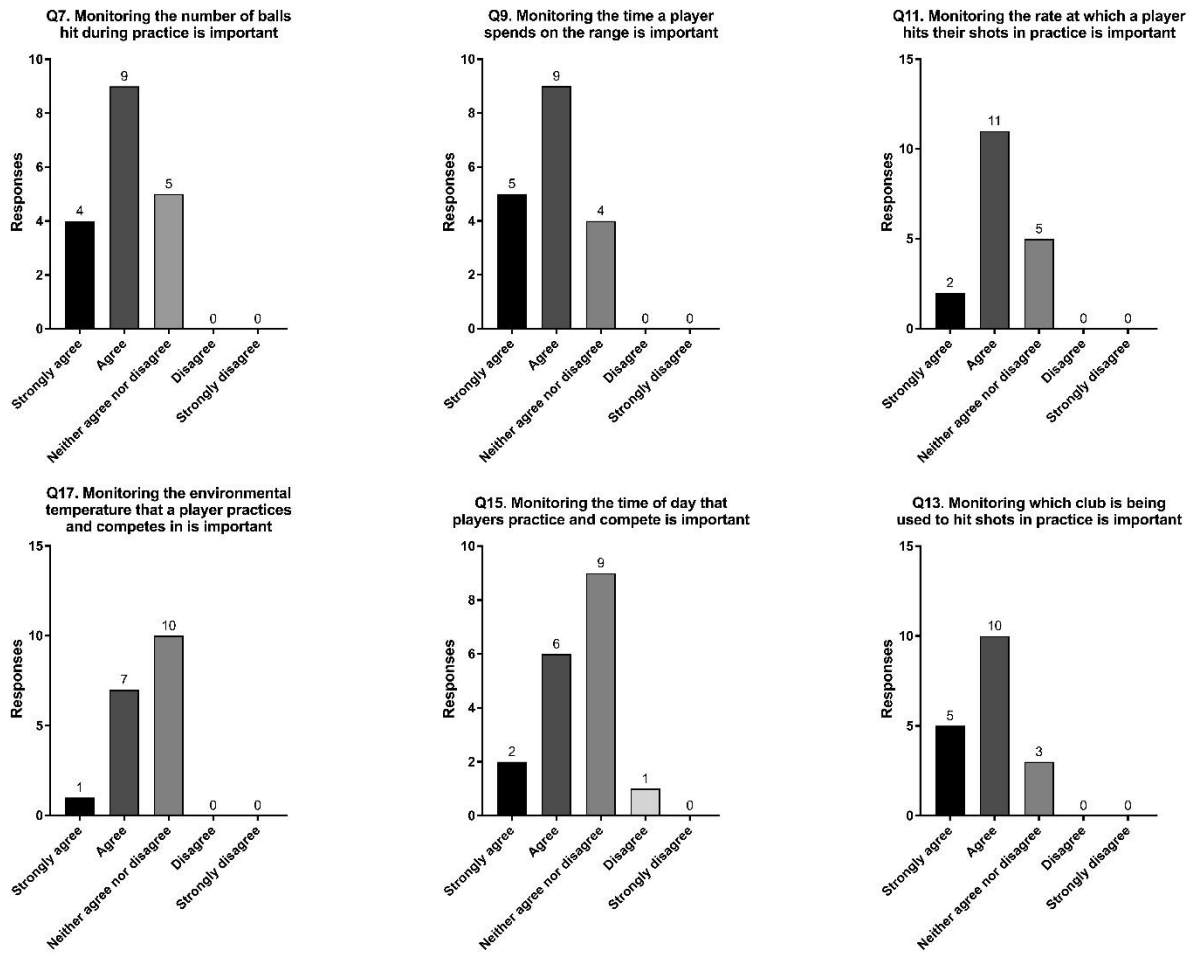


Figure 3. Responses from golf coaches relating to their opinions on the importance of monitoring training load in golf.

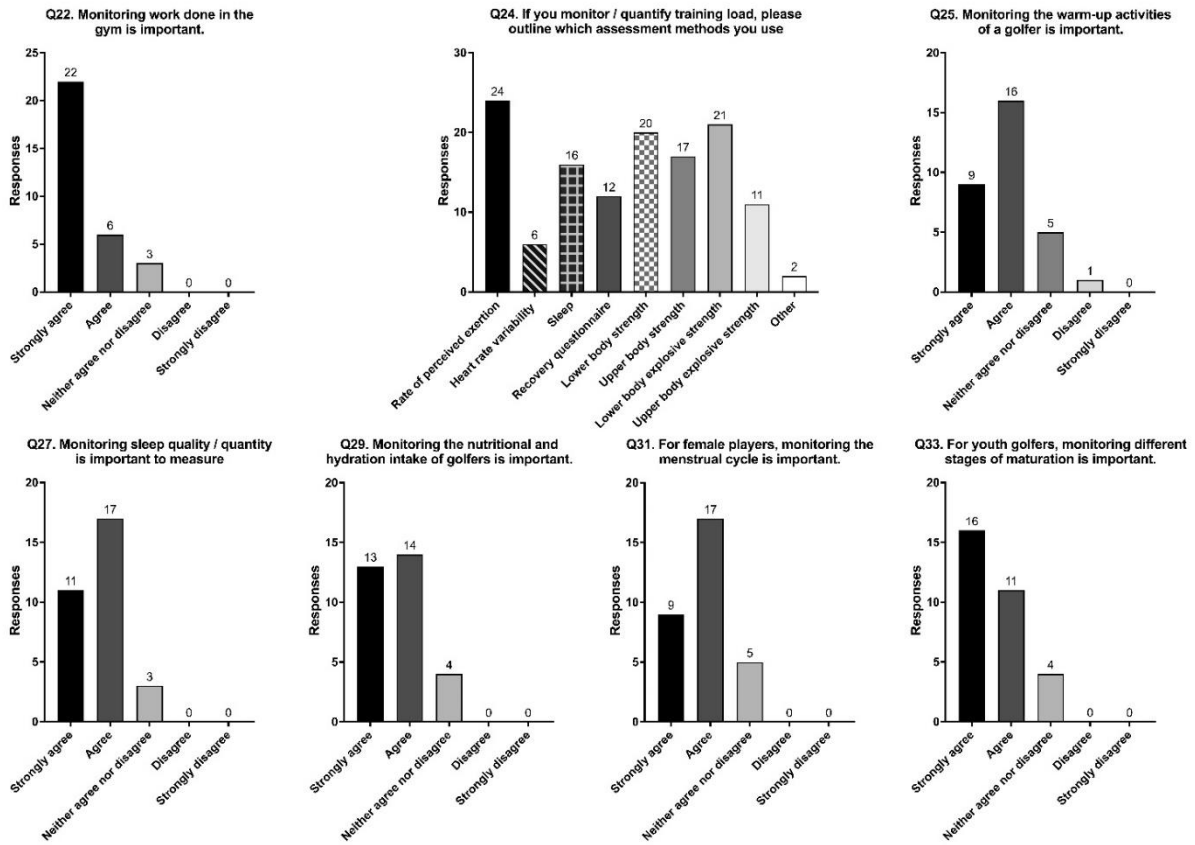


Figure 4. Responses from performance practitioners relating to their opinions on the importance of monitoring training load in golf.

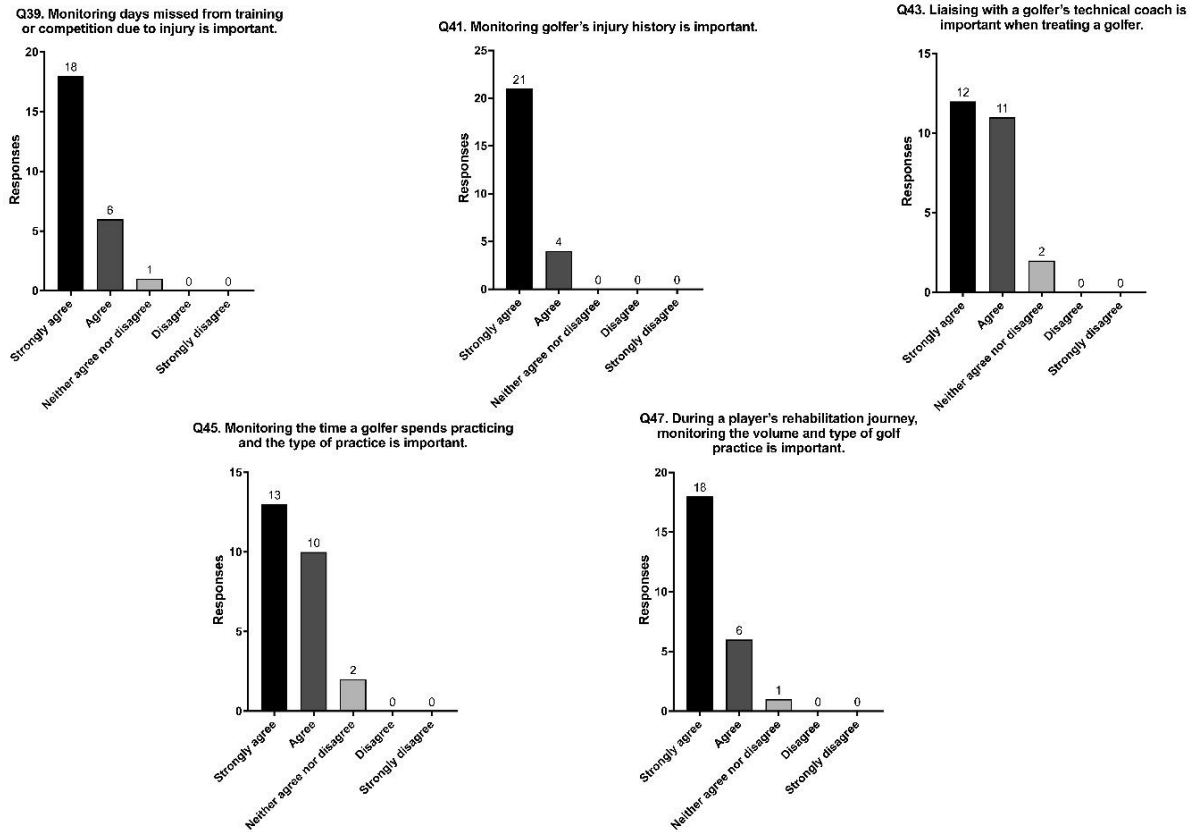


Figure 5. Responses from medical practitioners relating to their opinions on the importance of monitoring training load in golf.

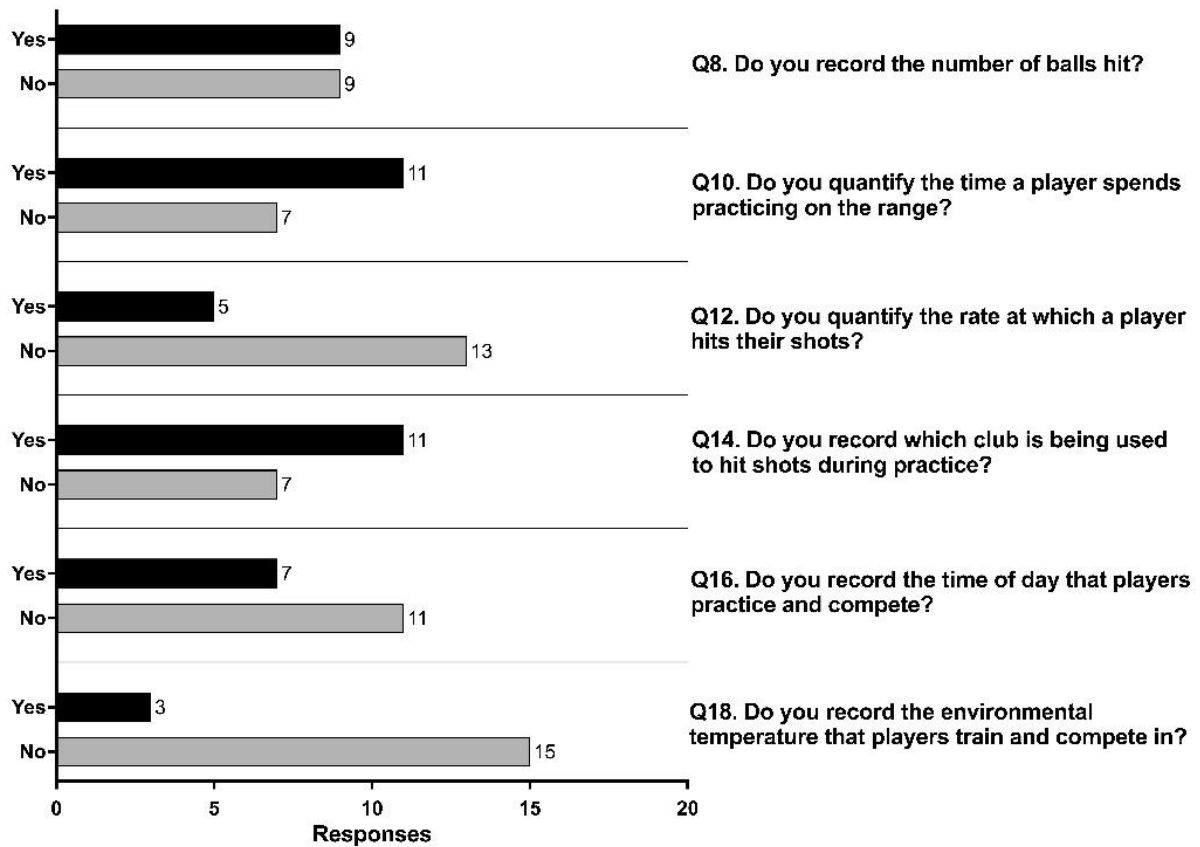


Figure 6. Responses from golf coaches relating to questions on current practices of monitoring training load in golfers.

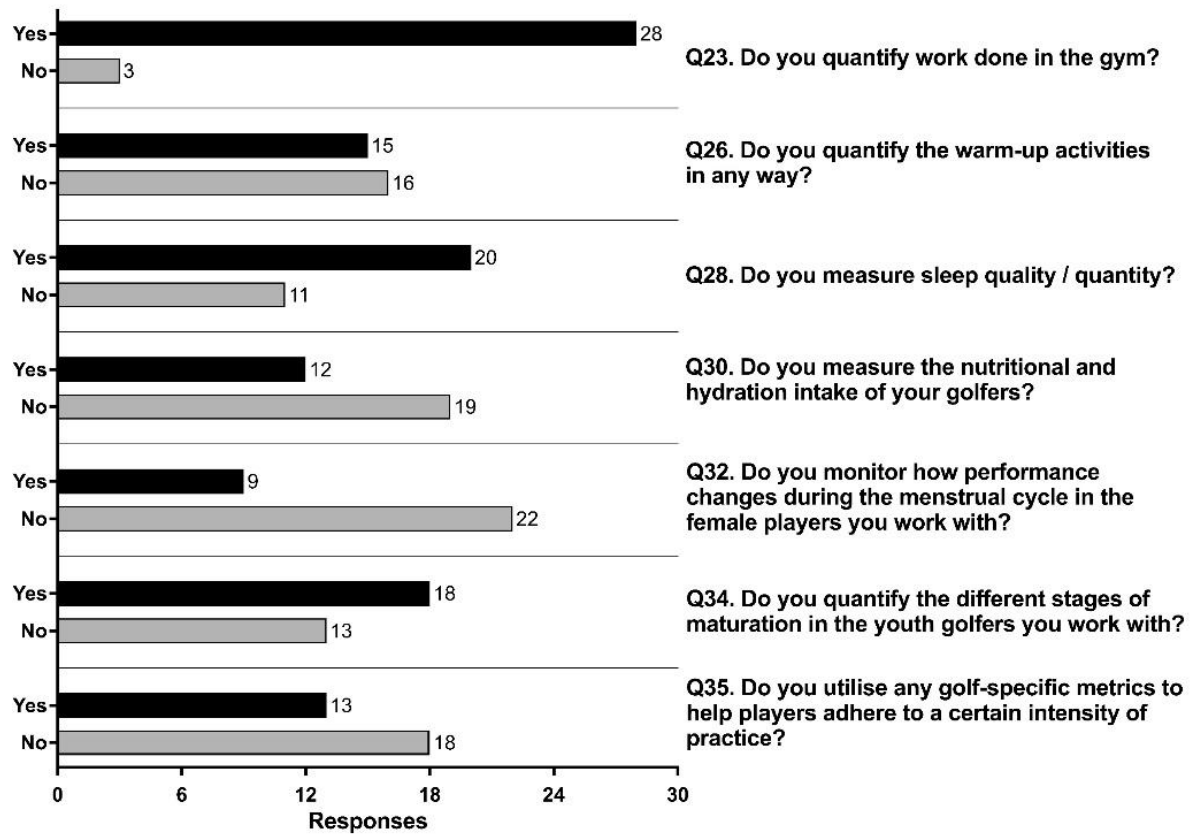


Figure 7. Responses from performance practitioners relating to questions on current practices of monitoring training load in golfers.

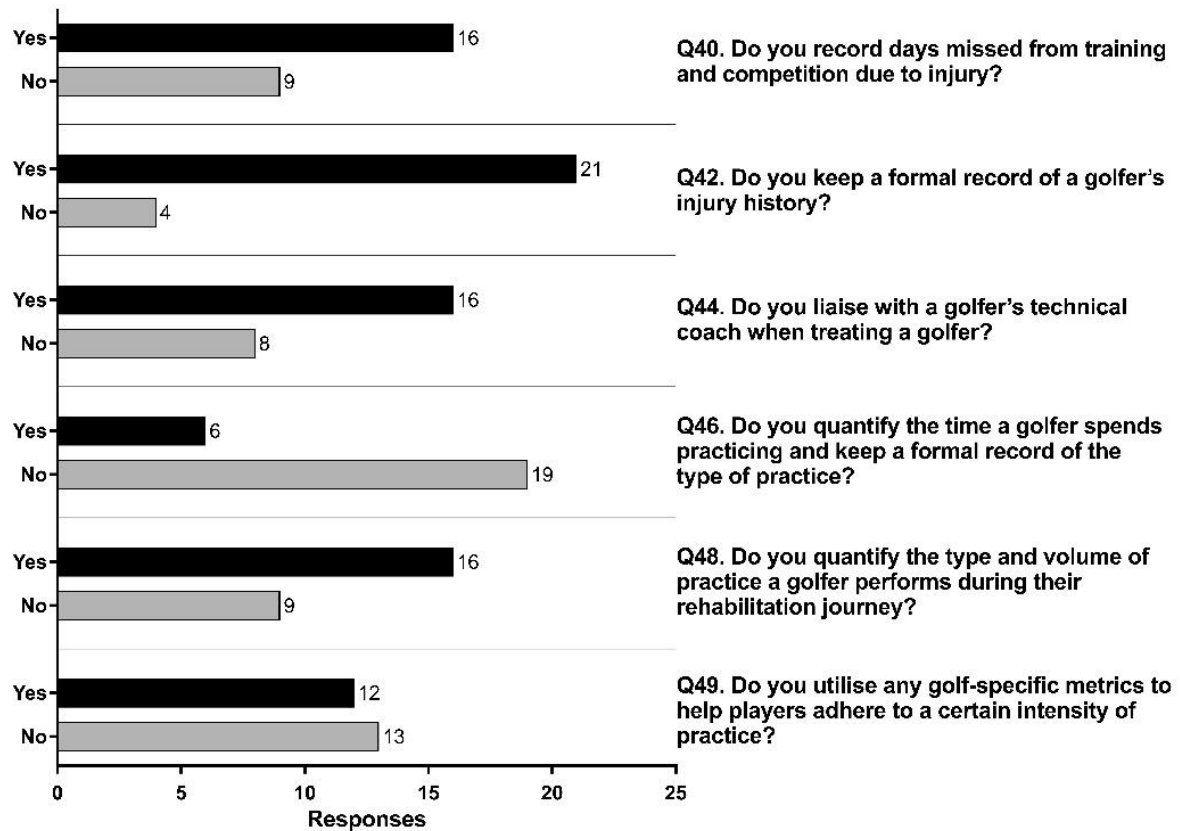


Figure 8. Responses from medical practitioners relating to questions on current practices of monitoring training load in golfers.