

Research article

Self-generated coping strategies among Muslim athletes during Ramadan fasting

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Abstract

The study explored the self-generated coping strategies employed by Muslim athletes from South East Asian region during the Ramadan fasting month. Sixty-five National elite Muslim athletes responded to an open-ended question on coping strategies employed during Ramadan fasting. Inductive content analysis identified five general dimensions from 54 meaning units which were abstracted into 14 first-order themes and 10 second order themes. The general dimension included four problem-focused coping: training modifications, dietary habits, psychological, rest and recovery, and one emotion-focused coping i.e., self-control. The coping strategies employed were diverse and dynamic in nature and no specific pattern was evident. The most frequently employed strategies were associated with training and dietary habits. Emotion focused coping was the least frequently used by the athletes.

Key words: Ramadan, training, competition, psychological coping, self-control, habit.

Introduction

Coping essentially involves an athlete's individual response to deal with a stressful situation (Lazarus and Folkman, 1984). Commonly used coping strategies include (a) problem focused coping, where the athlete tries to reduce the symptoms associated with stress or alleviate the stimulus causing stress response, and (b) emotion focused coping, in which the athlete tries to regulate his or her emotions to manage distress. Contemporary transactional model of stress and coping forms the theoretical basis for the present study. The model proposes that the stress process involves primary and secondary appraisals and coping results from the interactions between appraisal of the situation and individual responses (balance/imbalance) (Lazarus and Folkman, 1984). In primary appraisal, the individual determines the implication of personal stake for their commitment, and in secondary appraisal, the individual evaluates the available coping resources to deal with the demands. While coping is required if situations are perceived as harmful, threatening or challenging, positive appraisals seldom require coping responses (Anshel and Delany, 2001).

Coping is now increasingly seen as a useful strategy prior to the occurrence of stress. Typically, the framework underlying this study involves the coping strategies which functions as *anticipatory coping*, *preventative coping*, and *proactive coping* (Greenglass, 2002). In anticipatory coping, the coping efforts deal with events that are fairly certain to occur in future. Preventative coping aims at developing resources to reduce the effects

of stressful uncertain future events (Peacock et al., 1993). Proactive coping involves strategies to develop general resources in achieving personal goals and growth (Greenglass, 2002).

Each year during the Islamic month of Ramadan, Muslims engage in observing fast from dawn to sunset daily, for 30 consecutive days. Eating and drinking are permissible during the nocturnal hours, with no restrictions to the amount or type of food or fluid that can be consumed. Typically, Muslims consume the majority of their daily nutrient intake at two sittings, the first meal just before commencement of the day's fast (i.e., *sahur* meal), and the second meal at the breaking of the day's fast (i.e., *iftar* meal). The issue of Ramadan fasting and sports participation is not new and most Muslim athletes tend not to refrain from training and competing during Ramadan. However, the adherence to socio-religious practices during this period can potentially lead to disruptions in the normal routine which could have physiological and/or psychological consequences for athletes.

Whilst research on fasting has indicated the prevalence of irritability, increased incidences of headaches, sleep deprivation, general fatigue, reduction in the feelings of well-being, and impairment in the cognitive functions (Kadri et al., 2000; Leiper et al., 2003), the impact of Ramadan fasting on exercise performances has been mixed. Some studies demonstrated that various types of exercise performances were not affected during Ramadan as compared to the same exercises performed during the non-Ramadan period. In contrast, others have indicated adverse impact of Ramadan fasting on exercise performances (see reviews of Aziz and Png, 2008; Chaouachi et al., 2009a; Waterhouse, 2010). One possible reason for the disparate findings between studies could be due to the dynamic approach of the coping strategies being adopted by each athlete. Coping responses changes from situation to situation and from individual to individual, and research has indicated that elite athletes frequently select different coping strategies to fit a myriad of situations (Gould et al., 1993; Park, 2000). Coping strategies can be dispositional in nature, (Giacobbi and Weinberg, 2000) and athletes would have, innately adopted the most effective way of coping with certain similar situations. In the case of Ramadan fasting, such a dispositional coping nature cannot be ruled out because Muslim athletes have been traditionally following fasting throughout. For example, Muslim children as young as six years old are initially encouraged to fast for at least a few hours each day, and eventually, by ten years old, most of them are able to keep fast for the entire daylight hours (~12-14 h)

(Poh et al., 1996). Thus, Muslim athletes, particularly those with many years of athletic experience, have most likely developed their own strategies to cope with fasting or have had acquired some learned behavioural patterns that they felt were effective in dealing with the challenge of fasting. In short, some Muslim athletes may be successful in their coping strategies and thus showed no adverse influence of Ramadan fasting on their subsequent exercise performances whilst others may be less able to cope with the perturbations induced by Ramadan fasting, which led to poor exercise performances.

Presently, the calendar of international sporting competitions does not take into consideration the Ramadan fasting period; and a case in point is that the London Olympics will fall right in the middle of the Ramadan month in 2012. Hence, it is important to understand the existing coping strategies adopted during Ramadan fasting and subsequently to be able to devise specific interventions that can help fasting Muslim athletes better handle or manage themselves when exercising in the Ramadan fasted state. The purpose of the present study, therefore was to explore the coping strategies adopted by the Muslim athletes whilst training or competing during Ramadan fasting. Specifically, the aim was to examine the self-generated coping strategies employed by these athletes.

Methods

Participants

Sixty-five (karate, $n = 3$; ten-pin bowling, $n = 4$; squash, $n = 6$; archery, $n = 4$; lawnbow, $n = 1$; pencak silat, $n = 2$; weightlifting, $n = 6$; field hockey, $n = 10$; cycling, $n = 9$; sepak takraw, $n = 18$; badminton, $n = 2$) Muslim athletes between 16 and 31 years old (mean = 23 y, SD = 4.6 y) volunteered for the study. Sixty eight percent ($n = 44$) of the participants were males and 32% ($n = 21$) were females. Participants were national-level athletes undergoing training under the sanctioned program of the National Sports Council of Malaysia. Purposive sampling was used to ensure that participants had been fasting during Ramadan and also have had competitive experiences at the national and international level, ranging from the regional South-East Asia Games to the Olympic Games. Approval and ethical permissions for the study were granted by the Institutional Research Committee of the first author. All participants were briefed on the purpose of the study and signed an informed written consent. The participants were assured about the confidentiality of their responses. The study was conducted during the Ramadan fasting month of the year 2009.

Procedures

The study's questionnaires required the athletes to respond to the following question, "Describe what coping strategies do you employ to reduce the impact of Ramadan fasting on training/competition?" To maintain a clear understanding of the strategies and to allow flexibility in the content of responses, all participants were provided with writing materials. There were no time limit set to respond to the questions and athletes were requested to retrospectively provide as many strategies as they have

had previously employed. Follow-up probes included clarification and elaborations when the coping strategies overlapped with usual or routine activities, or that they were not specifically related to athletic training or to the period of Ramadan fasting. All participants completed their response within 30 minutes. At least one of the investigators was present during the testing to clarify any queries and to answer any doubts that the athletes might have.

Data analysis

The transcripts were independently analyzed to construct an idiographic profile of strategies used by the athlete. The statements extracted from the idiographic profile provided the cognitive strategies used during Ramadan. Data reduction was done to organize the meaningful qualitative data and discard irrelevant data. An open coding (Gratton and Jones, 2004) was done by selecting statements relating to the research question as 'meaning units' and each was assigned a code. Axial coding (Strauss and Corbin, 1990) was done which involved the researchers re-reading the qualitative data and searching for statements fitting into any of the categories. Each researcher looked for patterns, sequences, possible causal relationships and explanation in the codes to relate the statements to more general codes. The coding results were then compared among the researchers to ensure a clear and valid set of codes. As suggested by Krane et al. (1997), the research partners acted as "devil's advocate" in questioning the coding. The reliability was calculated using the formula suggested by Miles and Huberman (1994), which involves dividing the number of agreements by the sum of number of agreements and number of disagreements to achieve a score of at least 91%.

Independently identified meaning units ($N = 54$) were then inductively content analyzed clustering it into common categories. Each meaning unit was tagged with appropriate label which represented raw data themes. Raw data themes were clustered together to form the first order and the second order themes. The inductive process was continued until it was no longer possible to generalize the themes. From the collective responses derived from participants, the highest order themes in each category were labelled 'General Dimension'.

Results

Fifty-four raw data themes extracted from the transcripts were abstracted into higher order themes. Subsequently, the higher order themes were further abstracted into five general dimensions, which were a summary of coping strategies used by the Muslim athletes during Ramadan fasting. The five general dimension arrived at were: 1) Training modifications, 2) Dietary habits, 3) Psychological, 4) Self-control, and 5) Rest and recovery.

Five first-order themes and two-second order theme were abstracted to derive the general dimension 'Training modifications' (Figure 1). Four first-order themes and four second-order themes were abstracted to form the general dimension 'Dietary habits' (Figure 2). Two first-order themes and one second-order themes were abstracted to form the general dimension 'Psychological'

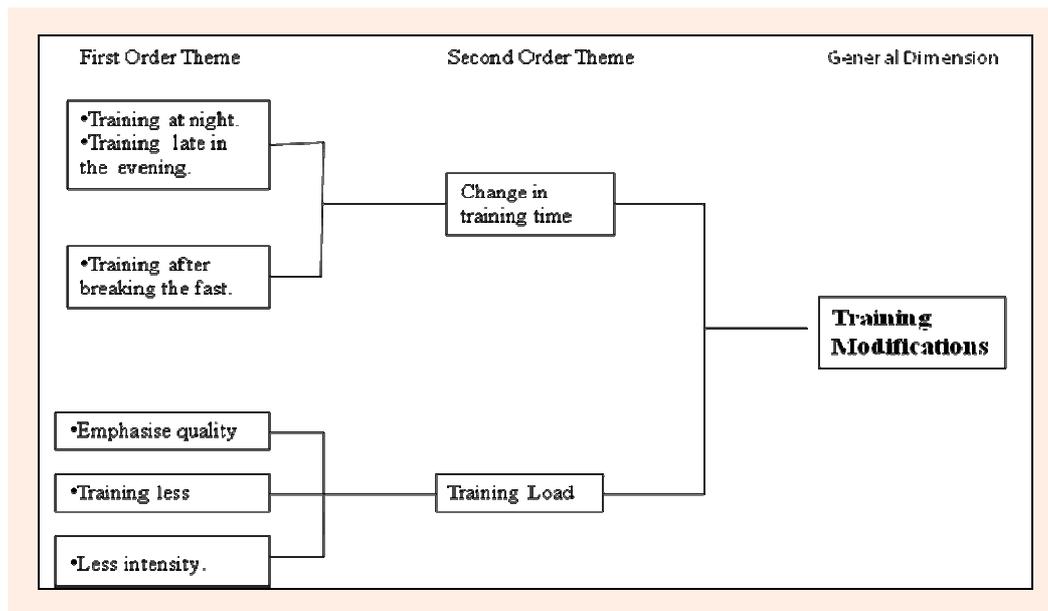


Figure 1. Coping strategies: Training modifications.

(Figure 3). One first-order theme was abstracted for one second-order theme to obtain the general dimension of ‘Self-control’ (Figure 4). Finally, two first-order themes were abstracted to two second-order themes to form the general dimension ‘Rest and recovery’ (Figure 5).

Training modifications

Training modifications dimension displayed issues pertaining to training during fasting and included two higher order themes: Change in training time and adjustments in training load were the most frequently referred coping

strategies. For example, athletes expressed the changes in training time in the statements:

- “I train at night”
- “I try to schedule heavy training during late evening/night time”
- “Training after breaking the fast”

Athletes emphasized about the quality of the training, training less and reducing the training intensity during fasting. For examples, abstracts from the athletes’ statements indicating the above were:

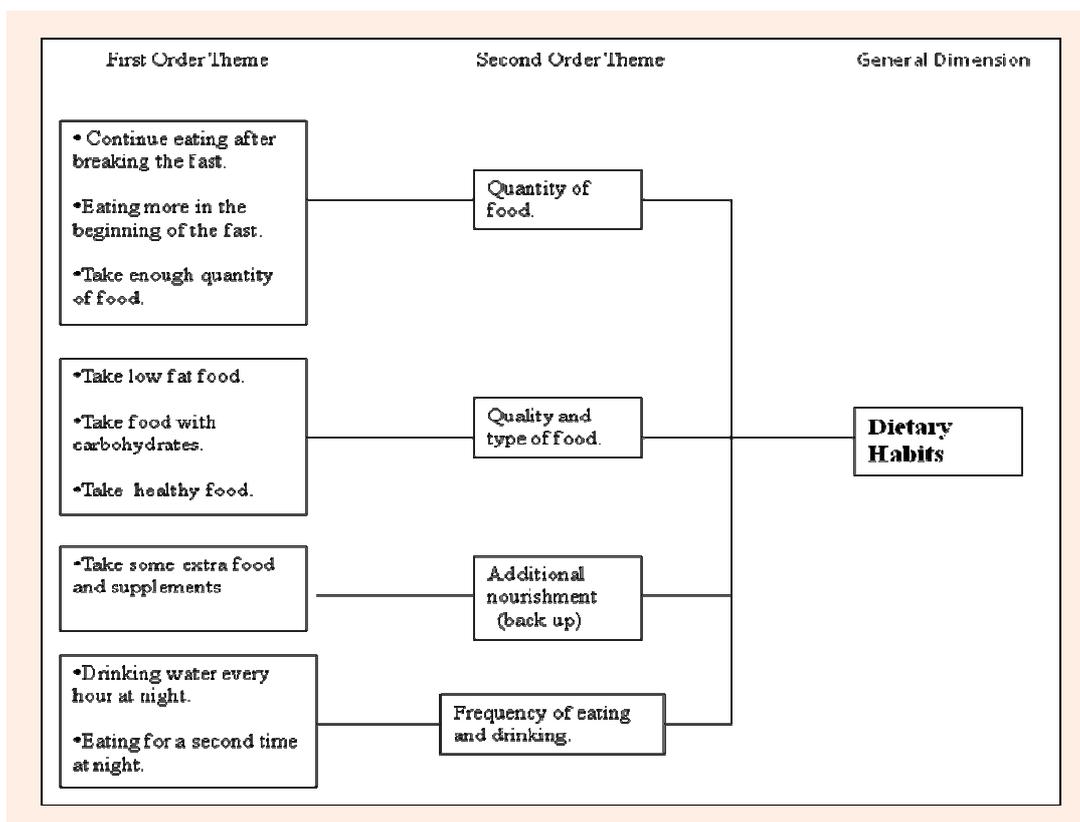


Figure 2. Coping strategies: Dietary habits.

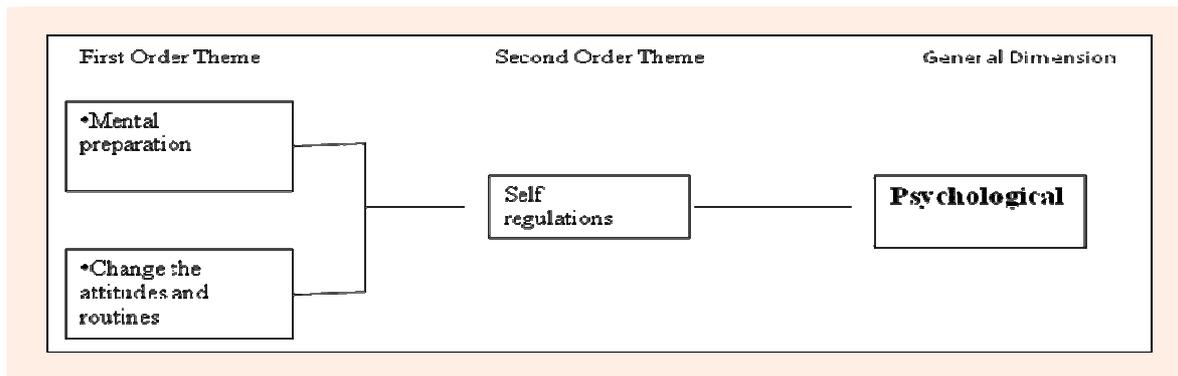


Figure 3. Coping strategies: Psychological dimension.

“I focus on the quality compared to the intensity.”
“I reduce the intensity in training with the permission of the coach.”
“I usually train less.”

Dietary habits

Figure 2 illustrates the elements of the general dimension of dietary habits. The coping strategies used by athletes suggested an increase of food intake, increased frequency in eating, taking additional supplements, and being conscious about consuming quality food items. For example, athletes reported strategies related to the quantity of food intake which is reflected in the following statements:

“I continue eating in the evening after breaking the day’s fast.”
“I eat increased quantity of food before beginning the fast.”
“I eat once more immediately before beginnings of the fast to help me keep going.”

Dietary habits included elements of the type of the food and the quality of food. Some athletes reported taking low fat food, while others included carbohydrates in their diet. Some athletes merely stated that they took healthy balanced food. In addition to this, athletes reported that they took food supplements. Descriptions of coping strategies which reflected the quality and the type of food were found in the following statements:

“I take healthy food.”
“I take food containing more carbohydrate during the beginning of the fast.”
“I take low fat food.”

Athletes also reported that they increased the frequency of intake of food. More specifically, the athletes reported that they ate food for a second time and drank water every hour in the evenings. The higher order themes of frequency of food intake as a coping strategy were evidenced in the following quotes:

“I take extra food and supplements with short intervals in between.”

“I drink water every hour at night as long as I am awake.”

Psychological aspects

The psychological dimensions included mentally preparing to follow the routine activities even as the athletes were fasting. For examples, the athletes recalled preparing themselves mentally, in the statements:

“I am mentally prepared and remain strong.”
“I change my attitudes and routines.”

These statements indicate the functions of cognitive systems and enhanced capacity for self-regulation (Baumeister et al., 2007) in human beings which can override impulses, emotions and associated behaviours.

Self-control

Controlling emotions and being patient, is a virtue expected from an individual, especially so, during the holy month of Ramadan. Although the precise nature of the energy source of self-control remains unclear, recent research (Galliot et al., 2007) suggests that self-control is not merely a psychological phenomenon but also relies on glucose as a limited energy source, which could be low during the latter part of the day (Maughan et al., 2008). Thus, it is possible that an individual may have to make additional conscious effort to remain patient during the fasting month of Ramadan. Having patience reflected discipline and self-control during the fasting month. As evidence of this behaviour routine, the statements from one athlete described his coping strategy in the following way:

“I try to remain patient.”

Rest and recovery

Comments by the athletes also indicated “rest” as a coping strategy. Athletes emphasized the need to rest or prolonging their period of inactivity. For example, the athlete stated:

“I take enough rest.”
“I rest for a longer time.”

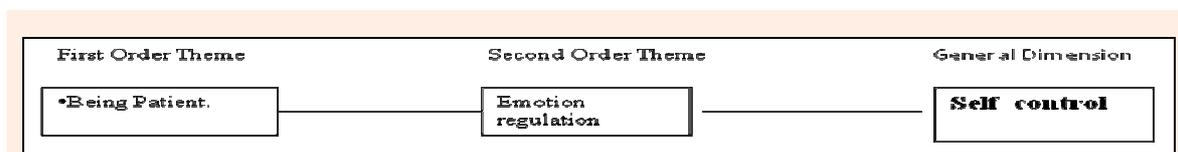


Figure 4. Coping strategies: Self control.

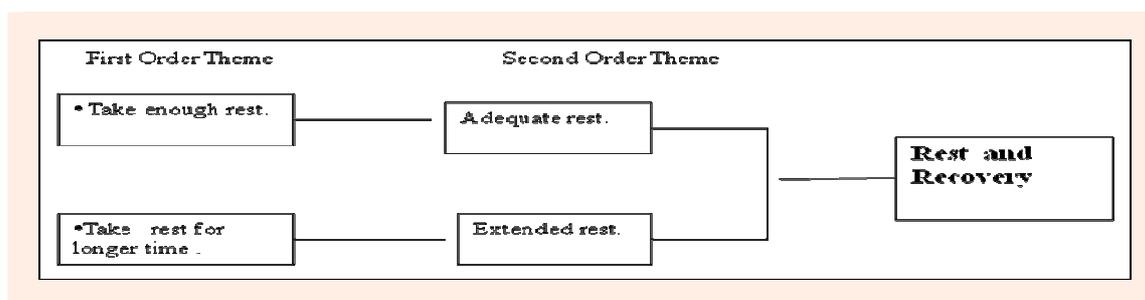


Figure 5. Coping strategies: Rest and recovery.

During the Ramadan fasting period individuals usually change their daily sleeping habits. Some individuals tend to stay up later or engage in some activities like watching television and socializing (Afifi, 1997). In the present study, however, the athletes did not report sleep disturbances or complain of poor or insufficient sleeping hours.

Discussion

Muslim athletes around the globe encountered the perennial issue of training and/or competing whilst fasting. While previous studies have described the impact of Ramadan fasting on exercise performance, to our knowledge, this is the first study to specifically explore the measures undertaken by Muslim athletes who are training/competing whilst observing fasting at the same time. The present study indicated that Muslim athletes employ a variety of coping strategies to deal with the challenges of training and/or competing during the Ramadan fasting month. These strategies included task focused such as modifications in training, adjustments in dietary habits, psychological self-regulation, and emotion focused such as having patience and inculcating self-control.

Low to moderate intensity exercise is easily tolerated with relatively unaffected physiological responses during Ramadan (Ramadan and Barac-Nieto, 1999; Ramadan et al., 2000; Stannard and Thompson, 2008). In contrast, sustained high-intensity to maximal exercises was adversely influenced by Ramadan fasting (Aziz et al., 2010; Chaouachi et al., 2009b; Chennaoui, et al., 2009; Guéye et al., 2004; Sioussi et al., 2007; Stannard and Thompson, 2008; Sweileh et al., 1990). Thus, one strategy to cope with hard training was to adjust training either to the early morning or late evening hours and avoid the mid-afternoon period. This seems logical because training in the mid-afternoon is clearly not “physiologically” optimal because athletes would be in a prolonged fasted state of at least 8-10 h prior to the afternoon training session. Further, exercising at this hottest part of the day will clearly exacerbate the physical stress of exercise since the fasted athletes would have no opportunity to hydrate themselves before, during and/or after training. Moreover, the early morning or late evening sessions are deemed advantages because athletes would have just consumed their *sahur* and *iftar* meals respectively, i.e., between 2-3 hours before commencing training (Mujika et al., 2010; Waterhouse 2010). Another notable strategy was reducing the training load (either via a lowering of training frequency, intensity and/or duration) as previously observed

in other studies (Coumts et al., 2008; Meckel et al., 2008). Whilst such a strategy means that the athlete may be able to cope with the physical rigors of training, such a response can be counter-productive since it can possibly lead to a detraining effect, particularly among the elite-level athletes (Meckel et al., 2008; Mujika et al., 2010). Consequently, it is worth noting that some of the athletes in the present study have reported that they have focused on the quality of their training rather than be overly concerned with training quantity; which was also recommended in the latest review on training during Ramadan by Mujika et al. (2010).

Ramadan fasting prohibits the consumption of food and drink during the daylight hours and this drastic shift in the pattern of daily caloric intake is likely to impact the athlete’s day-to-day endogenous muscle glycogen levels (Maughan et al., 2010; Nilsson and Hultman, 1973), which in turn could affect the quality and/or quantity of the athlete’s day’s training performance; even more so if twice a day training sessions are the norms for these athletes. In this regards, the athletes reported eating a greater amount, increasing the frequency of eating, and being conscious about the quality and the type of the food, with some even taking food supplements. This is clearly to compensate for the acute lack of food during the daylight hours. It is also possible that this behaviour is purely psychological in origin where athletes believe that the additional food intake during the non-daylight hours would help them to sustain their energy levels relatively much longer during the day. This can also be considered as an anticipatory coping effort (Greenglass, 2002) to achieve the personal goal of fasting. Overall, this indicates that the total energy intake over the Ramadan period is less likely to be affected. This view is supported by previous studies suggesting that athletes consumed a similar total energy or caloric intake between the Ramadan and non-Ramadan periods (Chaouachi et al., 2009b; Maughan et al., 2008; Meckel et al., 2008). Relative to food, the inability to consume fluid during the daylight hours probably has greater physiological consequences on exercise performance since dehydration could directly impact on the athlete’s ability to optimally regulate body core temperature during exercise (Leiper et al., 2003). This is even more pertinent in the present study where the athletes’ training environment is hot and humid throughout the year. As with the pattern of food intake, the athletes also consciously increased the consumption of fluids during the permissible period, as an anticipatory coping strategy (Greenglass, 2002) to override the feelings of thirst in the hot and humid environment during the day-

time. Again, such compensatory behavior has previously been documented in training and fasting Muslim athletes (Meckel et al., 2008; Shirreffs and Maughan, 2008).

An additional coping strategy observed in this study includes taking sufficient rest and sometimes adhering to inactivity for an extended period of time. This 'rest and recovery' element seems to be a logical and rationale strategy considering the findings of the previous research where sleep deprivation, irritability, and general feelings of malaise and fatigue were reported to influence exercise performances (Kadri et al., 2000). During Ramadan Muslims typically need to get up early for the predawn sahur meal, and this is exacerbated by probably a delayed bedtime the previous evening (Laraqui et al., 2001; Taroudi-Benchekroum et al., 1999) and the accumulative loss of a few hours of sleep over several consecutive days can lead to chronic sleep deprivation. Interestingly, Laraqui et al. (2001) showed that poor sleep was more critical than either thirst or hunger in affecting the capacity to work during the daytime. Thus, it is rather surprising that athletes in the present study did not adopt the practice of taking daytime naps to try to alleviate the previous night sleepiness, which has been suggested as a good way to compensate for the loss of previous night's sleep (Aziz and Png, 2008). It has previously been suggested that subjective alertness decreased significantly during Ramadan which could impact elite-level exercise performances, which requires a sustained level of awareness and alertness (Roky et al., 2000; 2004). Thus, 'rest' as a preventative coping strategy would be a simple measure undertaken to enhance recovery and maintain alertness. This finding is supported by a study where professional footballers in Qatar tended to extend their sleeping hours until mid-afternoon period before waking-up (Wilson et al., 2009). Wilson and colleagues argued that by staying in bed for most of the day, the players effectively reduced the hours of daylight activity during which the fast had to be endured. In addition, such a strategy has the inherent advantage of conserving the presumably limited acute "energy resources" available within the players.

Our data further indicated that the coping strategies were not limited to changes and/or manipulations of the athletes' training and dietary habits. The processes of coping involved other strategies such as mental preparation and changes in social behaviours and attitudes. Some of the common mental preparation strategies required during competition include task focused concentration, positive expectations, correct execution of task, and emotional control. Thus mental preparation and attitude changes can be considered as proactive coping strategies to develop general resources for sustaining the discomfort of fasting during Ramadan. Greenglass (2002) had indicated that individuals involved in proactive coping were likely to experience a sense of efficacy in their task.

From a religious and socio-cultural perspective, during the holy month of Ramadan, a Muslim individual is expected to engage in daily prayers and adopt a non-aggressive behaviour and attitude towards others. Such a stance clearly is in parallel with the act of being patient. Thus, by virtue of being patient, we assume that, athletes are likely to experience positive mental health and well-being. Whilst only one athlete reported 'being patient', it

is however a significant observation, considering the concurrence it might have with the religious connotation of sacrifice and forgiveness, during Ramadan fasting. Recent research by Baumeister et al. (2007) had suggested emotion as a feedback which influences an individual's behaviour. The feedback system considers two distinct emotional responses such as automatic affect and full-fledged conscious emotion. While conscious emotion function includes analysis, learning and adaptation following a behaviour, automatic affective response tend to preserve the lessons and information from previous emotional outcome and current affect (Baumeister et al., 2007). Thus, by this account, probably, the previous behaviours and resultant emotions prompted the athlete to reflect and re-evaluate the decision process in the light of social and religious obligations of Ramadan, to make a conscious effort to adopt a behaviour such as 'being patient'. Although least in frequency count, emotion regulation was unique, and has no less meaning than frequently cited strategies. The unique strategy is in fact enlightening to explore wider domains about the personal belief systems and values, in future studies.

Implications of findings

Our findings provide some practical implications for coaches and athletes. First, training loads should be modified to suit the prevailing athletes' needs and situations. Also, training should be done during the coolest part of the day and preferably, indoors. The focus should be on intensity (i.e., quality) and not quantity. To deal with the acute lack of food and fluid, athletes should be encouraged to consume additional intake of fluid and food during the permissible period. To further promote intake, the athletes could be "enticed" with their favourite foods and beverages of different flavours. This would ensure a somewhat overcompensation and hyperhydration state in the athletes prior to the start of the day's fast. Third, extended rest has been a preventative coping strategy among the athletes during the fasting month. Therefore, athletes should be advised to keep social activities to the minimum and make deliberate effort to sleep early. Wherever possible, athletes may be encouraged to take afternoon naps, particularly if they feel sleepy during the daytime. It would be worth educating the athletes to be deliberate in reducing or omitting other non-essential physical activities so as to conserve acute energy levels. Fourth, self-control was one of the proactive coping strategies used by the athletes. Thus, coaches could help athletes in augmenting the skills of calmness and tranquility which are synonymous with having patience. Additionally, coaches could assist the athletes to develop willpower and determination for perseverance which are akin to enduring the "lack of food and fluid". We suggest that the athletes participating in high level competition during Ramadan should also look for broader application of coping strategies to suit individual needs. For example, additional proactive coping strategies can include a) organized informal group gathering among fasting athletes to provide social support as a coping measure, b) mental disengagement from conscious thoughts of fasting and associated feelings, and c) emotion regulation by generating positive association to the spiritual elements of Ramadan fasting.

Study limitation

There are several limitations of the present study. Although the athletes completed the questionnaires during the Ramadan month, the study relied heavily on the athlete's accuracy of his/her subjective recalls. The descriptive nature of this study might be viewed as a limitation, but it provides valuable insights into Muslim athletes' coping measures during Ramadan fasting. The results do not offer any explanations into the mechanisms of coping or the functional meanings of the strategies to athletes. Finally, the results are confined within the socio-cultural context of Muslim athletes living within the Asian geographical region since there are differences in the fasting regimen, cultural and social customs and behaviours between Muslims in different continents (Waterhouse et al., 2008).

Conclusion

Majority of the self-generated coping strategies are problem focused. A unique response of 'having patience' to maintain self-control, was included under emotion focused coping. The findings indicated that there is no single pattern of coping strategies. Athletes frequently combine the strategies to cope with the training and competition during Ramadan.

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Key points

- Muslim athletes employ diverse self-generated coping strategies during Ramadan fasting which can be categorized as anticipatory coping, preventative coping and proactive coping.
- Frequently employed coping strategies are task focused such as training modifications and adjustments in dietary habits.

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