

# Evaluation of the Association between Physical Health and Religion: A Literature Review

Mohammad Taghi Karimi\*

Rehabilitation Faculty, Isfahan University of Medical Science, Isfahan, Iran

ARTICLE INFO	ABSTRACT
<p><i>Article type:</i> Review article</p> <hr/> <p><i>Article History:</i> Received: 18 Nov 2013 Revised: 16 Feb 2014 Accepted: 28 Jan 2014 Published: 4 March 2014</p> <hr/> <p><i>Keywords:</i> Physical health Prayer Religion</p>	<p>Physical health is influenced by various factors including religion. There are many questions regarding the impact of religious activities on physical health. Therefore, the aim of this study was to find the correlation between physical health and religion. Various databases including PubMed, Ovid, and Medline were investigated. Considering the inclusion criteria, 50 studies were found using the keyword-based information retrieval; though, only 12 papers were approved for the final analysis. Based on the literature review, there is no consensus regarding the impacts of religious practices on physical health; it is not clear whether religious activities result in better physical health and less severe musculoskeletal disorders, or are inversely related to physical health. There are various limitations observed in the available studies; therefore, reaching a firm conclusion might be no easy task. It is recommended that cross-sectional studies be carried out in various regions to find the association between religion and physical health.</p>

► Please cite this paper as:

Karimi MT. Evaluation of the Association between Physical Health and Religion: A Literature Review. *J Fasting Health*. 2014; 2(1):22-30.

## Introduction

Physical health is influenced by various factors including social, economical, and physiological parameters. Religious activities may be also considered as an influential factor (1, 2). There is no consensus regarding the impacts of religious practices on physical health. It is not clear whether these practices, including praying and meditation, improve the health of an individual or are inversely related to physical health (3).

Based on the results of some previous studies, private religious practices (such as prayers and meditation) are associated with physical health outcomes, meaning that those who experience decreased physical health are more likely to engage in private religious activities, perhaps as a way to cope with their situation (1, 4). However, there is some evidence regarding the association between religious activities and reduced muscle tension,

improved cardiovascular function, and better physical health (5).

Unfortunately, it is not clear whether or not religious activities result in better physical health and less severe musculoskeletal disorders (1). Therefore, the aim of this study was to find the relationship between physical health and religious practices. The main hypothesis of this study was that private religious activities are not a response to increasing physical disability or pain.

## Materials and Method

In the present review article, various databases including Web of Knowledge, PubMed, and Embase were investigated. All combinations of keywords including religion, religiosity, Muslim, Christian, Orthodox, Protestant, Jew, Buddhist, Catholic, physical fitness, musculoskeletal disorder, and pain were

\* Corresponding author: Mohammad Taghi Karimi, Rehabilitation Faculty, Isfahan University of Medical Science, Isfahan, Iran. E-mail: [Mohammad.karimi@strath.ac.uk](mailto:Mohammad.karimi@strath.ac.uk)

© 2014 *mums.ac.ir* All rights reserved.

This is an Open Access article distributed under the terms of the Creative Commons Attribution License (<http://creativecommons.org/licenses/by/3.0>), which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

**Table 1.** The results of quality assessment and the study outputs regarding the effects of religious activities on health status

Ref. number	Authors	Study type	Level of evidence	Quality score	Method	Results
(1)	Rippintrop <i>et al</i>	Survey-based	4	22	One hundred and fifty-seven subjects with chronic knee, shoulder, and low back pain were asked to participate in this study. The mean age of the subjects was 52.7±16.3 years. In total, 144 subjects with various religious and ethical backgrounds agreed to participate in this study. The religiousness and pain were scored using BMMRS and McGill pain questionnaires, respectively.	Religion appears to have both costs and benefits for a population with chronic pain. Those with worse physical health may be more likely to engage in private religious activities as a coping mechanism.
(21)	Idler and Kasl	Cohort	4	20	The effect of religion on the physical health of a group of elderly subjects was monitored for 12 years. No information regarding the age and the number of participants was included.	The results showed that performing religious activities is a good predictor of better health function. This study supports the importance of religion on the improvement of physical fitness.
(22)	Ellison and Levin	Review	5		In this study, the effect of religion on physical and mental health was discussed; however, the number of the analyzed studies was not mentioned. The validity of the scale used to score religion was discussed.	The authors concluded that the usefulness of quantitative data in studies on health and religion should not be overlooked. Therefore, further research is required in this regard.
(23)	Idler	Original research	4	23	In this study, the patterns of religious involvement and the health status of 2,811 elderly subjects were evaluated.	The results showed a higher degree of public religious involvement associated with a lower degree of functional disability.
(24)	Paul <i>et al</i>	Review	5	20	In this study, the effect of prayer on physical health was discussed. There was no information regarding the number of covered studies.	The results represent some evidence which supports the direct effect of prayer on physical health. This study suggests considerations for further experimental research on prayer.

used. The current review investigated studies conducted between 1960 and 2012.

The studies which were concerned with the most widely-known religions (such as Islam, Christianity, and Judaism), were published in English language, and focused on physical health, were included in this review article. The quality of the studies was evaluated using Black and Down tool (6).

## Results

Although 50 studies were found with the mentioned keywords, only 12 papers were eligible for the final analysis, which met the

inclusion criteria. Most of the studies were conducted regarding the effects of religion on mental and psychological health. The religiousness and the age of the participants varied in these studies. For instance, only in one of the studies, 3,581 elderly subjects were selected, and in some studies, most of the participants were Christians and Jews. Some of the studies focused on the impact of prayer movements and postures on the development of vertebral stress injuries, and the influence of fasting on postural stability.

The quality assessment of the selected studies is shown in Tables 1 and 2. As can be

**Table 2.** The results of quality assessment and the study outputs regarding the effects of religious activities on health status

Ref. number	Authors	Study type	Quality score	Method	Results
(7)	Abouhassan <i>et al</i>	Original research	21	In this study, the loads applied on L5/S1 in 33 healthy male Muslims was measured during bowing posture, using the motion analysis system. There is no clear description about the method used to calculate the loads applied on L5/S1.	The results showed a high value of compression and shearing forces applied on L5/S1. A new posture was recommended in this study to decrease the applied loads. In the new posture, it was recommended to use some degree of knee flexion to reduce the pelvic tilt.
(25)	Brisswalter <i>et al</i>	Original study	20	Two fasting and non-fasting groups of healthy subjects participated in this study. Two analyses (one before fasting and the other after two weeks of fasting) were performed. Maximum running test and maximum voluntary knee extensor contractions were selected as the main variables in this study.	It was shown that maximum voluntary contraction decreases at the end of Ramadan fasting. Also, the performance of the subjects decreased after this month.
(8)	Souissi <i>et al</i>	Original study	21	The effect of Ramadan fasting on postural stability was evaluated. The stability was evaluated one week before and two weeks after Ramadan fasting. A Kistler force plate was used to measure standing stability. The sway velocity was measured during unipedal and bipedal stance with opened and closed eyes. A group of judo athletes were selected in this study.	The results showed that COP sway velocity during bipedal and unipedal stance was significantly lowered during Ramadan fasting in comparison with the pre-Ramadan period. Ramadan fasting may negatively affect the postural control of judo athletes and may affect their performance during competitions.
(10)	Memari <i>et al</i>	Original research	20	The aim of this research was to determine the effects of Ramadan fasting on body composition, caloric intake, and physical performance in young female athletes (12 females within the age range of 15-27 years). The performance (balance and explosive leg power) was measured before and after Ramadan.	The results showed that Ramadan fasting could affect body composition, but not physical performance in female athletes during Ramadan.
(9)	Chennaoui <i>et al</i>	Original research	20	The physical performance of 8 athletes was tested before and after Ramadan. Energy availability and metabolic cost were measured in this study.	The results confirmed that sleep disturbances, energy deficiency, and fatigue during Ramadan fasting may decrease the physical performance of Muslim athletes.
(11)	Zerguini <i>et al</i>	Original research	20	Four male Tunisian junior football teams participated in this study. The physical performance was evaluated before and after Ramadan.	It was shown that biochemical, nutritional, and physical performances were not adversely affected in young male football players who fasted during Ramadan.
(13)	Chtourou <i>et al</i>	Original research	21	This study was designed to assess the effects of Ramadan fasting on young soccer players. Twenty junior male soccer players participated in this study. The total distance travelled was evaluated.	The results of this study showed that the performance of young soccer players was influenced by Ramadan fasting.

seen from these tables, most studies lack high quality. Brief reviews of the results of these studies are presented in Tables 1 and 2.

The level of religious activities- the amount of attendance in religious activities- was

determined by considering the functional and behavioral aspects of religious activities. The functional aspect of these practices was determined by the frequency of religious attendance, praying, and media consumption.

One of the scales used to measure the key domains of religiousness was The Multidimensional Measurement of Religiousness/Spirituality for Use in Health Research.

## Discussion

The effects of religion on physical health have always been a matter of controversy. Furthermore, it is not clear whether performing religious activities such as prayer and fasting influence physical health. According to the literature, the conducted studies can be divided into two main groups: studies based on the surveys and follow-ups (1-5), and those analyzing the effects of religious activities on physical health by measuring the physical performance (7-11).

In one research study, conducted on 122 patients with chronic musculoskeletal pain, it was shown that private religious activities were inversely related to physical health outcomes (1). According to this study, religious practices may have both costs and benefits for the health of individuals with chronic pain.

In another cross-sectional study on 3,581 elderly patients, it was revealed that those who prayed or read bible on a daily basis had a greater number of physical impairments; on the other hand, those who engaged in prayers once per week had the least number of impairments (4). Although the performed study did not assume an inverse relationship between health and religion, it was concluded that performing private religious activities is a response to increasing disability and pain (4). It was also assumed that any direct relationship between religion and physical health improvement may be associated with greater social support offered by the governments, which leads to better physical health (12). Another study also showed that prayer may be associated with reduced muscle tension, improved cardiovascular function, and better physical health in patients with knee pain (5).

Regarding Ramadan fasting, some studies evaluated its influence on the physical health of athletes. Table 2 shows the studies investigating the influence of Ramadan fasting on physical performance. As it is indicated in this table, there is no consensus regarding the influence of

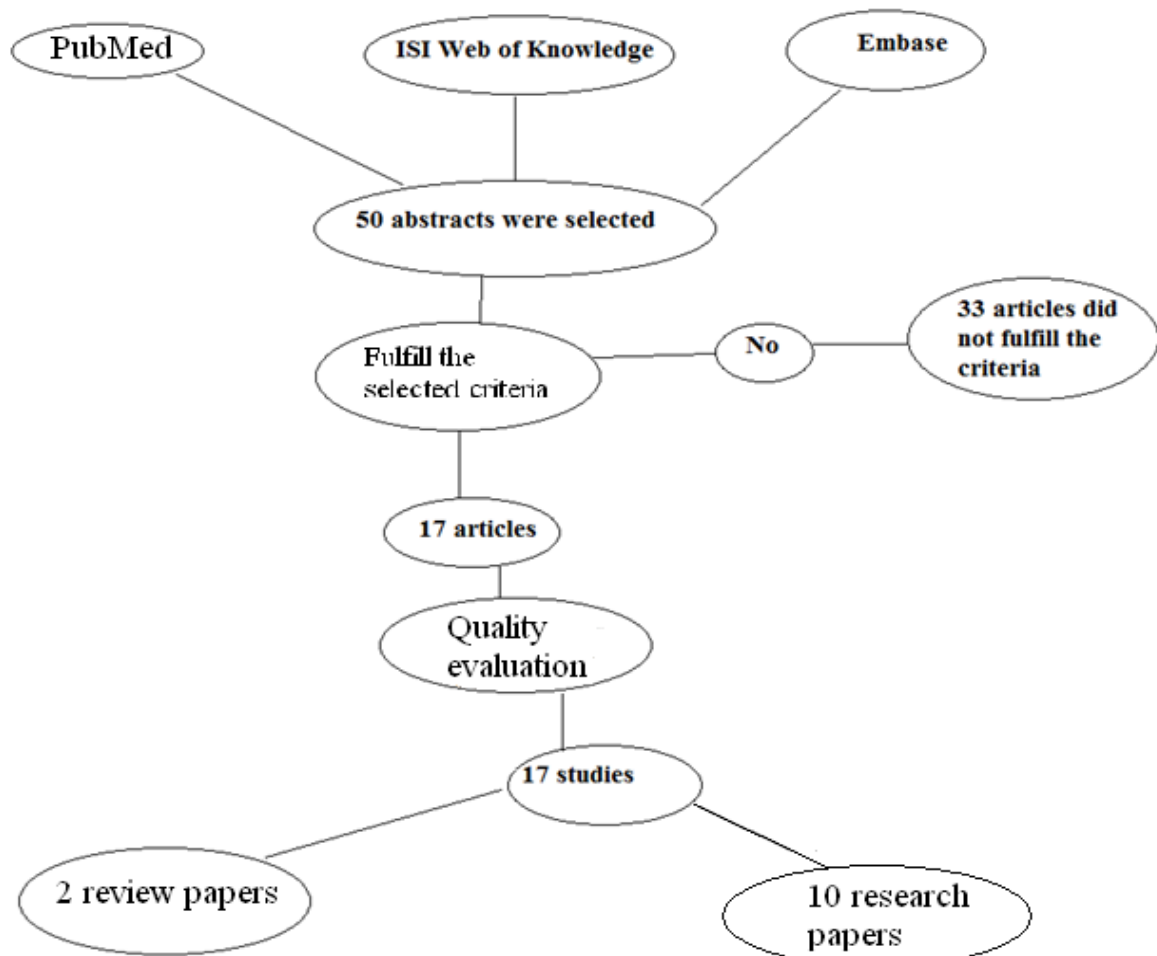
Ramadan fasting on physical performance (9-11, 13-15). However, it can be concluded that by using specific time schedules, the negative effects of Ramadan fasting on physical performance can be reduced. This time schedule should be arranged in a way to provide enough sleep and nutrition for the subjects (9, 11, 14).

There are two main challenges which need to be acknowledged regarding the studies on Ramadan fasting. The first problem is the limited number of subjects in these studies; due to this limitation, it would be difficult to draw firm conclusions based on their results. The second challenge is the time of Ramadan fasting which varies in the mentioned studies.

In one of the studies investigating the influence of Ramadan fasting on postural stability, a group of male judokas were recruited (8). Sway velocity was measured during single and double limb stance with open and closed eyes. The results showed that sway velocity was lower during the fasting period compared with the non-fasting period. Therefore, it was concluded that fasting may negatively influence the postural control of judo athletes. Two problems were associated with the aforementioned study. First of all, the researchers concluded that the stability decreased during fasting due to the reduction of sway velocity. However, based on various studies, the decrease in center of pressure (COP) velocity represents better balance (16, 17); therefore, the conclusion seems questionable.

The second problem of the aforementioned study is that stability was measured while the subject was standing and walking; consequently, having less COP velocity cannot be a good indicator of dynamic stability (18). Moreover, there is not a significant correlation between static and dynamic stabilities, which means that having static stability does not guarantee dynamic stability.

Unfortunately, it is not possible to reach a solid conclusion regarding the relationship between physical health and religion, based on the results of the first group of studies. There are some challenges which need to be acknowledged (2, 3, 19). The first point is the method used to describe a religious person. It is important to distinguish between behavioral and functional aspects of religious activities



**Figure 1.** The diagram of the stages used in this review article

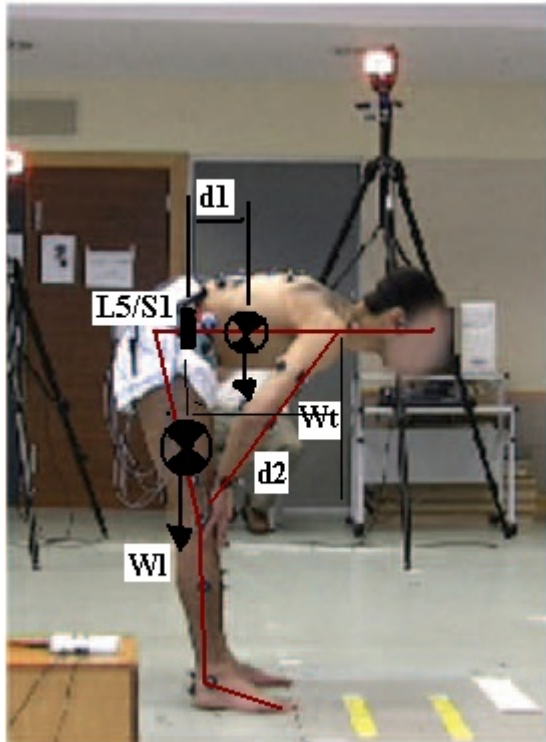
(frequency of religious attendance, prayer, and media consumption); moreover, performing religious activities is affected by the individual's local environment. Followers of some religions may be more welcomed in a society, have greater access to the resources, and therefore have less physical disabilities (19).

The second challenge is related to the age of the participants. In some studies, only the elderly subjects were recruited, who were more religious and had various types of musculoskeletal disorders. In a cross-sectional study on 3,851 elderly patients, it was revealed that those who prayed, meditated, and read bible on a daily basis had greater physical disabilities in comparison with those who

engaged in these activities once per week (4). It is not possible to conclude that being religious leads to poor physical health. However, we can conclude that private religious activities are a response to increasing physical disability or pain.

Another problem is the variations in the scoring methods for measuring religiousness; religiousness can be determined by direct observation and focus on the frequency of church and mosque attendance (1-4, 12, 19). Moreover, the scoring systems of physical pain and its severity were different in various studies. For instance, various scoring systems have been used to represent the pain severity of musculoskeletal disorders. McGill pain





**Figure 2.** The forces applied on the body during bowing postur

questionnaire is the most commonly used scale (1, 4); also, SF-MPQ, as a short form of McGill pain questionnaire, is widely used, and consists of 15 descriptors (sensory and affective) for pain description.

It should be also emphasized that pain severity varied at different times and situations; therefore, analyzing the relationship between religion and physical health is not easy. The final challenge is related to the percentage of religiousness- the amount of attendance in religious activities- in the selected populations. In most of the studies, the number of subjects was too limited and mostly included Christians, Jews, and Buddhists (4, 19); for instance, in one of these studies, only one Muslim was recruited (1). The religious beliefs also differ in various regions. Therefore, it is recommended that comprehensive studies be conducted in different regions to find the influence of religion on physical health.

The second group of studies focused on analyzing the effects of religious activities on physical health. In the study conducted by Abouhassan *et al*, the loading on sacroiliac joint

was analyzed in bowing posture during Islamic prayer (7). Muslims are required to perform their prayers at least 5 times per day, and the prayer consists of a number of movements including the bowing posture. In this position, knees are extended and the hands are placed above the knees, which apply a downward-directed force upon the knee joints.

In the mentioned study, conducted on 33 male Muslims within the age range of 18-40 years, the moments generated by the erector spinae muscles were calculated. It was revealed that nearly 212 Nm moments were produced by these muscles to keep the trunk in the bowing posture; in addition, nearly 2,099 and 374 N-Newton- compression and anterior shear forces were produced by this muscle, respectively (7). Based on the results, it was recommended that Muslims employ a new posture, which uses some degree of knee flexion during bowing position and decreases the loads.

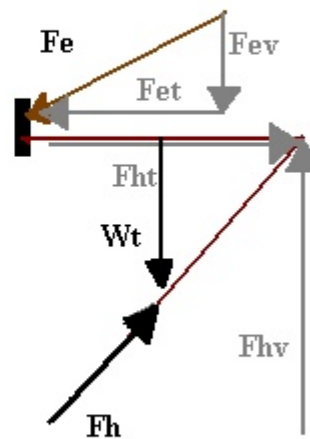
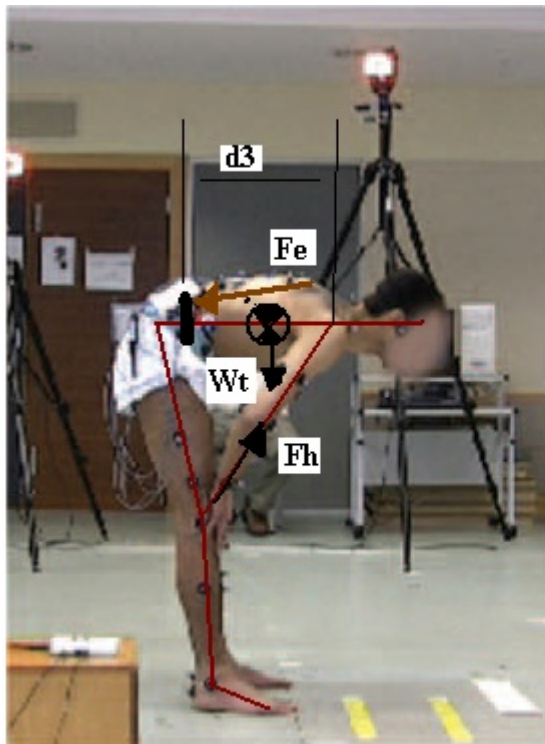
It was concluded that bowing posture places a lot of pressure on the sacroiliac joint and is not recommended for those with low back pain. However, based on Figure 2, the body is in a static position during bowing position and is also in equilibrium.

The main forces applied on the body consist of ground reaction force, weight of the upper body and thorax, and the force of the hand, which is applied above the knee. The hand in this position acts similar to a supporting beam, which transmits the weight of the upper trunk to the lower limb, and also keeps the knee joint in an extended position. In a closed body posture, the force transmitted by the hands decreases the trunk extensor moment. If the hands are removed from the knee joints, the trunk will remain in the bowing posture by the moment produced by the trunk extensor.

The first limitation of the mentioned study was the lack of hand force measurement. Based on Figure 3, if the force transmitted through the hands was assumed to be 5% and 50% of body weight, the compression force produced by the trunk extensor would be 3449 and 850 N, respectively.

The moments produced by external force (force of the upper trunk weight) can be measured as follows (20).

$$W_t = 0.678BW = 0.678 \times 80 \times 9.81 = 532 \text{ N}$$



**Figure 3.** Free-body diagram of the forces applied on the body during bowing posture

Therefore, the compression force can be calculated using the following formula:

$$M = W_t \times d_1$$

$$d_1 = 0.288 H \times 0.678 = 0.351 \text{ m}$$

$$M = 0.3518 \times 532 = 186.84 \text{ Nm}$$

In Figure 2,  $d_1$  is the distance between the center of gravity of HAT (head, arms and trunk) and L5/S1,  $W_t$  refers to the weight of HAT,  $d_2$  is the distance between the point of the application of hand force and L5/S1, and  $W_l$  is the weight of the leg.

The magnitude of compression force applied on L5/S1 depends on the force transmitted by the hands (the effects of other forces have been ignored):

$$M = F_{et} \times d_2$$

$$d_2 = 0.05 \text{ m}$$

$$M = 186.84 = F_{et} \times 0.05$$

$$F_{et} = \frac{186.84}{0.05} = 3736 \text{ N}$$

Which is a compression force.

In Figure 3,  $F_e$  is the force produced by trunk extensors,  $F_{ev}$  is the vertical component of the force produced by trunk extensors,  $F_{et}$  refers the transverse component of the force produced by the trunk extensor,  $F_h$  denotes the force transmitted through the hands, and  $F_{hv}$  is the vertical component of the force transmitted through the hands. However, some of the body weight was transmitted through the hands; therefore, a new calculation would be as follows:

$$M = 186.84 = F_{et} \times 0.05 + F_{hv} \times d_3$$

$$d_3 = 0.288H = 0.288 \times 1.8 = 0.518 \text{ m}$$

$$F_{et} = \frac{186.84 - F_{hv} \times 0.518}{0.05} = \frac{186.84 - F_h \times \sin \alpha \times 0.518}{0.05}$$

For  $\alpha=45$  degrees and  $F_h=5\%$  and  $25\%$  of body weight, the magnitude of  $F_{et}$  would be 3448 and 2293 N, respectively.

However, if most of the trunk and upper limb weight was transmitted by hands (50% of the body weight), the compression force applied on the structure would be 850 N. Regarding the shearing force, it can be understood that the

magnitude of shearing force applied on L5/S1 is too little in contrast to the compression force.

The shearing force can be determined as follows (Figure 3):

$$\text{Shearing force} = F_{hv} - F_{wt} = F_h \times \cos \alpha - F_{wt}$$

If  $F_h$  equals to 50% of body weight, the magnitude of shearing force would be 139.4 N.

Therefore, in the mentioned study, the effect of the force transmitted through the hands and also the angle of the shoulder joint were ignored. It is recommended that this force be measured by the use of strain gauge, and detailed calculation be conducted with the real value of this force.

## Conclusion

Although there are various studies on the effect of religion on physical health, it is not possible to reach a conclusion regarding the relationship between physical health and being religious. Only two studies investigated the influence of bowing posture on the loads applied on the spine during praying and the effect of fasting on postural stability. However, there are some limitations associated with these studies. Therefore, it is recommended that some studies be performed in different regions with large sample sizes. Moreover, doing full biomechanical analysis of praying postures is recommended.

## References

- Rippentrop EA, Altmaier EM, Chen JJ, Found EM, Keffala VJ. The relationship between religion/spirituality and physical health, mental health, and pain in a chronic pain population. *Pain*. 2005; 116(3): 311-21.
- Levin JS, Vanderpool HY. Religious Factors in Physical Health and the Prevention of Illness. *Prevention in Human Services*. 1991; 9: 41-64.
- McIntosh, D. and B. Spilka, religion and physical health: The role of personal faith and control beliefs. *Research in the social scientific study of religion*, 1990. 2: p. 167-194.
- Haley KC, Koenig HG, Bruchett BM. Relationship Between Private Religious Activity and Physical Functioning in Older Adults. *Journal of Religion and Health*. 2001; 40(2): 305-12.
- Rapp SR, Rejeski WJ, Miller ME. Physical function among older adults with knee pain: the role of pain coping skills. *Arthritis Care Res*. 2000; 13(5):270-9.
- Downs SH Black N. The feasibility of creating a checklist for the assessment of the methodological quality both of randomised and non-randomised studies of health care interventions. *J Epidemiol Community Health*. 1998; 52(6): 377-84.
- AbouHassan J, Milosavljevic S, Carman A. Can postural modification reduce kinetic and kinematic loading during the bowing postures of Islamic prayer? *Ergonomic*. 2010; 53(12): 1446-54.
- Souissi N, Chtourou H, Zouita A, Dziri C, Souissi N. Effects of Ramadan intermittent fasting on postural control in judo athletes. *Biological Rhythm Research*. 2012; 44(2):237-44.
- Chennaoui M, Desgorces F, Drogou C, Boudjema B, Tomaszewski A, Depiesse F, et al. Effects of Ramadan fasting on physical performance and metabolic, hormonal, and inflammatory parameters in middle-distance runners. *Appl Physiol Nutr Metab*. 2009; 34(4): 587-94.
- Memari AH, Kordi R, Panahi N, Nikookar LR, Abdollahi M, Akbarnejad A. Effect of ramadan fasting on body composition and physical performance in female athletes. *Asian J Sports Med*. 2011; 2(3): 161-6.
- Zerguini Y, Dvorak J, Maughan RJ, Leiper JB, Bartagi Z, Kirkendall DT, et al. Influence of Ramadan fasting on physiological and performance variables in football players: summary of the F-MARC 2006 Ramadan fasting study. *J Sports Sci*. 2008; 26 Suppl 3:S3-6.
- Koenig HG, George LK, Titus P. Religion, spirituality, and health in medically ill hospitalized older patients. *J Am Geriatr Soc*. 2004; 52(4): 554-62.
- Chtourou H, Hammouda O, Souissi H, Chamari K, Chaouachi A, Souissi N. The effect of ramadan fasting on physical performances, mood state and perceived exertion in young footballers. *Asian J Sports Med*. 2011; 2(3): 177-85.
- Chaouachi A, Leiper JB, Souissi N, Coutts AJ, Chamari K. Effects of Ramadan intermittent fasting on sports performance and training: a review. *Int J Sports Physiol Perform*. 2009; 4(4): 419-34.
- Chaouachi A, Leiper JB, Chtourou H, Aziz AR, Chamari K. The effects of Ramadan intermittent fasting on athletic performance: Recommendations for the maintenance of physical fitness. *J Sports Sci*. 2012; 30 Suppl 1:S53-73.
- Hytönen M, Pyykkö I, Aalto H, Starck J. Postural control and age. *Acta oto-Laryngologica*. 1993; 113: 119-22.



17. Le Clair K, Riach C. Postural stability measures: what to measure and for how long. *Clin Biomech* (Bristol, Avon). 1996;11(3):176-178.
18. Karimi MT, Solomonidis S. The relationship between parameters of static and dynamic stability tests. *J Res Med Sci*. 2011;16(4):530-5.
19. Lee BY, Newberg AB. Religion and health: a review and critical analysis. *Health and religious*. 2005; 40: 443-68.
20. Winter DA. The biomechanics and motor control of human gait : normal, elderly and pathological. 2nd ed. Waterloo, Ont.: Waterloo Biomechanics; 1991.
21. Idler E, Kasl S. Religion among Disabled and Nondisabled Persons I: Cross-sectional Patterns in Health Practices, Social Activities, and Well-being. *J Gerontol*. 1997; 52B: 294-305.
22. Ellison CG, Levin JS. The religion-health connection: evidence, theory, and future directions. *Health Educ Behav*. 1998; 25:700-20.
23. Idler E. Religious Involvement and the Health of the Elderly: Some Hypotheses and an Initial Test. *Social Forces*. 1987; 66:226-38.
24. Capaul M, Zollinger H, Satz N, Dietz V, Lehmann D, Schurch B. Analyses of 94 consecutive spinal cord injury patients using ASIA definition and modified Frankel score classification. *Paraplegia*. 1994;32(9):583-7.
25. Brisswalter J, Bouhlef E, Falola JM, Abbiss CR, Vallier JM, Hausswirth C. Effects of Ramadan intermittent fasting on middle-distance running performance in well-trained runners. *Clin J Sport Med*. 2011;21(5):422-7.