

The Mindfulness-Based Nursing Rehabilitation Program (MNRP) among Thai Buddhist Patients with Lower Extremity Injury: A Pilot Study

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บทคัดย่อ

การศึกษานำร่องครั้งนี้มีวัตถุประสงค์เพื่อศึกษาความเป็นไปได้ และผลของโปรแกรมการฟื้นฟูทางการพยาบาลร่วมกับการฝึกสติ ต่อความสามารถในการทำหน้าที่ของร่างกาย ความผาสุกทางจิตวิญญาณและภาวะบีบคั้นทางจิตใจในผู้ป่วยไทยพุทธที่กระดูกงูยาล้างบาดเจ็บ กลุ่มตัวอย่างถูกเลือกแบบเฉพาะเจาะจง เป็นผู้ป่วยไทยพุทธที่กระดูกต้นขาหักและพักรักษาตัวในโรงพยาบาลตติยภูมิ จำนวน 5 คน มีอายุระหว่าง 19-38 ปี โปรแกรมเริ่มดำเนินการในวันที่ 3 หลังการบาดเจ็บ และฝึกปฏิบัติตามโปรแกรมต่อเนื่องที่บ้าน เครื่องมือที่ใช้การประเมินประกอบด้วย 1) การประเมินความแข็งแรงของกล้ามเนื้อ 2) การประเมินพิสัยการเคลื่อนไหวของข้อสะโพกและข้อเข่า 3) ดัชนีสุขภาวะทางจิตปัญญา และ 4) แบบประเมินภาวะบีบคั้นทางจิตใจ ผู้ป่วยทุกคนจะได้รับการประเมินจากเครื่องมือดังกล่าวก่อนเข้าร่วมโปรแกรม, 1 เดือน และ 3 เดือนหลังการบาดเจ็บ ผลการประเมินในแต่ละช่วงเวลาจะถูกนำมาเปรียบเทียบเพื่อประเมินการเปลี่ยนแปลงที่เกิดขึ้น ผลการวิจัยพบว่า

มีความเป็นไปได้ในการนำโปรแกรมการฟื้นฟูทางการพยาบาลร่วมกับการฝึกสติมาใช้ในการวิจัยต่อไป และกลุ่มตัวอย่างทั้งหมดมีคะแนนความสามารถในการทำหน้าที่ของร่างกายและความผาสุกทางจิตวิญญาณเพิ่มขึ้นและมีคะแนนภาวะบีบคั้นด้านจิตใจลดลง ในช่วงเวลา 1 เดือนและ 3 เดือนหลังการบาดเจ็บเมื่อเปรียบเทียบกับผลก่อนเข้าร่วมโปรแกรม กลุ่มตัวอย่างส่วนใหญ่มีความแข็งแรงของกล้ามเนื้อและพิสัยการเคลื่อนไหวของข้อสะโพกและข้อเข่าเพิ่มขึ้น และกลุ่มตัวอย่าง 4 คน สามารถกลับไปทำงานในสถานที่ทำงานเดิมและตำแหน่งงานเดิม

ดังนั้น จึงมีความเป็นไปได้ที่จะนำโปรแกรมนี้ไปปฏิบัติในสถานการณ์จริง และมีโอกาสเกิดผลลัพธ์ในทางที่ดี

คำสำคัญ: โปรแกรมการฟื้นฟูทางการพยาบาลร่วมกับการฝึกสติ, กระดูกงูยาล้างบาดเจ็บ, ความสามารถในการทำหน้าที่ของร่างกาย, ภาวะบีบคั้นทางจิตใจ, ความผาสุกทางจิตวิญญาณ

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Abstract

The purpose of this pilot study is to explore the feasibility and the effects of The Mindfulness-Based Nursing Rehabilitation Program (MNRP) on physical functioning, spiritual well-being and psychological distress among Thai Buddhist Patients with lower extremity injury. Participants comprised of three males and two females, a purposive sampling aged 19 - 38 years, suffering from femoral fracture and admitted to a tertiary hospital located in the Southern of Thailand. The MNRP was developed based on knowledge of the cognator sub-system of Roy's Adaptation Model and mindfulness as the path of the Nobel Truths. The MNRP was started on the third day after injury and continued after discharging from the hospital. There were four instruments for assessing physical functioning, spiritual well-being and psychological distress including muscle strength (MS), passive range of motion (PROM) of hip and knee joint, Spirituality Index of Well-Being (SIWB) and Brief Symptom Inventory-18 (BSI-18) at the baseline, 1 and 3 months after injury. Quantitative data were compared across time to take the progression.

The findings demonstrated the MNRP is feasible and participants had a high level of physical functioning, and spiritual well-being, also low level of psychological distress. Most participants dramatically improved muscle strength and passive range of motion of hip and knee.

Furthermore, four of five participants returned to the same work within 3 months of the injury. To conclude, the MNRP is feasible and potentially efficacious.

Keywords: Lower Extremity Injury, Mindfulness-Based Nursing Rehabilitation Program, Physical Functioning, Psychological Distress, Spiritual Well-Being

Introduction

Sudden injury together with unplanned hospitalization due to lower extremity injury was a cause of changing roles, suffering as sociated with physical illness, separation from loved ones, and confronting unplanned psychological reactions to the injury and the loss of self-image (Tutton, Seers, & Langstaff, 2012; Skogstad, Toien, Hem, Ranhoff, Sandvik, & Ekeberg, 2014). As a result of the lack of psychological reaction preparations, most patients had a difficulty in accepting unexpected situations. These lead patients to suffer with a high degree of psychological distress.

According to the theory of Roy Adaptation (Roy, 2009), lower extremity injury is defined as focal stimulus immediate affecting the self-concept adaptive mode. The basic needs of the self-concept mode are psychic and spiritual integrity. Hence, psychological distress following injury is identified as an ineffective response of the self-concept mode. The compromised self-concept can affect role function mode. Previous studies have shown that psychological distress following physical traumatic injury affects short-term and long-term outcomes, especially physical impairment and disability. Posttraumatic psychological distress, depression, and anxiety after orthopedic trauma had interfered the physical functioning and quality of life (Vincent, Horodyski, Vincent, Brisbane, & Sadasivan, 2015).

The rehabilitation process has been increasing attention in helping patients to rapidly recover from injuries and return to normal work and social activities. Therefore, appropriate

intervention for trauma and orthopedic patients requires a multidisciplinary approach of care management. Based on the literature review, mindfulness-based interventions have been provided for reducing psychological distress associated with medical and psychiatric problems (Marchand, 2012). Mindfulness-based intervention is superior to other interventions in reducing psychological symptoms and emotional disturbance, as well as improving behavioral regulation (Keng, Smoski, & Robins, 2011). Furthermore, mindfulness can improve the process of motor learning. Patients use the process of motor learning to learn new movements such as relearning how to walk with crutches or walkers, or how to stand (Magill, 2011; Kee & Liu, 2011). Therefore, the mindfulness is recommended to be integrated in a regular course of physical therapy which could be more effective to reduce psychological distress and improve functional outcome than applying the physical therapy alone.

According to Buddhist philosophy, the heart of the Buddha's teachings is the Four Noble Truths including suffering, the cause of suffering, the cessation of suffering and the path for maintaining the mind in a state of no-suffering (Varadhammo, 1996). Mindfulness is one of the eight constituents of the Noble Eightfold Path taught by the Buddha who found Buddhism more than 2600 years ago. The concept of mindfulness has emerged from Buddhist meditation techniques (Delgado-Pastor, Perakakis, Subramanya, Telles & Vila, 2013) with practiced based on the Buddha's teachings, including impermanence, suffering and not-self (Keng, Smoski & Robins, 2011). Currently, mindfulness practices are becoming well-known as complementary therapy for medical and psychiatric conditions (Marchand, 2012; Grabovac, Lau, & Willett, 2011). Due to various methods of Mindfulness available in Thailand, Luangpor Teean's awareness-mindfulness meditation is composed of developing awareness of the body's movement and visualizing thoughts every time they arise (Thaiyanond, 2010). This method was chosen because it was easy and can be practiced in daily life. It could help a person to be aware of the movement in every position such as standing, walking, sitting, and lying down (Thaiyanond, 2010; Luangpor Teean, 2013). Therefore, an integration of both mindfulness and rehabilitation concepts into the program had been used to promote physical functioning, spiritual well-being and reduce psychological distress.

Objectives of the Study

The aim of this pilot study was to explore the feasibility, process and the outcomes of the MNRP on physical functioning, spiritual well-being and psychological distress among Thai Buddhist Patients with lower extremity injury

Hypotheses

1. The score of physical functioning at 1 and 3 months after injury would be higher than baseline.
2. The score of psychological distress at 1 and 3 months after injury would be lower than baseline.
3. The median score of spiritual well-being at 1 and 3 months after injury would be higher than baseline.

Conceptual Framework

The conceptual framework of this study was built upon Buddhist Philosophy and Roy's Adaptation Model (Roy, 2009). The MNRP was developed by integrating Luangpor Teean's awareness mindfulness meditation and home-based rehabilitation program.

Research design

A pilot study design was selected because it had the potential to focus on exploring the process of the MNRP within a real-life context.

Population

The target population of this study consisted of Thai Buddhists patient with lower extremity injury admitted to the female or male orthopedic ward, tertiary care hospital.

Sample

The participants were eligible for the study if they were (1) Thai Buddhist patients aged between 18 and 40 years; (2) able to communicate and write in Thai; (3) had full-or part-time employment or education before injury; (4) ability to ambulate before injury; (5) had no evidence of pre-injury psychiatric disorders; and (6) medically diagnosed with a unilateral lower extremity injury and receiving an orthopedic surgery who required a home rehabilitation program. The exclusion criteria was Thai Buddhist patients with lower extremity injury who had (1) an evidence of head trauma and a Glasgow Coma Score (GCS) of less than 15; and (2) an evidence of cognitive impairment. Five eligible participants who met the inclusion criteria were invited to participate in the study.

Instruments

The instruments used in this study were one instrument for research procedure and four instruments for data collection.

1. Instruments for Research Procedure

The Nursing Manual, pamphlet and DVD of the (MNRP) for Thai Buddhist patients with lower extremity injuries. The MNRP composes of three activities as follow: 1) Health education regarding lower extremity injury, wound healing process, and self-care for improving bone healing process; 2) Luangpor Teean's awareness- mindfulness meditation; and 3) Exercise program integrating mindfulness -based teaching. Five experts validated the accuracy, language, and cultural appropriateness of the Nursing Manual, pamphlet and DVD of the MNRP.

2. Instruments for Data Collection

2.1 Muscle strength (MS) of quadriceps is evaluated as physical functioning outcome. Muscle strength can be assessed by manual muscle testing (MMT). In the MMT, the Medical Research Council (MRC) scale is an ordinal scale frequently used to detect the magnitude of strength by grading muscle strength from 0 (no strength) to 5 (normal) (O' Dell, Lin, Singh, & Christolias, 2016; Write, 2014).

2.2 Passive ranges of motion (PROM) of hip and knee joints are measured as physical functioning outcomes. A Universal Goniometry will be used as the measurement tool. Hip Goniometry consists of hip flexion and hip extension. Knee Goniometry consists of knee flexion

and knee extension. Average of PROM of hip flexion, hip extension, and knee flexion were 0-120, 0-30 and 0-135, respectively (O' Dell, Lin, Singh, & Christolias, 2016).

Spirituality Index of Well Being and Brief Symptom Inventory- 18 developed in the English language were translated using the back translation technique, followed by content validity and testing their reliability.

2.3 Spirituality Index of Well Being (SIWB) is a self-report measure spiritual well-being consisting of 12 items, 6 each from the self-efficacy and life scheme subscales. Each item is answered on a 5-point scale ranging from 1 (Strongly Agree) to 5 (Strongly Disagree), for each patients with higher scores indicating more spiritual well-being (Daaleman, & Frey, 2004; Frey, Timothy, & Peyton, 2005). The scale was tested for the reliability in 30 patients with lower extremity injury. The Cronbach's alpha coefficient for the BSI-18 was .86.

2.4 Brief Symptom Inventory- 18 (BSI)- 18 consists of 18 items and is designed to measure psychological distress. The BSI-18 consisted of three subscales somatization, depression, and anxiety by means of 6 items each. Each item is scored on a 5-point Likert scale ranging from 0 to 4, for each patient with higher scores indicating more psychological distress and low psychological well-being (Meijer, Rivka, & Bruggen, 2011; McCarthy, MacKenzie, Edwin, Bosse, Castillo & Starr, 2011). The scale was tested for the reliability in 30 patients with lower extremity injury. The Cronbach's alpha coefficient for the BSI-18 was .87

Data collection

Data were gathered over a 3-month period through three major phases: recruitment, application of the designed MNRP, and follow up phase.

The recruitment phase, participants were recruited by purposive sampling from tertiary hospital located in the South of Thailand.

Application of the designed MNRP phase, at the third day after injury, psycho-spiritual well-being was promoted by using Luangpor Teean's awareness-mindfulness meditation which is the one part of the MNRP. Participants watched Luangpor Teean's awareness-mindfulness meditation DVD via electronic media and practiced together with their caregivers and investigator. Luangpor Teean's awareness-mindfulness meditation described fourteen steps of cultivation self-awareness which are demonstrated in figure 1



Figure 1 - Luangpor Teean's awareness-mindfulness meditation

Three to five days post-operation, vacuum drain was removed and participants were transferred to the department of physical therapy for training a home rehabilitation program. After that, the third part of the MNRP, exercise program integrating mindfulness -based teaching was delivered continuously until patients were discharged from the hospital. Exercise program consisted of 10 activities including 1) Mindfulness -based teaching and Gluteal muscle exercise 1; 2) Mindfulness -based teaching and Gluteal muscle exercise 2; 3) Mindfulness -based teaching and Gluteal muscle exercise 3; 4) Mindfulness -based teaching and knee extension and knee flexion muscle exercise 1; 5) Mindfulness -based teaching and knee extension and knee flexion muscle exercise 2; 6) Mindfulness -based teaching and ankle joint exercise 1; 7) Mindfulness -based teaching and ankle joint exercise 2; 8) Mindfulness -based teaching and standing/walking with crutches; 9) Mindfulness -based teaching and walking up stairs with crutches; and 10) Mindfulness -based teaching and walking down stairs with crutches. The participants need to practice in activity 1-7 about 30 sections per times and 3 times per day.

To ensure patient's practice of the MNRP at home and evaluate the barrier at the first week post discharge, a telephone call was done.

The follow up phase, muscle strength of Quadriceps muscle, PROM of the hip and knee joints, BSI-18, and SIWB were evaluated again at one month and 3 months after injury at the participant's home. Muscle strength of Quadriceps muscle and PROM of the hip and knee joints were evaluated by the physiotherapist. The rest outcomes were evaluated by the investigator.

Data analysis

Quantitative data in terms of physical functioning, spiritual well-being and psychological distress based on the MS, PROM of hip and knee joint, SIWB, BSI-18 were compared across time to take the progression of physical functioning, spiritual well-being and psychological distress.

Ethical consideration

This study was conducted after the approval by Faculty of Nursing, Prince of Songkla University (ศธ0521.1.05/3374, February 5, 2014) and the tertiary care hospital in the upper south of Thailand (21/2558, August 4, 2015) Ethics review board. Information on the study including the consent statement, purposes, research process, expected outcomes, timeframe, potential risks and benefits for the participants and the participants' right to participate or withdraw from the study were explained to the participants at their bedside. Five eligible participants were requested to sign a written informed consent for the study.

Results

1. Participants' demographics.

Table 1 Participants' demographics.

Pseudonym	Age	LOS	Mechanism of injury	Primary injury	Family caregiver
Gender					
SN		6	motorcycle	Fracture of right femur	Wife
25			accident		

Table 1 (continue)

Pseudonym	Age	LOS	Mechanism of injury	Primary injury	Family caregiver
Gender					
Male					
KW	19	8	motorcycle accident	Closed fracture intertrochanteric left femur	Mother and sister
Male					
SS	25	10	motorcycle accident	Closed fracture of mid-shaft right femur	Mother and husband
Female					
PS	38	7	Car accident	Closed fracture of mid-shaft left femur	Mother
Female					
KT	31	12	Car accident	Open fracture of right distal femur	Mother
Male					

Note. LOS: Length of hospital stay

Participants' demographics are summarized in Table 1. Five participants were recruited by purposive sampling. Three of the 5 participants were male, representing the trend that more male are involved in road traffic accident (WHO, 2017). The age ranged from 19 to 38 years. Injury mechanisms were motorcycle and car accident. All participants had femoral fracture in different location comprising proximal, intertrochanteric, mid-shaft, and distal femur. Days in hospital varied from 6 to 12 days. During hospitalization, immobilization due to injuries and treatments leads to a need for help and support from other persons. Hence, all participants had family caregivers such as mother, sister, wife and husband for supporting.

2. Physical functioning outcomes

Table 2 Physical functioning outcomes

Pseudonym	SN			KW			SS			PS			KT		
Time	T1	T2	T3	T1	T2	T3	T1	T2	T3	T1	T2	T3	T1	T2	T3
Fracture	Proximal femur			Intertrochanteric			Mid-shaft femur			Mid-shaft femur			Distal femur		
MS Grade	3	5	5	3	5	5	3	4	5	4	5	5	3	5	5
ROM of Hip flexion	45	125	125	30	118	118	30	33	90	70	90	110	83	95	118
ROM of Hip extension	0	19	19	0	15	15	0	20	20	0	12	15	15	20	20
ROM of Knee flexion	45	137	145	55	140	140	45	80	90	80	110	120	109	115	135

Note. MS: Muscle strength; ROM: Range of Motion; T1: Baseline; T2: 1 month post-injury; T3: 3 month post-injury; Average of hip flexion = 0-120 degree; Average of hip extension = 0-30 degree; average of knee flexion = 0-135 degree (Source: O' Dell et al, 2016)

Physical functioning are demonstrated in Table 2. There were improvements of physical functioning as evidenced by MS and PROM of hip and knee joint. Four of five participants had elevated MS from grade 3 at baseline to nearly grade 5 at one month after injury. In the end of the study, all participants had MS of grade 5. The mean PROM of hip flexion was increased from 52 degrees to 92 degrees at 1 month after injury. The mean PROM of hip extension was 3 degrees and jumped to 18 degrees at three months. The mean PROM of knee flexion increased from 67 degrees to 126 degrees at three month. The findings illustrated most PROMs were nearly normal. Despite the fact that only one participant could return to the same work one month following injury, four of five participants could return to the same work at the end of the study. It can be clearly seen that the mean score of MS and PROM of hip and knee are increasing through three months post-injury.

3. Spiritual well-being outcomes

Table 3 Spiritual well-being outcomes

Pseudonym	SN			KW			SS			PS			KT		
	T1	T2	T3	T1	T2	T3	T1	T2	T3	T1	T2	T3	T1	T2	T3
Fracture	Proximal femur			Intertrochanteric			Mid-shaft femur			Mid-shaft femur			Distal femur		
SIWB	41	45	54	60	59	60	52	52	54	56	59	59	47	57	58

Note. SIWB: Spirituality Index of Well Being; T1: Baseline; T2: 1 month after injury; T3: 3 months after injury

Spiritual well-being are demonstrated in Table 3. There were improvements of spiritual well-being as evidenced by SIWB. The mean score of SIWB was 51.2 at baseline and steeply increased to 57 at three months following injury. A high score on the SIWB means a high level of spiritual well-being. The results illustrated that participants had an improved spiritual well-being.

4. Psychological distress outcome

Table 4 Psychological Distress outcome

Pseudonym	SN			KW			SS			PS			KT		
	T1	T2	T3	T1	T2	T3	T1	T2	T3	T1	T2	T3	T1	T2	T3
Fracture	Proximal femur			Intertrochanteric			Mid-shaft femur			Mid-shaft femur			Distal femur		
BSI-18	6	2	0	6	5	2	12	2	2	4	3	1	18	9	4

Note. BSI-18: Brief Symptom Inventory-18; T1: Baseline; T2: 1 month after injury; T3: 3 months after injury

Psychological distress are presented in Table 4. There were improvements of psychological distress as evidenced by BSI-18. The mean score of BSI-18 was 9.2 at baseline and decreased to 4.8 and 1.8 at 1 month and 3 month post injury, respectively. A low score on the BSI-18 means a low level of psychological distress. The results illustrated that participants had an improved psychological distress.

According to program application and follow up outcomes, the MNRP was implemented on the third-day following injury. We found that all participants had preparedness for following the program because they had passed the phase of emergent and their cardiovascular system were stable.

For example, KT (case 5) told investigator that skeletal traction with bohler bar 5 kilograms was done within 3 hours of post-injury. During the traction, pain score was 10 and he asked for analgesic medication every hour. After he followed the program, he found pain tolerance was prolonged and he was satisfactorily regarding pain management. The BSI -18 score was rapidly decreased and the SIWB score was increased dramatically. The trends of these score were similar comparing with other participants.

Discussion

The results of the study had discussed and compared with previous studies. The Buddhist philosophy, Roy adaptation model, and rehabilitation concept were addressed in the discussion.

According to Buddhist philosophy, mindfulness is one of the elements of the Noble Eightfold Path. Thai Buddhist patients invited into the current study may be easy to follow this program (Thaiyanond, 2010) and possibly benefit from the MNRP.

The MNRP consisted of Luangpor Teean's awareness mindfulness meditation and a rehabilitation program which focuses on mindfulness of the body, mindfulness of feeling, mindfulness of mind, and mindfulness of mental phenomena. When the participants practice this method, they know, see, and understand themselves. They can see the process of thought and know how to defeat it. As a consequence, psychological disturbance would fade away and the suffering would be then reduced (Meijer, Rivka & Bruggen, 2011). Therefore, the MNRP might release psycho-spiritual distress and enhance psycho-spiritual well-being.

The MNRP focused on Luangpor Teean's awareness mindfulness meditation integrating healing process and rehabilitation therapeutic modifier to stimulate the structural and functional aspects of the injured parts. Patients required the process of motor learning including relearning how to walk, stand or sit up. Motor learning process divided into three stages, namely, the cognitive, associative and autonomous stage. The completion of the cognitive stage is difficult; however, the literature has shown that mental practice can be effective for learning and relearning skills. In addition, mental practice can be effective in the rehabilitation context for the relearning of skills and improving skills performance (Malouin, Jackson, & Richards, 2013).

Thus, the MNRP is not only reducing psychological disturbance but also promoting the motor learning process and improve social functioning.

Within a Thai health service context, most hospitals are concerned with shorter hospitalization in relation to cost-effectiveness issues. Due to short period of treatment, some patients are not fully prepared to subsist in new situations. Hence, design and application of the MNRP were integrated in a routine practice. At emergent phase, patients often concerned about the traumatic experiences, the severity of the injuries and immediate emergency treatments. They could not view support or counseling as being able to alleviate psychosocial problems (Visser, Gosens, Den Oudsten, & De Vries, 2018). After the emergent phase had completed, the MNRP process was started. This time was an appropriate time and early intervention had played a role in reducing psycho-spiritual disturbance and promoting functional outcomes after injury (O'Donnell, Varker, Holmes, Ellen, Wade, Creamer et al., 2013). Therefore, process of MNRP within a Thai health service context was applicable.

In term of physical functioning, this result had represented male participants dramatically improved muscle strength and range of motion of hip and knee more than female participants. In addition, during the program, it was observed that male participants strictly comply with the program more than female participants and then return to the work earlier. Two of the three male participants played a breadwinner, thus, rapidly functional recovery is the first goal for them. However, the current result was contrast from the previous studies which have shown that gender factor was not a key predictor for time of return to work following acute orthopedic trauma (Clay, Newstead, & McClure, 2010; Clay, Fitzharris, Kerr, McClure, & Watson, 2012).

Psychological disturbance is prescribed as a factor influencing psycho-spiritual well-being and social functioning. In the current study, SS (case 3) explained that sometime she had no mood to adhere to the schedule. Although scores of SIWB and BSI-18 were similarly correlated with each other, MS, PROM of hip and knee were different. Her MS slowly increased within the 1 month aftermath injury and she could not return to work two months later. Low levels of psychological disturbance such as being bored might affect rehabilitation process and impeding bone recovery. This result was consistent with previous studies. O' Donnell et al. who shown patients with physical injury also have higher levels of acute stress syndrome and depression to report higher levels of disability and lower quality of life when compared with the normative population. Furthermore, Sutherland and colleagues illustrated psychological disturbance at two months to be capable of predicting long-term functional outcome at six months and five years (Sutherland, Suttie, Alexander, & Hutchison, 2011). Psychological disturbances following injury were found to be significant risk factors affecting long-term disability and delayed return to work (O' Donnell et al, 2013; Clay et al, 2010; Toien, Skogstad, Ekeberg, Myhren, & Bredal, 2012). Hence, psychological disturbance following injury is identified as a noteworthy factor affecting social functioning.

Social support is a post-injury factor affecting psychological distress (Kellezi, Coupland, Morriss, Beckett, Joseph, Barnes et al., 2016). In Thai culture context, most people stay in contact with family and relatives. When people were confronted with injuries, family members had a role as caregiver. They supported participants in terms of physical, emotion and social function. In this pilot study, it was indicated that family caregiver and family members is the most significant person to be a source of social support to the participants. This result was similar to Tsai *et al.* who found that veterans who screened positive for PTSD would be related to lower social support and concluded that social support has a significant effect on psychological outcome following traumatic injury (Tsai, Harpaz-Rotem, Pietrzak & Southwick, 2012)

Implication of the results

The MNRP was conducted in order to promote psycho-spiritual well-being and improve physical functioning. The program is uncomplicated and easy to follow. The participants can practice anytime and anywhere. The findings from this study indicate that practicing the exercise integrating mindfulness-based teaching for 15 – 20 minutes at least three times per day is an effective treatment for improving muscle strength and range of motion for the hip and knee



joints. Moreover, the MNRP might be integrated with routine care for orthopedic patients in order to improve physical functioning and psycho-spiritual outcomes

Recommendation for further study

This study needs to be replicated using a larger sample group.

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