



โปรแกรมการลดความกลัวการหกล้มซ้ำและเพิ่มความสามารถในการทำกิจกรรมในผู้สูงอายุ  
ที่ได้รับการผ่าตัดกระดูกสะโพก: การศึกษาความเป็นไปได้<sup>1</sup>

A TAILORED INTERVENTION TO REDUCE FEAR OF FALLING AND IMPROVE  
FUNCTIONAL ABILITY AMONG OLDER ADULTS UNDERGOING HIP SURGERY:  
A FEASIBILITY STUDY

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### บทคัดย่อ

ความกลัวการหกล้มภายหลังการผ่าตัดกระดูกสะโพกส่งผลกระทบต่อภาวะสุขภาพของผู้สูงอายุหลายด้าน การวิจัยครั้งนี้มีวัตถุประสงค์เพื่อศึกษาความเป็นไปได้ในการนำโปรแกรมการทดลองที่ใช้ทฤษฎีการเรียนรู้สมรรถนะแห่งตนเป็นพื้นฐานไปใช้ในคลินิกเพื่อลดความกลัวการหกล้ม ลดอุบัติการณ์การหกล้มซ้ำและ

เพิ่มความสามารถในการทำกิจกรรมในผู้สูงอายุหลังผ่าตัดกระดูกสะโพก การศึกษาวิจัยครั้งนี้เป็นการวิจัยกึ่งทดลอง แบบกลุ่มเดียววัดซ้ำ ตัวอย่าง 15 ราย ที่มีคุณสมบัติตามเกณฑ์การคัดเลือกเข้าได้รับโปรแกรมการทดลอง ประกอบด้วย การวางแผนจำหน่ายอย่างครอบคลุมและโปรแกรมการฟื้นฟูสภาพร่างกายภายหลังการผ่าตัดที่เฉพาะสำหรับ แต่ละรายตามการผ่าตัดที่ได้รับ ตลอดระยะเวลาที่เข้ารับการรักษาในโรงพยาบาล วิเคราะห์ข้อมูลโดยใช้สถิติบรรยาย และสถิติทดสอบ Friedman test และ Wilcoxon signed ranks test

ผลการวิจัยพบว่า โปรแกรมการทดลองมีความเป็นไปได้ในการนำไปใช้ในคลินิกสูง (ร้อยละ 92.36) และไม่มี ตัวอย่างขอลอนตัวจากการวิจัย ความกลัวการหกล้มซ้ำวันที่จำหน่ายออกจากโรงพยาบาล และหลังผ่าตัด 6 สัปดาห์ ลดลงอย่างมีนัยสำคัญทางสถิติ เมื่อเปรียบเทียบกับก่อนให้โปรแกรมการทดลอง ( $Z = -3.680, p = .002$  และ  $Z = -3.352, p = .001$  ตามลำดับ) ความกลัวการหกล้มซ้ำก่อนจำหน่ายออกจากโรงพยาบาลและหลังผ่าตัด 6 สัปดาห์ไม่แตกต่างกัน ( $Z = -1.633, p = .102$ ) ความสามารถในการทำกิจกรรมหลังผ่าตัด 6 สัปดาห์เพิ่มขึ้น เมื่อเปรียบเทียบกับก่อนให้โปรแกรมการทดลองและวันที่จำหน่ายออกจากโรงพยาบาล ( $Z = -3.424, p = .001$  และ  $Z = -3.190, p = .001$  ตามลำดับ) ภายใน 6 สัปดาห์หลังผ่าตัดตัวอย่างไม่เกิดการหกล้มซ้ำ การนำทฤษฎีมาใช้เป็น พื้นฐานในการปฏิบัติการพยาบาล โดยการประยุกต์ใช้ทฤษฎีการรับรู้สมรรถนะแห่งตนมาเป็นแนวทางปฏิบัติกิจกรรม โดยตระหนักถึงบทบาทของพยาบาลเป็นสิ่งสำคัญในการส่งเสริมสุขภาพเพื่อเพิ่มความสามารถในการทำกิจกรรม และ ส่งเสริมคุณภาพชีวิตที่ดีของผู้สูงอายุที่ได้รับการผ่าตัดกระดูกสะโพก

**คำสำคัญ :** ความกลัวการหกล้ม, กระดูกสะโพกหัก, ผู้สูงอายุ

### Abstract

Fear of falling after a hip surgery has drastically impacted on multi-dimensions of health. This study aimed to examine the feasibility of a tailored intervention program using the self-efficacy concept as a basis to reduce the fear of falling, decrease the incidence of re-falling, and improve functional abilities in older adults undergoing hip surgery. A quasi-experimental one-group pretest-posttest design was employed. Fifteen participants who met inclusion criteria were recruited to receive the tailored intervention, which included comprehensive discharge planning and rehabilitation program related to surgery approaches during their admission. Data were analyzed by using descriptive statistics, the Friedman test, and Wilcoxon signed rank test.

Results demonstrated high scores of the tailored intervention program feasibility for implementation in the clinic. Fears of falling at discharge and six weeks after the surgery were significantly decreased compared with the baseline ( $Z = -3.680, p = .002$  and  $Z = -3.352, p = .001$ , respectively), but the fear of falling at discharge and six weeks after surgery were not significantly different ( $Z = -1.633, p = .102$ ). The functional ability at six weeks was significantly different from the baseline and the discharge day ( $Z = -3.424, p = .001$  and  $Z = -3.190, p = .001$ , respectively). During the six weeks after the surgery, the participants had no incidence of re-falling. In conclusion, integrating self-efficacy theory-based intervention into a clinical practice emphasized the professional nursing role is vital to promote health, meliorate physical ability, and enhance the quality of care in older adults undergoing hip surgery.

**Keywords :** fear of falling, hip fracture, older adults

## Background and Significance

Falls are serious consequences in older adults and significant causes of hip fracture (Nilsson et al., 2016). Hip fracture is a severe physical injury, requiring surgery and intensive rehabilitation to restore and retain optimal functional abilities (FA) (Winter, Bradman, Fraser, & Holt, 2016). Besides, physical impairment and fear of falling (FOF) are major psychological problems.

FOF is common in older people and usually occurs after falling or "Post fall syndrome" (Murphy & Isaacs, 1982). It presents with fear of standing or walking, resulting in reducing self-confidence to perform physical activities (Tamsat, Aree-Ue, Leelacharat, 2015). Reducing activities cause muscle weakness leading to standing or walking instability sequel to re-falling (Bower et al., 2016). Besides, older adults with FOF decrease socialization due to dependent care (Dingova & Kralov, 2017). These consequences would delay functional recovery during rehabilitation (Williem et al., 2017). Therefore, interventions to promote self-efficacy (SE) in performing activities and to minimize the FOF is needed to underpin the changes.

To date, there was neither any intervention to promote self-efficacy in older adults with a FOF nor evidence to examine that when the FOF decrease, older adults with fall-related hip fracture who experienced fear of falling increase their FA postoperatively. Therefore, a developed intervention, namely a tailored intervention program (TIP) using SE theory

is expected to promote FA in older adults undergoing hip surgery with FOF from fall-related hip fracture. Ultimately, this study will also be expected to improve the quality of nursing care along with providing the standard of care for older adults with hip surgery.

## Literature Reviews

The literature review, comprehensive discharge planning (CDP) is a nursing plan promoting patient care quality from admission to discharge (Goncalves-Bradley, Lannin, Clemson, Cameron, & Shepperd, 2016). The CDP based on Include, Discuss, Educate, Assess, and Listen (IDEAL) discharge plan, which included discussion and education methods. This information is given to patients undergoing hip surgery and families. The details of information related to the home environment, medication use, self-care after hip surgery highlighted warning signs, explanation the next follow-up and laboratory examination, assessment and listening to individual problems, and providing advice by using leaflets or flip-books (Agency for health care research and quality advancing excellence in health care, 2018). Previous studies indicated that the older adults and families who received the CDP during the hospital stay until discharged from the hospital and home or phone visit after discharge from the hospital had more self-care knowledge and exercise behavior, and had a better understanding of post-discharge (Al-Maqbali, 2014). Moreover, the CDP increased ability to perform postoperative activities and

improved quality of life of older people after hip surgery ( Wongngam, Sucamvang, & Nanasilp, 2014).

Notably, a person post hip surgery is required to promote his/ her physical activity and/ or exercise for post- surgery recovery. The physical exercise included the muscles exercise and balance training consisting of hip abductor and extensor strengthening, quadriceps exercise, gluteal muscle exercise, standing up from the armchair, walking in straight line practice, marching, stepping over a bench were found to increase muscle strength and balance, particularly when training with the duration of 30-90 minutes per day, for 6-12 weeks. Besides, it was also reported a decreasing in FOF (Nick et al., 2016; Thiamwong & Suwanno, 2014). Besides, a previous study showed that FOF was associated with self-efficacy (Tamsat et al., 2015) as the older adults with FOF have a lower level of self-efficacy, change their normal health behavior, and decrease in their performance of activities after hip surgery (Visschedijk, van Balen, Hertogh, & Achterberg, 2013). So, to promote physical activity or any exercising post-hip surgery, older adults must feel confident in their ability to perform such behaviors along with lessening their FOF.

Evidence from previous studies indicated that using self- efficacy theory as a theoretical based intervention increased in self- efficacy in performing activities (Thiamwong & Suwanno, 2014), increasing exercise behaviors (Dattilo, Martire, Gottschall, & Weybright, 2014), and decreasing fear of

falling (Jaipiti & Sasat, 2018) among older adults after hip surgery. Therefore, the researcher is interested in developing a tailored intervention program (TIP) consisting of the CDP and Rehabilitation program (RP) based on SE theory as a framework to investigate the feasibility of a TIP to reduce the FOF and improves FA in older adults undergoing hip surgery that have experienced FOF resulted from fall-related hip fracture.

### Research Objectives

- 1) To investigate the feasibility of the tailored intervention program for implementing in the clinic.
- 2) To compare the differences of functional ability and fear of falling in the older adults who underwent hip surgery between before receiving the tailored intervention program, before discharge from the hospital, and the six-week after surgery.
- 3) To explore an incidence of re-falling in older adults underwent hip surgery at six-week after surgery.

### Conceptual Framework

This study applies SE theory as a conceptual framework. The SE theory was developed by Albert Bandura in 1997. Based on the theory, the SE is a perception that the person evaluates his/her competency to perform a specific behavior according to the recognition of one's competency or ability. In addition, a person will decide to initiate, perform, and maintain any activity depending on his/her efficacy expectation and outcome expectation.

An efficacy expectation is self-confidence in his/her ability to perform a specific activity that leads to outcome expectations. On the other hand, outcome expectation is a personal belief in their behavior that will lead to targeted results. So, to encourage behavior change, a person will present self-confidence in that ability (Bandura, 1997). In this study, the SE theory was used to guide the developed intervention, namely a tailored intervention program (TIP), which was specifically designed for older adults undergoing different types of hip surgery to encourage them to be more self-confident in performing activities and recovery treatment regimens after a hip surgery. The TIP, which includes the CDP and RP programs is expected to be feasible for using in the clinical setting and improving older adults undergoing hip surgery to be confident in performing FA, reduce the FOF, and minimize the incidence of re-falling.

## Methods

### Samples

The samples included older adults who underwent hip surgery admitted at the orthopaedic and trauma units at the Ramathibodi hospital from April to December 2018 and nurses at orthopaedic and trauma wards and nurse research assistants who were delivered the Tip program.

### Sampling methods

Due to the lack of the criteria for selecting samples in the feasibility study, fifteen samples were determined based on

a similar study (Wetherell et al., 2016). The purposive sampling was used based on the inclusion criteria and the random selection was used for the 10 nurse participants from the ward according to the proportion of patients undergoing hip surgery.

### Inclusion/Exclusion criteria

The inclusion criteria for patients were: 1) age  $\geq 60$  years, 2) fall-related hip fracture, 3) no cognitive impairment assessed by Six-item Cognitive Impairment Test (6CIT) with a score  $\leq 7$  points (Aree-Ue & Youngcharoen, 2020), 4) the ability to walk independently before admission, 5) the ability to communicate in Thai, and 6) the willingness to participate and sign an informed consent before participation. The exclusion criteria were diagnosed with pathologic fractures from other causes except for osteoporosis or refused or requested to withdraw. Termination criteria: 1) developed acute confusional state and treated for more than three days, 2) developed complications such as hip dislocation, surgical site infection, pneumonia, deep vein thrombosis, pulmonary emboli, sepsis, re-operation within six weeks after discharge, and 3) admitted to the intensive care unit more than 48 hours after surgery.

The nurse samples were 10 nurses with  $\geq 5$  years of experience in direct nursing care for patients with bone and joint problems working at Ramathibodi Hospital.

### Instruments

#### Demographic Questionnaire

This questionnaire was developed by the researcher based on the literature

review. It included 28 questions with multiple choices and open-ended questions consisting of personal and health information such as age, gender, and co-morbidity.

#### **Modified Barthel Activities of Daily Living (MBAL)**

Thai version was modified by Aphisit Tamsat (Tamsat et al., 2015) from the original MBI, which was first translated into Thai by Suttichai Jittapankul (Jitapankul, Kamolratanakul, & Ebrahim, 1994). The MBAL is 9 alternative questions based on older adults' ability to perform 9 activities. Each activity is scored ranging from 0 to 2 points. The total score ranged from 0-18 points. A high score means a better ability to perform activities. In this study with 15 older adults, the Cronbach Alpha was .80.

#### **Fall-Efficacy Scale**

This scale is an assessment tool for self-confidence in doing daily living activities. It was modified by Aphisit Tamsat (Tamsat et al., 2015) from the fall-efficacy scale of Tinetti and colleague (1990). It has 10 questions to assess self-confidence to perform 10 activities. Each question is numeric rating scale of 1-10 points. A low score means more self-confidence (low FOF). In this study, the Cronbach alpha was .93.

#### **The Re-Falling Record Form**

The form was created to evaluate fall incidence within six weeks after hip surgery. The re-falling record form was an alternative "yes" or "no" answer and open-ended questions to indicate the activities that the older participants have done while falling and management strategies after re-falling.

### **The Feasibility of the TIP Questionnaire**

This questionnaire was modified by the researcher from the evaluation form of the Osteoporosis Prevention Program (Aree-Ue, 2004) to ask nurse research assistants, who helped in implementing the TIP. It is a numeric rating scale ranging from 1 to 10 points. The total score of 8 questions ranges from 8 to 80 points; a high total score means the experimental program has highly feasibility. The content validity was confirmed by three experts, and the content validity index (CVI) was 1.00.

#### **Intervention Description**

Briefly, the TIP was individually developed and designed based on SE theory. The intervention consisted of the CDP and the RP programs. The CDP is a discharge plan designed to encourage both participants and family involvement in learning about postoperative self-care behavior correctly and continuously from the hospital to home. It consists of health education about hip fracture (causes, symptoms, and treatment plans), falls, fear of falling, self-care practice pre-post-surgery, safety home environment preparation, and continuing care behaviors after discharge from the hospital, which highlighted warning signs (i.e., hip dislocation, deep vein thrombosis, pulmonary embolism, surgical site infection). For the RP, it was designed specifically for hip arthroplasty and open reduction and internal fixation. It consists of an exercise program and daily life activity practice. The exercise program includes exercise training to improve standing, balancing,

quadriceps muscle, gluteal muscle, gastrocnemius muscle, and chest therapy. The daily life activity practices consist of how to, dressing, picking, using the bathroom, walking, and moving by using a walker. Based on the SE theoretical guide, the participants have promoted self-confidence by providing a hip fracture role model, giving persuasion, practicing self-care behavior until confidence, assessing physical and emotional arousal (i.e., pain, anxiety, vital signs, discomfort condition) during exercising, and evaluating problems planning and setting goals together. The strategies for implementation of the TIP included providing, discussing, sharing, encouraging, supporting, practicing, and rehearsing.

The duration of the TIP implementation was 30-45 minutes a day, starting from the day before hip surgery (pre-operative day) until discharge (discharge day). The TIP was confirmed for its validity by three experts consisting of an advanced orthopaedic practice nurse, an orthopaedist, and a physiatrist; the content validity index (CVI) was .98.

#### **Ethical Consideration:**

After this study was approved by the Institutional Review Board, Faculty of Medicine Ramathibodi Hospital, Mahidol University (ID 02-61-61), the participants were approached for explaining the study protocol and seeking for cooperation. Besides, the study risks and benefits, confidential as well as the right to withdraw from the study at any time without any impact on the participants' treatment were also given to

the participants. The study was carried out after the participants agreed and signed to participate in the study.

#### **Data collection**

Before implementing the TIP, the 10 nurse research assistants were instructed how to implement the TIP, while the other 2 nurse research assistants who collected the data were also trained to collect data accurately. Then, the participants who met inclusion criteria were approached, and consent forms were signed before enrollment, and the baseline data were collected. The TIP was given from pre-operation to discharge day by the researcher and 10 nurse research assistants. After that, the MBI and Falls-Efficacy Scale were completed by participants before discharge to home, and the feasibility of the TIP was completed by the 10 nurse research assistants. In the 2<sup>nd</sup> and 4<sup>th</sup> weeks after discharge, the researcher followed-up participants by phone to encourage and convince them to keep exercising and performing self-care activities. At the 6<sup>th</sup> week post-surgery, the MBI, Falls-Efficacy Scale, and Re-Falling Record Form were evaluated.

#### **Data analysis**

Data were analyzed by using SPSS/FW program version 18. Descriptive statistics, the Friedman test, and Wilcoxon signed-rank test statistics were employed in statistical testing.

#### **Results**

The participants were 15 older adults. There are 10 females and 5 males

(aged between 64-88 years, average 77.33,  $SD = 7.30$  years). Most participants were age older than 80 years (53.30 %). Health information, most of them (60%) had a normal body mass index ( $18.5 - 22.9 \text{ kg/m}^2$ ) and had  $\geq 1$  comorbid disease (93.30). Participants reported their physical classification system of the American Society of Anesthesiologists (ASA) class III (53.30). The intertrochanteric hip fracture was mostly found (53.40%) followed by the neck of femur fracture (40%).

#### Feasibility of the TIP

Feasibility of the TIP was assessed by the percentage of the mean score of the feasibility of the TIP questionnaire  $> 80\%$ , and a dropout rate of participants was  $< 10\%$  (Aree-Ue, 2004). The mean score of the feasibility of the TIP was high ( $M = 73.90$ ,  $SD = 3.32$ ) with the percentage of the mean score of 92.36%. There was no dropout rate of the participants.

#### Fear of falling

The mean score of the FOF at six weeks post-surgery ( $M = 18.88$ ,  $SD = 11.56$ ) decreased when compared with before discharge ( $M = 29.00$ ,  $SD = 17.79$ ) and before the intervention implementation ( $M = 67.67$ ,

$SD = 24.15$ ). Applying the Friedman test, the median of FOF before intervention implementation, before discharge, and six weeks post-surgery showed a significant difference as shown in Table 1. Moreover, the Wilcoxon signed-rank test statistic revealed the FOF at discharge day, and six weeks post-surgery was significantly decreased compared with the baseline although the FOF at discharge day and six weeks post-surgery were not significantly different (Table 2).

#### Functional ability

The mean score of FA at six weeks after hip surgery ( $M = 16.60$ ,  $SD = 2.26$ ) increased when compared with before intervention ( $M = 5.53$ ,  $SD = 1.69$ ) and before discharge ( $M = 12.53$ ,  $SD = 3.50$ ). Moreover, before discharge, and six weeks post-surgery, it showed a significant difference as shown in Table 1; the Wilcoxon signed-rank test statistic revealed the FA at six weeks after surgery was significantly different from the baseline and from the discharge day as illustrated in Table 2.

#### Incidence of re-falling

There was no incidence of re-falling at six weeks post-surgery.

Table 1 The comparison of fear of falling and the functional ability across time points using Friedman Test Statistic ( $n = 15$ ).

Variables	Mean Rank			Chi-square	df	p
	T1	T2	T3			
Fear of falling	2.80	1.70	1.50	14.99	2	.001
Functional ability	1.00	2.07	2.93	29.10	2	.000

Note: T1 = before the intervention; T2 = before discharge from the hospital; T3 = six weeks after surgery



Table 2 The pair differences of fear of falling and functional ability, before the intervention, before the discharge from the hospital, and six weeks after surgery using Wilcoxon signed-rank test ( $n = 15$ ).

Variables		Mean Rank	Sum of Rank	Z	p
<b>Fear of falling</b>					
T1 - T2	Negative Rank	8.77	114.00	-3.680	.002
	Positive Rank	3.00	6.00		
T2 - T3	Negative Rank	9.81	78.50	-1.633	.102
	Positive Rank	4.42	26.50		
T1 - T3	Negative Rank	8.50	119.00	-3.352	.001
	Positive Rank	1.00	1.00		
<b>Functional ability</b>					
T1 - T2	Negative Rank	0	0	-3.413	.001
	Positive Rank	8.00	120.00		
T2 - T3	Negative Rank	0	0	-3.190	.001
	Positive Rank	7.00	91.00		
T1 - T3	Negative Rank	0	0	-3.424	.001
	Positive Rank	8.00	120.00		

Note: T1 = before the intervention; T2 = before discharge from the hospital; T3 = six weeks after surgery

## Discussion

Most participants were female with an average age in the middle-old age group. This finding was similar to previous studies published elsewhere that revealed hip fracture was more commonly found in females (Leal et al., 2016). This was supported by the fact that post-menopausal females having inadequate or lacking estrogen hormones, which led them to decrease bone mass resulting in an increase in the risk of osteoporosis and bone fragility; consequently, older females are more likely to experience a hip fracture (Cummings-vaghn & Gammack, 2011). Moreover, age-related changes in older adults are significant factors leading to unstable walking or

balancing, that increase risk of fall (Trombetti et al., 2016). Also, the participants had multiple-comorbidities along with ASA class III, which were at risk of hip fracture. Older adults with comorbidity, especially those who used cardiovascular drugs increased postural hypotension side effects, which is a significant cause of falls in older people (Cauley, Cawthon, & Peters, 2016). Therefore, multiple-comorbidities and polypharmacy usage in older people might interfere with a physiological system leading to fall-related injuries in these study participants.

The TIP has a high feasibility score of clinical implementations (92.36%); notably, there was no drop out of participants. It can be said that the TIP was

a feasible program for clinical implementation. Because the TIP was developed based on standard evidence and SE theory (Bandura, 1997), it is easy to understand with less complicated procedures to follow resulting in a highly feasible program for clinical implementation. Besides, the 10 nurses research assistants had experience in caring of orthopaedic patients together with learning with the simple protocol of the TIP led them to feel more confident and knowledgeable to deliver the TIP to patients and their relatives effectively. This was supported by previous studies, which indicated that orthopaedic nurse applied the SE theory into nursing practice in orthopedic care as caring hip surgery patients resulting in better physical rehabilitation (Wirojyuti, Kengganpanich, Kengganpanich, & Tansakul, 2014).

The FOF before discharge and six weeks post-surgery significantly decreased compared with before receiving the TIP. These might be explained by participants received rehabilitation program designed based on SE theory including enhancing self-accomplishment actions, developing a hip fracture role model, motivating physical activities with evaluating physical and emotional arousal before and after joining the program; improving self-confidence by using SE theory in this study was consistent with a previous study (Jaipiti & Sasat, 2018). In addition, the TIP was specifically designed to an individual participant. Continuing an exercise training for improving muscle strength and daily activity practice during admission along with post-surgery may lead the

participants to feel more confident and less FOF since after falling and surgical treatment, not only the muscle was injured, but also the patients felt the uncertainty and FOF (Visschedijk et al., 2013). Besides, exercise training after surgery might facilitate muscle recovery faster because exercising Gluteal and Quadriceps muscle groups (supportive muscles around the hip) enhances stability while standing or walking, which results in decreasing FOF (Thiamwong & Suwanno, 2014; Dattilo et al., 2014). However, FOF before discharge and after six weeks of surgery was found no statistical difference. It might be due to FOF before discharge was lessened, and it continued the same as after six weeks of surgery. This made the change was not observed.

The FA of most participants at six weeks post-surgery increased more than before receiving the TIP and before discharge. This could be explained by some reasons. The CDP delivered to participants integrated holistic care approach included home environment preparation, risk of falling evaluation, and promoting self-care for rehabilitation post-surgery, monitoring unusual/warning symptoms, explaining the ongoing laboratory monitoring, and treatment plan discussion. These may lead the participants and relatives to gain more knowledge and understanding of the treatment and care planning to result in more readiness to perform daily activities independently after discharge similar to a previous study (Al-Maqbali, 2014; Wongngam et al., 2014). Besides, the TIP comprised of muscle exercise training and daily life

activity practices. Previous studies supported that muscle exercise training improves muscle and joint strength resulting in stability while performing activities (Malina & Marcos, 2015), promotes mobility, and enhances good physical rehabilitation (Turunen et al., 2017). Besides, the rehabilitation program integrated with the SE theory focused on promoting SE towards postoperative activities in reducing FOF and enhancing self-confidence to perform activities (Jaipiti & Sasat, 2018); diminishing FOF increases FA at six weeks after hip surgery (Tamsat et al., 2015).

After six weeks post-surgery, there was no incidence of re-falling. This may be because participants and relatives received appropriate knowledge - risk factors for falling, fall and fall prevention, environmental management, walking and standing position advice, drug use and precautions from the side effect of the drugs - from the TIP program resulting in improved understanding and knowledge of falls and fall prevention. Besides, the RP that was a part of the TIP program may increase muscle around the hip joint strengthening, enhancing balance and ability in walking (Thiamwong & Suwanno, 2014; Katri et al., 2017).

### Recommendation

The implementation of TIP in an orthopaedic clinical setting is feasible. It can reduce FOF and increase FA after hip surgery in older adults with fall-related hip fracture. Integrating the SE theory into clinical practice on health promotion intervention emphasized that a professional nursing role is vital for quality

of care in older adults undergoing hip surgery. However, further study should be conducted on two-group pretest-posttest design in order to establish the causality of the study results. Besides, a longitudinal follow-up study, 3 or 6 months, is suggested since changes in performing the activity of daily life, fear of falling, and incidence of re-falling, maybe a different pattern.

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