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### Chief complaints of elderly individuals on presentation to emergency department: a retrospective analysis of South Korean national data 2014

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*Asian Nurs. Res. (Korean Soc. Nurs. Sci.* 2016; 10(4): 312-317.

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#### Abstract

**PURPOSE:** We aimed to assess the chief complaints (CCs) of elderly individuals on presentation to the emergency department (ED) according to gender, age, and disease-related and injury-related visits.

**METHODS:** The 2014 registry database of the National Emergency Department Information System in South Korea, which included data on 908,761 ED visits by individuals aged 65 years and over, was reviewed.

**RESULTS:** We found that 80.7% ED visits were related to disease, whereas the remaining visits were related to injury. The most common CCs presented by elderly male and female individuals with disease-related visits were dyspnea and dizziness, respectively. The 10 most common CCs accounted for 45.5% and 49.2% of the total disease-related visits for male and female individuals, respectively. The most common CC in male and female individuals with injury-related visits was headache and hip pain, respectively. The CC rank showed minimal variance among the different age groups, but a difference was observed between male and female individuals. The most common mechanism of injury in elderly male and female individuals was slipping, wherein females showed a higher occurrence rate than their male counterparts.

**CONCLUSIONS:** These findings can be used to establish an ED training curriculum for nursing students and ED nurses, particularly for ED triage in the elderly.

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### Commentary: Building the older adult fall prevention movement - steps and lessons learned

Smith ML, Chaudhary S, Nieb S, Bayakly R, Graham K, Head E.

*Front. Public Health* 2016; 4: e277.

**Affiliation:** Georgia Department of Public Health, Atlanta, GA, USA.

**Comment On:** *Front Public Health* 2015;2:194.

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**Abstract** [Abstract unavailable] Commentary

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### Effectiveness of an intervention to prevent frailty in pre-frail community-dwelling older people consulting in primary care: a randomised controlled trial

Serra-Prat M, Sist X, Domenich R, Jurado L, Saiz A, Rocés A, Palomera E, Tarradellas M, Papiol M.

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### Abstract

**BACKGROUND:** evidence on the effectiveness of interventions to prevent frailty is scarce.

**OBJECTIVE:** to assess the effect of an intervention in preventing frailty progression in pre-frail older people.

**STUDY DESIGN:** a randomised, open label, controlled trial with two parallel arms.

**POPULATION:** community-dwelling pre-frail older people ( $\geq 70$  years) consulting in primary care.

**INTERVENTION:** nutritional assessment (and derivation to a Nutritional Unit for usual care in the event of nutritional risk) and a physical activity programme including aerobic exercise and a set of mixed strengthening, balance and coordination exercises

**CONTROL GROUP:** patients receiving the usual care.

**MAIN OUTCOME MEASURE:** prevalence of frailty (Fried criteria) at 12 months. **SECONDARY**

**OUTCOMES MEASURES:** functional capacity (Barthel index), falls and nutritional status (Short-Form Mini Nutritional Assessment) on follow-up at 12 months.

**RESULTS:** one hundred and seventy-two participants were recruited and randomised (mean age: 78.3 years; mean number of Fried criteria: 1.45). Thirty-nine participants (22.6%) were dropped out during the study. At follow-up, 4.9% of the intervention group and 15.3% of the control group had evolved to frailty, for a crude odds ratio (OR) of 0.29 (95% confidence interval [CI]: 0.08-1.08;  $P = 0.052$ ) and an adjusted (by age, gender and number of co-morbidities) OR of 0.19 (95% CI: 0.04-0.95;  $P = 0.044$ ). Intervention group showed a higher outdoors walking hour per day (0.97 versus 0.73;  $P = 0.019$ ) but no difference was observed in muscle strength, gait speed or other functional indicators.

**CONCLUSION:** an intervention focused on physical exercise and maintaining good nutritional status may be effective in preventing frailty in community-dwelling pre-frail older individuals.

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#### **Effects of evidence-based fall reduction programming on the functional wellness of older adults in a senior living community: a clinical case study**

Harnish A, Dieter W, Crawford A, Shubert TE.

*Front. Public Health* 2016; 4: e262.

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### Abstract

**BACKGROUND:** Older adults at a high risk of falls may be referred to a physical therapist. A physical therapy episode of care is designed for the transition of an older adult from a high fall risk to a moderate to low fall risk. However, these episodes of care are limited in time and duration. There is compelling evidence for the efficacy of group-based exercise classes to address risk, and transitioning an older adult from physical therapy to a group-based program may be an effective way to manage risk through the continuum of care.

**OBJECTIVES:** The purpose of this study was to translate research findings into a "real world" setting, and demonstrate the efficacy of integrating evidence-based fall prevention exercises into pre-

existing exercise classes at a senior living facility as a "proof of concept" model for future programming.

**METHODS:** Twenty-four participants aged 65 years and older living in a senior living community and the community were stratified into group-based exercise classes. Cutoff scores from functional outcome measures were used to stratify participants. Exercises from The Otago Exercise Program were implemented into the classes. Functional outcome measures collected included the 10-Meter Walk Test, 30-Second Sit to Stand, and Timed Up and Go (TUG). Number of falls, hospitalizations, and physical therapy episodes of care were also tracked. Data were compared to a control group in a different senior living community that offered classes with similar exercises aimed at improving strength and mobility. The classes were taught by an exercise physiologist and were of equal duration and frequency.

**RESULTS:** Participants demonstrated significant improvements in all functional outcome measures. TUG mean improved from 13.5 to 10.4 s ( $p = 0.034$ ). The 30-Second Sit to Stand mean improved from 10.5 to 13.4 ( $p = 0.002$ ). The 10-Meter Walk Test improved from 0.81 to 0.98 m/s ( $p < 0.0001$ ). Participants did not experience any falls or hospitalizations, and two participants required physical therapy episodes of care.

**CONCLUSION:** Implementing an evidence-based fall reduction program into a senior living program has a positive effect on strength, balance, fall risk, gait speed, fall rate, hospitalizations, and amount of physical therapy intervention.

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#### **Effects of physical-cognitive dual task training on executive function and gait performance in older adults: a randomized controlled trial**

Falbo S, Condello G, Capranica L, Forte R, Pesce C.

*Biomed. Res. Int.* 2016; 2016: e5812092.

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#### **Abstract**

Physical and cognitive training seem to counteract age-related decline in physical and mental function. Recently, the possibility of integrating cognitive demands into physical training has attracted attention. The purpose of this study was to evaluate the effects of twelve weeks of designed physical-cognitive training on executive cognitive function and gait performance in older adults. Thirty-six healthy, active individuals aged  $72.30 \pm 5.84$  years were assigned to two types of physical training with major focus on physical single task (ST) training ( $n = 16$ ) and physical-cognitive dual task (DT) training ( $n = 20$ ), respectively. They were tested before and after the intervention for executive function (inhibition, working memory) through Random Number Generation and for gait (walking with/without negotiating hurdles) under both single and dual task (ST, DT) conditions. Gait performance improved in both groups, while inhibitory performance decreased after exercise training with ST focus but tended to increase after training with physical-cognitive DT focus. Changes in inhibition performance were correlated with changes in DT walking performance with group differences as a function of motor task complexity (with/without hurdling). The study supports the effectiveness of group exercise classes for older individuals to improve gait performance, with

physical-cognitive DT training selectively counteracting the age-related decline in a core executive function essential for daily living.

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**Epidemiology of comorbid conditions among adults 50 years and older with traumatic brain injury**

Kumar RG, Juengst SB, Wang Z, Dams-O'Connor K, Dikmen SS, O'Neil-Pirozzi TM, Dahdah MN, Hammond FM, Felix ER, Arentz PM, Wagner AK.

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**DOI** 10.1097/HTR.0000000000000273 **PMID** 28060201

**Abstract**

**OBJECTIVES:** Aging individuals with traumatic brain injury (TBI) experience multiple comorbidities that can affect recovery from injury. The objective of this study was to describe the most commonly co-occurring comorbid conditions among adults 50 years and older with TBI.

**SETTING:** Level I Trauma centers.

**PARTICIPANTS:** Adults 50 years and older with moderate/severe TBI enrolled in the TBI-Model Systems (TBI-MS) from 2007 to 2014 (n = 2134).

**DESIGN:** A TBI-MS prospective cohort study.

**MAIN MEASURES:** International Classification of Disease-9th Revision codes collapsed into 45 comorbidity categories. Comorbidity prevalence estimates and trend analyses were conducted by age strata (50-54, 55-64, 65-74, 75-84, ≥85 years). A dimension reduction method, Treelet Transform, classified clusters of comorbidities that tended to co-occur.

**RESULTS:** The 3 most commonly occurring comorbid categories were hypertensive disease (52.6/100 persons), other diseases of the respiratory system (51.8/100 persons), and fluid component imbalances (43.7/100 persons). Treelet Transform classified 3 clusters of comorbid codes, broadly classified as (1) acute medical diseases/infections, (2) chronic conditions, and (3) substance abuse disorders.

**CONCLUSION:** This study provides valuable insight into comorbid conditions that co-occur among adults 50 years and older with TBI and provides a foundation for future studies to explore how specific comorbidities affect TBI recovery.

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**Fear of falling and mortality among community-dwelling older adults in the Shih-Pai study in Taiwan: a longitudinal follow-up study**

Chang HT, Chen HC, Chou P.

*Geriatr. Gerontol. Int.* 2017; ePub(ePub): ePub.

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**Abstract**

**AIM:** Little is known about the association between fear of falling (FOF) and the risk of mortality. The aim of the present study was to investigate the association between FOF and mortality among

community-dwelling older adults.

**METHODS:** A total of 3814 older adults aged 65 years and older living in the Shih-Pai area in Taiwan participated in this 7-year follow-up longitudinal study. A structured questionnaire was used to record participants' FOF, history of falling, demographic characteristics, medical conditions, history of insomnia, depression symptoms and subjective health from 1999 to 2002. Follow-up all-cause mortality data were obtained from the National Death Registry of the Department of Health to identify the occurrence of deaths from the initial interview through to 31 December 2008.

**RESULTS:** At the baseline assessment, the mean age of the participants was  $73.8 \pm 5.8$  years, 56.4% were men and 53.4% had FOF. Cox regression showed that participants with FOF had an increased risk of mortality (aHR 1.16, 95% CI 1.02-1.33) after adjusting for sex, history of falling, age, body mass index, marital status, education level, smoking status, alcohol use, living status, chronic condition, depression and subjective health. Furthermore, FOF was a significant risk factor for male participants (aHR 1.17, 95% CI 1.00-1.38), but had a marginal risk for female participants (aHR 1.24, 95% CI 0.95-1.60) after adjusting for other risk factors, as in the full model except for sex.

**CONCLUSIONS:** The findings of the present study suggest that FOF is a significant risk factor of mortality, especially in older male adults. Further research on the mechanism and effects of fear of falling on mortality is necessary. © 2017 Japan Geriatrics Society.

#### PDF Endnote Y

#### Gait speed and processing speed as clinical markers for geriatric health outcomes

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*Am. J. Geriatr. Psychiatry* 2016; ePub(ePub): ePub.

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#### Abstract

**OBJECTIVE:** This study investigates the independent and combined potential of slowed gait speed and slowed processing speed as predictors of adverse health outcomes. The role of depressive symptoms in these associations is also investigated.

**METHODS:** In the prospective cohort study, using the Longitudinal Aging Study Amsterdam database, three study samples for each outcome variable were defined: persistent cognitive decline (PCD; N = 1,271, 13 years of follow-up), falls (N = 1,282, 6 years of follow-up), and mortality (N = 1,559, age  $74.9 \pm 5.8$ , 21 years of follow-up). At baseline, gait speed (6-m walk with a turn at 3 m), processing speed (coding task), depressive symptoms (Center for Epidemiologic Studies Depression Scale), and basic demographic data were assessed. Also, time to PCD, falls, and mortality were assessed. Cox (for PCD and mortality) and stratified Cox (for falls) regression models were used.

**RESULTS:** Slowed processing speed predicted PCD (HR: 7.8; 95% CI: 3.3-18.8), slowed gait speed predicted falls (HR: 1.3; 95% CI: 1.0-1.5), and both measures predicted mortality (gait speed HR: 2.1; 95% CI: 1.6-2.6; processing speed HR: 1.9; 95% CI: 1.6-2.4). Each association remained significant after adjusting for the other slowing symptom. Slowed processing speed only predicted falls in the presence of slowed gait (interaction). A slowing sum score that combines both slowing symptoms predicted all three outcomes. The associations were not influenced by depressive symptoms.

CONCLUSION: Slowing of thought is as relevant as slowing of movement to predict adverse health outcomes, because they seem to represent separate underlying pathologies.

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### **How do work hierarchies and strict divisions of labour impact care workers' experiences of health and safety? Case studies of long term care in Toronto**

Syed I, Daly T, Armstrong P, Lowndes R, Chadoin M, Naidoo V.

*J. Nurs. Home Res.* 2016; 2(1): 41-49.

**Affiliation:** York University Department of Health Policy and Health Equity, Toronto, Canada.

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#### **Abstract**

**BACKGROUND:** According to the Canadian Health Care Association (1), there are 2,577 long-term care ("LTC") facilities across Canada, with the largest proportion (33.4%) located in Ontario. Most studies focus on residents' health, with less attention paid to the health and safety experiences of staff. Given that the work performed in Ontario LTC facilities is very gendered, increasingly racialized, task-oriented, and with strict divisions of labour, this paper explores in what ways some of these factors impact workers' experiences of health and safety.

**OBJECTIVES:** The study objectives included the following research question: How are work hierarchies and task orientation experienced by staff? **DESIGN AND SETTING:** This paper draws on data from rapid team-based ethnographies of the shifting division of labour in LTC due to use of informal carers in six non-profit LTC facilities located in Toronto, Ontario.

**METHODS:** Our method involved conducting observations and key informant interviews (N=167) with registered nurses, registered practical nurses, personal support workers, dietary aides, recreation therapists, families, privately paid companions, students, and volunteers. Interviews were audio-recorded, transcribed verbatim, and thematically analyzed. For observations, researchers were paired and covered shifts between 7 a.m. and 11 p.m., as well as into the late night over six days, at each of the six sites. Detailed ethnographic field notes were written during and immediately following observational fieldwork.

**RESULTS:** Our results indicate that employee stress is linked to the experiences of care work hierarchies, task orientation, and strict divisions of labour between and among various staff designations.

**CONCLUSION:** Findings from this project confirm and extend current research that demonstrates there are challenging working conditions in LTC, which can result in occupational health and safety problems, as well as stress for individual workers.

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### **Interventions to prevent or reduce the level of frailty in community-dwelling older adults: a scoping review of the literature and international policies**

Puts MT, Toubasi S, Andrew MK, Ashe MC, Ploeg J, Atkinson E, Ayala AP, Roy A, Rodríguez Monforte M, Bergman H, McGilton K.

*Age Ageing* 2017; ePub(ePub): ePub.

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### Abstract

**BACKGROUND:** frailty impacts older adults' ability to recover from an acute illness, injuries and other stresses. Currently, a systematic synthesis of available interventions to prevent or reduce frailty does not exist. Therefore, we conducted a scoping review of interventions and international policies designed to prevent or reduce the level of frailty in community-dwelling older adults.

**METHODS AND ANALYSIS:** we conducted a scoping review using the framework of Arksey and O'Malley. We systematically searched articles and grey literature to identify interventions and policies that aimed to prevent or reduce the level of frailty.

**RESULTS:** fourteen studies were included: 12 randomised controlled trials and 2 cohort studies (mean number of participants 260 (range 51-610)), with most research conducted in USA and Japan. The study quality was moderate to good. The interventions included physical activity; physical activity combined with nutrition; physical activity plus nutrition plus memory training; home modifications; prehabilitation (physical therapy plus exercise plus home modifications) and comprehensive geriatric assessment (CGA). Our review showed that the interventions that significantly reduced the number of frailty markers present or the prevalence of frailty included the physical activity interventions (all types and combinations), and prehabilitation. The CGA studies had mixed findings.

**CONCLUSION:** nine of the 14 studies reported that the intervention reduced the level of frailty. The results need to be interpreted with caution, as only 14 studies using 6 different definitions of frailty were retained. Future research could combine interventions targeting more frailty markers including cognitive or psychosocial well-being.

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### **Involvement of the end user: exploration of older people's needs and preferences for a wearable fall detection device - a qualitative descriptive study**

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*Patient Prefer. Adherence* 2017; 11: 11-22.

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### Abstract

**PURPOSE:** To explore the needs and preferences of community-dwelling older people, by involving them in the device design and mock-up development stage of a fall detection device, consisting of a body-worn sensor linked to a smartphone application.

**PATIENTS AND METHODS:** A total of 22 community-dwelling persons 75 years of age and older were involved in the development of a fall detection device. Three semistructured focus group interviews were conducted. The interview data were analyzed using qualitative descriptive analysis with deductive coding.

**RESULTS:** The mock-up of a waterproof, body-worn, automatic and manual alerting device, which served both as a day-time wearable sensor and a night-time wearable sensor, was welcomed. Changes should be considered regarding shape, color and size along with alternate ways of

integrating the sensor with items already in use in daily life, such as jewelry and personal watches. The reliability of the sensor is key for the participants. Issues important to the alerting process were discussed, for instance, who should be contacted and why. Several participants were concerned with the mandatory use of the smartphone and assumed that it would be difficult to use. They criticized the limited distance between the sensor and the smartphone for reliable fall detection, as it might restrict activity and negatively influence their degree of independence in daily life.

**CONCLUSION:** This study supports that involving end users in the design and mock-up development stage is welcomed by older people and allows their needs and preferences concerning the fall detection device to be explored. Based on these findings, the development of a "need-driven" prototype is possible. As participants are doubtful regarding smartphone usage, careful training and support of community-dwelling older people during real field testing will be crucial.

#### **PDF Y Endnote Y**

#### **Nocturia is associated with slipping and falling**

Kim SY, Bang W, Kim MS, Park B, Kim JH, Choi HG.

PLoS One 2017; 12(1): e0169690.

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#### **Abstract**

Several reports have demonstrated associations between falls and nocturia in the elderly. However, little information is available regarding other age groups. This study evaluated the relationship between the frequency of nocturia and falls in men using a large, population-based survey in Korea, and the results were adjusted for various confounding factors. Data from a 2011 Korean community health survey (KCHS) were retrieved for 92,660 men aged 19 to 103 years. Information regarding the history of slips or falls in the past year was collected. The frequency of nocturia was classified as 0, 1, 2, 3, 4, and  $\geq 5$  instances a night. Walking during the day, education, income, body mass index (BMI), smoking, alcohol consumption, sleep time, stress level and medical histories of hypertension, diabetes mellitus, hyperlipidemia, cerebral stroke, angina or myocardial infarction, arthritis, and osteoporosis were adjusted using multiple logistic regression analysis with complex sampling. A subgroup analysis was conducted for young (19-30 years), middle-aged (31-60 years), and elderly individuals (61+ years). Approximately 14.6% of the men had a history of falls. Their mean age was 42.9 years, which was significantly higher than that of the non-faller group ( $P < 0.001$ ). An increased frequency of nocturia was associated with increased adjusted odds ratio (AOR) for falls (AOR for 1 instance of nocturia/night = 1.41 [95% confidence interval, 1.33-1.50]; AOR for 2 instances = 1.41 [1.33-1.50]; AOR for 3 instances = 2.00 [1.75-2.28]; AOR for 4 instances = 2.12 [1.73-2.61]; AOR for  $\geq 5$  instances = 2.02 [1.74-2.36],  $P < 0.001$ ). In the subgroup analysis, the AORs for falls significantly increased in all age groups as the frequency of nocturia increased.

#### **PDF Y Endnote Y**

#### **Reaction time and postural sway modify the effect of executive function on risk of falls in older people with mild to moderate cognitive impairment**

Taylor ME, Lord SR, Delbaere K, Kurrle SE, Mikolaizak AS, Close JC.

*Am. J. Geriatr. Psychiatry* 2016; ePub(ePub): ePub.



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### **Abstract**

**OBJECTIVES:** To explore the relationship between cognitive performance and falls in older people with mild to moderate cognitive impairment (CI) by investigating the mediational effects of medical, medication, neuropsychological, and physiological factors.

**DESIGN:** Secondary analysis, prospective cohort study.

**SETTING:** Community and low-level care.

**PARTICIPANTS:** 177 older people (aged  $82 \pm 7$  years) with mild to moderate CI (MMSE 11-23; ACE-R < 83).

**MEASUREMENTS:** Global cognition and six neuropsychological domains (memory, language, visuospatial, processing speed, executive function [EF], and affect) were assessed. Participants also underwent sensorimotor and balance assessments. Falls were recorded prospectively for 12 months.

**RESULTS:** The EF domain was most strongly associated with multiple falls (relative risk [RR]: 1.50, 95% CI: 1.18-1.91). Global cognition was not associated with falls (RR: 1.09, 95% CI: 0.92-1.30). Additional analyses showed that participants with poorer EF (median cutpoint) were more likely to be taking centrally acting medications and were less physically active. They also had significantly worse vision, reaction time, knee extension strength, balance (postural sway, controlled leaning balance), and higher physiological fall risk scores. Participants with poorer EF were 1.5 times (RR: 1.50, 95% CI: 1.03-2.18) more likely to have multiple falls. Mediational analyses demonstrated that reaction time and postural sway reduced the relative risk of EF on multiple falls by 31% (RR: 1.19, 95% CI: 0.81-1.74).

**CONCLUSIONS:** Within this sample of older people with mild to moderate CI, poorer EF increased the risk of multiple falls. This relationship was mediated by reaction time and postural sway, suggesting cognitively impaired older people with poorer EF may benefit from fall prevention programs targeting these mediating factors.

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### **PDF Y Endnote Y**

#### **The effect of transfemoral interface design on gait speed and risk of falls**

Kahle JT, Klenow TD, Sampson WJ, Highsmith MJ.

*Technol. Innov.* 2016; 18(2-3): 167-173.

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### **Abstract**

Falls and diminished walking capacity are impairments common in persons with transfemoral amputation (TFA). Reducing falls and optimizing walking capacity through such means as achieving a more normal gait speed and community ambulation should be considered when formulating the

prosthetic prescription. Because walking capacity and balance confidence are compromised with TFA, these outcomes should be considered when evaluating interfaces for transfemoral prosthetic users. The purpose of this study was to compare the effect of TFA interface design on walking capacity and balance confidence. A retrospective cohort design was utilized involving unilateral TFA patients who used ischial ramus containment (IRC) and High-Fidelity (HiFi) interfaces (independent variables). Dependent variables included the Activity-specific Balance Scale (ABC) and the two-minute walk test (2MWT). Complete records were available for 13 patients ( $n = 13$ ). The age range was 26 to 58 years. Three patients functioned at the K4 activity level, whereas all others functioned at the K3 level. Mean ABC scores were significantly different ( $p \leq 0.05$ ) at 77.2 ( $\pm 16.8$ ; 35.6 to 96.9) for IRC and 90.7 ( $\pm 5.7$ ; 77.5 to 98.7) for HiFi. The mean distance walked on the 2MWT was 91.8 m ( $\pm 22.0$ , 58.3 to 124.7) for IRC compared to 110.4 m ( $\pm 28.7$ ; 64.7 to 171.1) for the HiFi socket ( $p \leq 0.05$ ). Alternative transfemoral interface design, such as the HiFi socket, can improve walking capacity and balance confidence in higher-functioning TFA patients.

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