Occupational Therapy Interventions for Adults With Musculoskeletal Conditions

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Evidence Connection articles provide a clinical application of systematic reviews developed in conjunction with the American Occupational Therapy Association's (AOTA's) Evidence-Based Practice Project. In this Evidence Connection article, we describe a case report of a person who underwent a total knee replacement due to severe osteoarthritis of his left knee. The occupational therapy assessment and intervention process both before and after surgery in the home setting is described. Findings from the systematic review (Dorsey & Bradshaw, 2017) on this topic were published in the January/February 2017 issue of the *American Journal of Occupational Therapy* and in AOTA's *Occupational Therapy Practice Guidelines for Adults With Musculoskeletal Conditions*. Each article in this series summarizes the evidence from the published reviews on a given topic and presents an application of the evidence to a related clinical case. Evidence Connection articles illustrate how the research evidence from the reviews can be used to inform and guide clinical reasoning.

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Clinical Case

Chandler is a 65-yr-old man who underwent a left total knee replacement due to osteoarthritis approximately 5 days ago. He is a newly retired firefighter who served in his city's fire department for 40 yr. Chandler and his wife of 42 yr live in their four-bedroom, single-story home; they have two grown sons who live in the area and a large-breed pet dog.

Chandler participated in his first occupational therapy visit 1 wk before his surgery during a "Joint Boot Camp" session held at the office of his orthopedic surgeon. During this evidence-supported presurgical occupational therapy session, Chandler received information and instruction about what to expect during the early postoperative phase and how to safely complete basic activities of daily living (ADLs), including toilet transfers, bathing techniques, and lower extremity dressing (Larsen, Hansen, & Søballe, 2008; Larsen, Sørensen, et al., 2008). He was provided with several pieces of adaptive equipment, including a long-handled reacher, dressing stick, long-handled bath brush, and sock aid for use after his surgery.

Chandler underwent his total knee arthroplasty at a hospital that participates in the Comprehensive Care for Joint Replacement model through the Centers for Medicare & Medicaid Services (2016). As a result of recommendations from this model for multidisciplinary care and the empirical evidence supporting increased health-related quality of life resulting from early rehabilitation that includes occupational therapy, Chandler was discharged to his home on the 3rd

day after surgery (Gillen et al., 2007; Khan, Ng, Gonzalez, Hale, & Turner-Stokes, 2008); he will begin home-based occupational therapy services today.

Occupational Therapy Assessment and Findings

During his first occupational therapy visit with John, a home care occupational therapist, Chandler completed the initial evaluation. As part of the evaluation, John administered the Canadian Occupational Performance Measure (COPM; Law et al., 2014) and an occupational profile (American Occupational Therapy Association, 2014, 2017) to determine Chandler's occupational history, potential impact of his environment on current condition, and his occupational interests and goals.

Through this interview process, Chandler reported becoming increasingly limited in his ability to participate in his desired occupations because of bilateral knee pain and stiffness caused by osteoarthritis. He retired as the chief of the fire department as a direct result of his difficulty with work tasks, most notably difficulty walking quickly up and down stairs, moving through uneven terrain, and transferring into and out of the fire truck when on a call. He also reported that in addition to work-related tasks, he was having difficulty with leisure activities that he enjoyed with his wife, including light home renovation, caring for his Scottish Deerhound, and yard work.

Chandler and his wife have always been very active within their community and enjoy spending time with their grandchildren who live nearby and volunteering in the community with at-risk children. His daily routine has typically consisted of waking early; taking his dog outside for a morning walk; preparing breakfast for himself and his wife; and then spending the day at work, in his yard, or at a community event. He indicates concerns that he may not be able to return to many of his occupations not only because of his recent surgery but also because of the worsening condition of his right knee, which is not scheduled for surgery at this time. He expressed that many activities he enjoys require walking on uneven surfaces, kneeling, squatting, and balancing.

His goals for occupational therapy, according to the COPM and as described on the occupational profile, include reengaging in community activities, such as fundraising and field days with at-risk youth; completing yard maintenance at his home, including lawn mowing, mulching, and plant care; cooking and completing odd jobs around his house (instrumental activities of daily living [IADLs]); and regaining independence in all self-care activities. While describing his goals, Chandler pointed out that sometimes he becomes concerned that he may not be able to return to his previous activity level. He pointed out that this concern causes him some anxiety but that he and his wife discuss his apprehensions on a regular basis and that it alleviates some of his fear.

To determine Chandler's status with his self-care abilities and pain status, the Performance Assessment of Self-Care—Home edition (Holm & Rogers, 2008) and Visual Analog Pain Scale (Berry & Huskisson, 1972) were also administered. The results of the occupational therapy evaluation are outlined in Table 1.

Assessment Results and Analysis of Occupational Performance

Results of the Performance Assessment of Self-Care—Home edition indicate that Chandler is not yet comfortable with transfers to and from bed and bed mobility activities reportedly because of pain level. However, he does appear safe and understands the methods for bed and sit-to-stand mobility that he was taught before his surgery and during his hospital stay. He is not yet secure with shower transfers but requires only minimal assistance with sponge bathing at this time. Toilet transfers are safe but require guarding for balance; he does not own any adaptive devices for the shower or toilet. Chandler demonstrated safe and effective dressing of upper and lower extremities using the dressing stick, reacher, and sock aid provided to him during his presurgical occupational therapy visit. He needed minimal cueing for technique during the assessment.

Results of the COPM indicate that the most important areas for Chandler to address at this time are self-care ADLs and IADLs of pet care, cooking, and gardening. He would also like to complete community outings with his wife to visit the fire station and continue fund raising. His initial COPM Performance scale score was 3/10, and his COPM Satisfaction scale score was 1/10. The Visual Analog Pain Scale indicated a moderate level of discomfort at both rest and during activity. John reviewed Chandler's medication routine with him and found that he is taking the recommended amount of pain medication without difficulty. John also completed a safety check of Chandler's one-story patio home and found three throw rugs that could potentially become a trip-and-fall hazard.

Intervention Plan

On the basis of the findings of the occupational profile and the analysis of occupational performance, Chandler and

Table 1. Occupational Therapy Assessment Results at Initial Evaluation and Discharge

Initial Evaluation	Discharge
COPM Performance/Satisfaction Results	
Showering/toileting = 4/1	Showering/toileting = 9/10
Dressing = 7/1	Dressing = 10/10
Gardening = 1/1	Gardening = 8/8
Cooking = 2/1	Cooking = 9/9
Community excursions with dog = 1/1	Community excursions with dog = 6/3
Average score = 3/1	Average score = 8.4/8
PASS–H Results	
Bed mobility: I = 1; S = 3; A = 2 (required minimal physical assist)	Bed mobility: I = 3; S = 3; A = 3
Toilet mobility: I = 2; S = 3; A = 2 (required minimal physical assist)	Toilet mobility: I = 3; S = 3; A = 3 (elevated toilet seat)
Shower and tub mobility: I = 1; S = 3; A = 2 (adaptive equipment and minimal physical assist)	Shower and tub mobility: I = 3; S = 3; A = 3 (with tub bench)
Dressing: I = 2; S = 3; A = 3 (adaptive equipment verbal cueing)	Dressing: I = 3; S = 3; A = 3
VAS Results	
6/10 at rest	0/10 at rest
7/10 with activity	1/10 with activity

Note. A = task adequacy score (3 = *acceptable,* 2 = *acceptable but improvement possible,* 1 = *marginal,* 0 = *unacceptable*); COPM = Canadian Occupational Performance Measure (Performance scale ranging from 1 = *low* to 10 = *high*; Satisfaction scale ranging from 1 = *low* to 10 = *high*); I = independence score (3 = *no assistance,* 2 = *occasional cues,* 1 = *continuous cues*); PASS–H = Performance Assessment of Self-Care—Home edition; S = safety score (3 = *safe practices,* 2 = *minor safety risk,* 1 = *risk to safety with cueing provided to prevent potential harm*); VAS = Visual Analog Pain Scale (ranging from 0 = *no pain* to 10 = *severe pain*).

John determined that occupational therapy would incorporate a restorative approach for the outcome of improved occupational performance. The focus of therapeutic occupations and activities will be on his self-care abilities and provision of adaptive equipment; IADL functioning, including pet care; and community mobility, including social participation with coworkers and volunteering with friends. Because Chandler mentioned that he has occasional feelings of concern and anxiety for his future functional abilities, John plans to monitor his coping abilities and anxiety levels as part of occupational therapy intervention.

Specific intervention will include the following items:

1. Education regarding course of knee arthroplasty and rehabilitation in addition to instruction in joint protection for his nonsurgical knee (Berge, Dolin, Williams, & Harman, 2004; Butler, Hurley, Buchanan, & Smith-VanHorne, 1996; Hørdam, Sabroe, Pedersen, Mejdahl, & Søballe, 2010; Nuñez et al., 2006).
2. Functional mobility activities, including bed mobility and functional transfers (DeJong et al., 2009).
3. ADL retraining (dressing and bathing), including compensatory techniques for knee pain and limited mobility (DeJong et al., 2009; Dohnke, Knäuper, & Müller-Fahrnow, 2005).
4. Provision and instruction in use of adaptive equipment for shower (transfer tub bench) and toilet (elevated commode over toilet) and recommendations for home safety, including removal of throw rugs (Crowe & Henderson, 2003).
5. Community reintegration focusing on new task training in natural environments to produce a higher self-reported performance of, satisfaction with, and confidence in completing community-related tasks (Gillen et al., 2007).

Chandler received five home visits over 5 wk to address his initial areas of difficulty. His wife participated in all visits and was educated alongside Chandler per his request so that she could assist him if needed with bed mobility, dressing, and bathing. His son, Daniel, was present for a community mobility outing per Chandler's request and concern for his safety the first time visiting the firehouse.

John worked closely with Chandler's physical therapist (Elizabeth) and visiting nurse (Jane) to ensure that postsurgical wound management and mobility activities were coordinated.

Sample Intervention: Second Occupational Therapy Visit

John scheduled his next occupational therapy visit for the early morning to coincide with Chandler's morning ADL routine. This visit included instructions in both bathtub and toilet transfers with adaptive equipment to provide greater levels of independence and safety. John brought his sample commode frame and transfer tub bench to

trial with Chandler. After he arrived, John set the transfer tub bench in Chandler's bathroom and the commode frame over his toilet. Both seat heights were adjusted to prevent knee flexion greater than 90° and to provide ease of standing.

John had previously noted that a hand-held showerhead was installed in the shower and that a nonslip absorbent bath mat was used on the tile floor of the bathroom to prevent slipping. John accompanied Chandler into the bathroom and explained the use of both pieces of adaptive equipment. He also reviewed the necessity of watching his step at the edge of the bath mat to prevent tripping. John then reviewed the procedure for setting up the bath, including adjusting water temperature and placing the showerhead into the bottom of the tub for easy access after transfer. He was then instructed to carefully lower himself to the edge of the tub transfer bench and to lift his knees into the tub while avoiding excessive flexion of his surgical knee and sliding along the bench into the bathtub. Chandler demonstrated washing his feet and back using the long-handled back brush and wetting and rinsing with the shower hose.

John then reviewed toilet transfers using the commode frame and ensured that Chandler was independent with components of hygiene and manipulation of his clothing. Chandler reported that he was satisfied with his abilities and the safety of using adaptive devices and that he would like John to proceed with acquiring a commode and tub bench for him and also securing the needed prescription from his medical doctor. Chandler's wife will arrange delivery with the local durable medical equipment vendor after the order is complete.

Sample Intervention 2: Four Weeks Postsurgery

Because evidence supports the benefits of community reintegration in natural environments focusing on new task training in providing satisfaction with and confidence in completing community-related tasks, today's activity involves a community-based outing at the local park with Chandler, his son, three young grandchildren, and his dog, Lachlan. Chandler is interested in being able to safely move around within his environment on multiple surfaces, completing multiple types of transfers, interacting with adults and children, and maintaining his dog on a leash.

During the visit to the park, Chandler is encouraged to walk along paved sidewalks as an introduction to moderately uneven surfaces while walking with Lachlan. It is also recommended that he play with his grandchildren on the park swings, jungle gym, slide, and various climbing surfaces. He will push children on the swings, lift them onto high surfaces, catch them as they travel down the slide, and be with them on surfaces of various heights. He will also walk to the pond and feed the ducks with the children. In addition to providing Chandler with an opportunity to be out of doors and interacting with his grandchildren, these activities address balance and endurance, and they provide successes to improve self-efficacy and confidence. In addition, John was able to discuss energy conservation and joint protection techniques needed in the natural environment such as pacing, walking surface choices, and rest breaks.

Conclusion

After five home visits over 6 wk, Chandler had met his goals designed to increase ADL and IADL independence and return to community activities. Through activity, engagement in occupations, ADL training, education, and adaptive equipment, Chandler improved his independence and safety with functional mobility and transfers, bathing, toileting, and dressing. He has also returned to light cooking and participation in community-based activities that were outlined as outcomes on the COPM. Chandler also reports a considerable decrease in pain and a positive outlook on the future. His plans include progressing to confidently engage in more challenging yard and community activities using the recommendations and suggestions provided by John. ▲

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