It is a natural human response to move less when experiencing severe pain. This is a protective mechanism employed in response to movement-evoked pain (MEP). Defined as pain that is initiated or exacerbated by active or passive movement of the involved tissues,1, 2 MEP is a common feature of both acute (vaso-occlusive, posttraumatic, postoperative) and chronic (low back, arthritic) pain. Pain associated with movement may have a low, moderate, or high impact on a patient’s everyday functioning. After surgery, especially, MEP often triggers fear and avoidance of activity, impeding recovery and leading to disuse and deconditioning-related problems regardless of pain severity. Limited movement is sometimes expected and appropriate in the initial postsurgical phase, but continued restricted movement slows recovery, initiates or worsens disability, and reduces well-being.1

Postoperative MEP differs from pain provoked by an underlying pathology, such as angina or pathological fracture, which requires rest until the underlying problem is evaluated and treated. MEP following surgery occurs with certain position changes or movements, whether they require exertion or involve weight-bearing or not. MEP often interferes with standard postoperative recovery exercises, such as turning, coughing, deep breathing, and mobilizing out of bed, but is not captured in standard pain assessment documentation. Increasing data support measuring pain during movement in addition to assessing pain at rest. For example, Farzad and colleagues found that MEP scores during the post-immobilization phase of distal radius fracture rehabilitation predicted both wrist pain and disability six months after injury, unlike pain at rest scores that only predicted pain.4

By evaluating MEP in addition to appraising pain at rest, permitted activities that produce pain can be modified, while unaffected movements can be encouraged to help minimize the pain, guarding, and immobility that hinder functioning. Moreover, pain controlled only at rest is not well-managed pain in the absence of functional improvement. Thus,
Toward a Multifaceted and Person-Centered Approach

Postoperative pain is expected, especially during required movements or exercises in the first days after surgery. Patients with preexisting MEP are particularly at risk. Performing multidimensional pain assessments has implications for education and research in, and clinical management of, postoperative MEP. Our previous AJN article addressed several methods for assessing MEP and the importance of MEP assessment as a standard practice. This follow-up article delineates ways to manage postoperative MEP using a multifaceted and person-centered approach in order to produce effective treatment plans and promote optimal recovery.

**Toward A Multifaceted and Person-Centered Approach**

Postoperative pain is expected, especially during required movements or exercises in the first days after surgery. Patients with preexisting MEP are particularly at risk. Performing multidimensional pain assessments has implications for education and research in, and clinical management of, postoperative MEP. Our previous AJN article addressed several methods for assessing MEP and the importance of MEP assessment as a standard practice. This follow-up article delineates ways to manage postoperative MEP using a multifaceted and person-centered approach in order to produce effective treatment plans and promote optimal recovery.

**Figure 1. Case Scenario: A Multimodal Treatment Plan**

TJ, a 40-year-old man, is postcystectomy, with a local anesthetic TAP block plus prn acetaminophen for mild pain and oxycodone for moderate pain. TJ reports his pain at rest as a 6 out of 10. He is anxious about returning (along with a caregiver) to family and work responsibilities. Despite denying the need for oral medications, TJ refuses to take deep breaths or ambulate, citing the need to avoid adverse effects or complications. The nurse encourages TJ to take acetaminophen to make diaphragmatic breathing and ambulation easier and to reduce the risk of atelectasis, infection, or thrombosis that would prolong hospitalization and potentially impede a quick and full recovery. Here is a potential multimodal plan of care for TJ.

**ERAS = Enhanced Recovery After Surgery; MEP = movement-evoked pain; SMART = specific, measurable, achievable, realistic, timely; TAP = transabdominal plane; TENS = transcutaneous electrical nerve stimulation.**
Table 1. Hazards of Immobility

<table>
<thead>
<tr>
<th>Body System</th>
<th>Effects on Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cardiovascular</td>
<td>Increased cardiac workload, including increased heart rate; deep vein thrombosis; orthostatic hypotension; loss of plasma volume; venous stasis; venous insufficiency, edema</td>
</tr>
<tr>
<td>Gastrointestinal</td>
<td>Increased risk of aspiration; loss of appetite; decreased peristalsis; constipation</td>
</tr>
<tr>
<td>Genitourinary</td>
<td>Incomplete bladder emptying; urinary tract infection; formation of calculi in kidneys and infection</td>
</tr>
<tr>
<td>Integumentary</td>
<td>Skin breakdown; pressure injury</td>
</tr>
<tr>
<td>Musculoskeletal</td>
<td>Weakness, increased risk of falls; muscle atrophy and loss of muscle strength; calcium loss from bones; contractures; joint pain</td>
</tr>
<tr>
<td>Psychological</td>
<td>Anxiety; depression; sensory deprivation; apathy; learned helplessness; delirium</td>
</tr>
<tr>
<td>Respiratory</td>
<td>Decreased vital lung capacity; decreased movement of secretions, pooling of mucus; atelectasis; pneumonia; oxygen–carbon dioxide imbalance</td>
</tr>
</tbody>
</table>

Nurses are in a key position to implement and evaluate safe, effective pain treatment plans while also considering functional benchmarks, discharge criteria, and patient-specific factors. Establishing a plan based on realistic, measurable goals will help maximize pain reduction and functional improvement while avoiding treatment-related harm. Nurses can work collaboratively with patients, the health care team, and caregivers to develop and implement a multifaceted plan of care to:

- educate others about the occurrence and effects of postoperative MEP.
- develop individualized short- and long-term SMART (specific, measurable, achievable, realistic, timely) goals.
- engage in early mobility and frequent movement to prevent immobility-related complications.
- assess and manage expectations and psychosocial factors that may impede movement.
- proactively control pain with integrated nonpharmacological and pharmacological strategies.
- evaluate and reassess MEP to refine the efficacy of treatments.
- provide patients and caregivers with resources to reduce pain, enhance functional recovery, and prevent complications secondary to prolonged pain or immobility.

This person-centered approach urges clinicians to assume a whole-person model of pain care; that is, not to simply treat the symptoms or pathology of pain but to actively engage with patients and the health care team to promote recovery, wellness, mobility, and life balance.

**PLANNING CARE**

The preoperative assessment of pain, the patients’ functional status, and their previous ways of coping with pain (drug and nondrug) form a strong foundation for treatment planning. A tailored plan of care must also acknowledge how pain or its treatment interferes with prescribed or valued activities while respecting and aligning with the individual’s unique goals. Accurate assessment of MEP helps pinpoint the most relevant nursing diagnosis for treatment planning and refinement so that patients can progress toward functional benchmarks and postoperative goals. Currently, MEP is not a nursing diagnosis or a code in the International Classification of Diseases, Eleventh Revision. However, delineating MEP’s etiology and defining characteristics by considering biopsychosocial factors, such as comorbidities, activity tolerance, anxiety, fear, coping style, and resources, may shift the focus of nursing in terms of interventions, education, and counseling. It is important to convey the deleterious complications of immobility (see Table 1). In addition to preventing and treating pain, other interventions that safely promote mobility are a necessary part of the plan and may require expanding the treatment team to include physiotherapists, psychologists, and other providers to best meet the individual’s needs.

**Goal setting.** Assessments and diagnoses provide a foundation for treatment planning, implementation, and evaluation based on individualized goals, risks, capabilities, and ordered restrictions. It is important to develop and articulate goals of treatment so that all parties—the patient, caregiver, and members of the health care team—can identify potential areas of disagreement, and be confident that the goals meet the SMART criteria for achieving the desired outcomes of comfort, function, and mood. For example, a recommendation to control pain so that standing for 30 seconds within 12 hours and walking 10 steps within...
24 hours is tolerable meets these criteria for many patients after surgery. Establishing mutually aligned goals requires critical thinking, engaging in dialogue, and at times challenging assumptions held by the patient, caregiver, or other treatment team members. Daily refinement of goals helps to further individualize interventions, as there will be some patients who refuse to turn, cough, or do deep breathing the day after surgery, and others who will want to resume activities that are restricted in the postoperative period.

A common but unrealistic assumption is that pain treatment will eliminate all postoperative pain at rest and during movement. In fact, pain may be minimized with local anesthetics and multimodal therapies at rest but still be present with movement or return when those therapies are stopped. Person-centered education should prepare patients and primary caregivers to expect some postoperative pain and instruct them in how to cope with it outside of the hospital setting. Patients and caregivers should also be educated on the importance of lessening the fear, anxiety, and other emotions that can drive up pain levels, hindering functional progress after surgery. The unrealistic expectation that pain can be eradicated is counterproductive if it contributes to overtreatment or diminishes functioning. Thus, frank conversations to develop realistic goals related to comfort, function, and mood are needed before surgery; these goals should be reinforced in the perioperative and postoperative phases when the patient’s responses to pain control strategies are known. Consistent messaging by the interprofessional team is needed to achieve realistic comfort–function goals.

Achieving realistic expectations includes acknowledging that anxiety, pain, and a sense of loss are natural, and that by coping with them people can regain functioning and explore new ways of pursuing valued activities. The responses to pain ("This is awful," "I shouldn’t move") may be better predictors of whether patients will regain their usual functioning after surgery than measures of pain intensity at rest. Hence, nurses should consider whether MEP is causing impaired functional recovery or is the result of a mindset or other complication that requires attention. Removing pain as a barrier to early postoperative mobilization is essential to the patient’s regaining full functional potential.

**MANAGEMENT STRATEGIES**

**A multifaceted approach.** MEP following a procedure may be the result of altered peripheral (sensation, inflammation) and/or central nervous system (CNS) functioning (intensification, spread, prolonged duration), increasing the risk of poor outcomes. The common yet suboptimal practice of selecting and dosing analgesics based on pain intensity alone may further interfere with functioning if the patient becomes oversedated or experiences severe adverse effects from the medications. Therefore, rather than increasing opioid doses based on reports of pain intensity, nurses can add different therapies to improve pain tolerance and functional capacity. Multimodal analgesia can improve pain control and mobility while avoiding overreliance on one therapy. The best practice of multimodal therapy entails using multiple drugs at the lowest effective dose for the shortest time, in addition to nondrug therapies (see Tables 2 and 3). Evidence supports multimodal analgesia as a means of reducing postoperative pain, complications, and opioid use, while improving desirable clinical outcomes such as patient functioning and satisfaction.

An opioid-sparing individualized treatment plan can be built on previously helpful coping skills while avoiding past failures. Nurses should advocate for expanding the types of treatment, including the use of nonpharmacological pain control interventions, and for expanding the treatment team to include providers with additional expertise in pain treatment modalities. Current best practices in treating high intensity and/or prolonged pain support moving beyond medications to integrate interventional, rehabilitative, behavioral, and other complementary or integrative approaches, as appropriate, into patient-centered care. For example, after surgery, a combination of medications, nerve blocks, physical therapy, education, and counseling, along with complementary comfort measures, is likely to produce the best outcomes. (See Figure 1 for a case scenario.)

The intensity of pain along with its impact on patient functioning will determine the appropriate types and degree of invasiveness of therapy. Thus, three or more CNS-active drugs, such as opioids, anticonvulsants, hypnotics, and antidepressants, are best avoided in older adults, as the possibility of oversedation may diminish functioning while increasing the risk of injury or adverse effects. Patient-centered interprofessional teamwork may be needed to balance concerns for pain reduction, therapeutic movement, and avoidance of adverse effects in complex cases.

**Promoting wellness and quality of life through movement.** It’s time to replace the outdated notion that “rest is best” with the more widely accepted though seemingly counterintuitive perspective, especially after surgery, “motion is the potion.” Both pain and movement are necessary for life; however, like too much pain, too little movement creates a catabolic, proinflammatory, and immunosuppressed state that increases the risk of life-threatening complications or illnesses. Balancing the need to enhance movement with efforts to control pain counters the deleterious effects of immobility and promotes healing. The benefits of consistent movement and exercise include improved pain levels, range of motion, strength, tissue repair, and analgesic endorphin release.

Teaching and practicing self-regulatory strategies are also important, but these may differ in effective-
<table>
<thead>
<tr>
<th>Category</th>
<th>Common Examples</th>
<th>Benefits</th>
<th>Risks</th>
<th>Effect on Mobility</th>
</tr>
</thead>
</table>
| **Topical analgesics:** Cream, gel, drop, spray, liquid, or patch applied to intact skin over painful areas | - NSAIDs (diclofenac gel, ibuprofen gel)  
- Local anesthetics (lidocaine)  
- Topical rubefacients (trolamine salicylate, menthol, isopropyl alcohol, camphor)  
- Capsaicin (from chili peppers) | Lower rates of adverse effects or toxicity than systemic (IV, PO) routes:  
- NSAIDs are good for skin and superficial musculoskeletal pain.  
- Local anesthetics are best for neuropathic or procedural pain.  
- Rubefacients may be effective for mild muscle and joint pain. Redness at the application site is expected given their counterirritation, cooling, or heating action.  
- Capsaicin cuts production or release of pain-signaling neuropeptides. Low dose is available over the counter. High dose (for neuropathic pain) is administered by professionals in a clinical setting. | Skin irritation/dryness is common.  
- NSAIDs can cause GI upset or renal impairment in people with preexisting problems in those systems.  
- Tachyphylaxis to local anesthetics may develop; avoid sustained use. Mild (rash) or serious allergies may occur.  
- Rubefacients may cause salicylate toxicity with repeated applications over large areas.  
- Capsaicin can burn sensitive mucous membranes (such as eyes); wash hands immediately after use. | Generally positive effect on mobility.  
- Local anesthetics desensitize nerves and may reduce MEP associated with nerve injury or neuropathy. |
| **Nonopioid analgesics:** Medications that are not opioids or listed as controlled substances | - Acetaminophen  
- NSAIDs (ibuprofen, naproxen, ketorolac, meloxicam, diclofenac, indomethacin, celecoxib) | Acetaminophen blocks neuroinflammation and pain signals in the CNS, is effective for mild to moderate pain, and slightly enhances the effect of other analgesics.  
- NSAIDs, both prescription and nonprescription, reduce pain-producing inflammation. | Acetaminophen may cause liver and kidney damage with high-dose/long-duration exposure, especially with age extremes, dehydration, and/or alcohol use. Know which medications contain acetaminophen.  
- NSAIDs of high-dose/long-duration exposure are linked to GI ulceration or bleeding, kidney and heart disease, and neurotoxicity with some drugs. | Pain reduction facilitates movement.  
- NSAID-induced drowsiness is possible. |
| **Adjuvant medications:** Drugs that have analgesic properties, although pain relief is not their typical primary indication | - Antidepressants (nortriptyline, imipramine, duloxetine, venlafaxine)  
- Anticonvulsants (gabapentin, pregabalin, carbamazepine)  
- Muscle relaxants or antispasmodics (orphenadrine, baclofen, tizanidine)  
- Corticosteroid (hydrocortisone, methylprednisolone, cortisone, prednisone) | They exert an analgesic effect by targeting the cause or altering the transmission, modulation, and/or perception of pain. May improve sleep. Best for neuropathic or widespread pain. May be opioid sparing. | Adverse effects may outweigh benefits initially. Watch for confusion, drug interactions, edema, fall risk, and oversedation. Consider comorbidities (cardiovascular, renal, or psychiatric). May produce physical dependence over time requiring a taper period before stopping. | Sedation, edema, fluid-electrolyte imbalance, altered vital signs or other adverse effects may impede mobility and increase risk of falls. |
Opioid analgesics: Controlled substances that provide powerful pain relief

- **Mu agonists** (morphine, fentanyl, oxycodone, hydromorphone)
- **Atypical opioids** (tramadol, tapentadol, buprenorphine)

Pain reduction often improves physical functioning and sleep. Synthetic opioids (fentanyl, methadone, and atypical opioids) may have fewer GI, skin, and histamine-related adverse effects.

These analgesics have a high adverse-effect burden, especially initially. Oversedation, sleep apnea, and respiratory depression are major concerns, especially if using other sedating medicines. Aberrant drug use behaviors or addiction may result from exposure. May produce physical dependence over time, requiring a taper period before stopping.

Example: Nearing the peak action of pharmacological medications, lead the patient in a 10-minute guided-imagery scenario, while incorporating other environmental relaxants like aromatherapy and soft music or soundscapes. This enhances the analgesic effect and distracts from pain.

Interventional approaches: Procedural techniques or devices applied to relieve pain; can be invasive or noninvasive

- **Nerve blocks**: Local anesthetics (or a combination of medications) administered to block pain transmission of specific nerves (brachial plexus, femoral, interscalene, paravertebral, sciatic, supraclavicular, transabdominal plane)
- **Neuromodulators**

Nerve blocks and epidurals block the transmission, amplification, and prolonged maintenance of pain signals, and prevent multisystem complications associated with severe pain. They may prevent pain and are opioid sparing. Liposome bupivacaine may extend these effects. Experimental neuromodulation techniques are emerging that use cold temperatures or electrical stimulation to suppress pain signals from selected nerves. These appear to have safety and efficacy advantages over current medications.

Local anesthetics used in nerve blocks and epidurals have serious toxic reactions if administered into the bloodstream. They may diminish awareness of actual/potential tissue damage and increase risk of falls by altering sensorimotor, proprioceptor, and autonomic functioning. Hypotension may also increase risk of falls (especially if patient is dehydrated). There is also a risk of bleeding (including epidural hematoma), especially with anticoagulation. Bupivacaine damages muscles. Special equipment and trained professionals are needed. Wrong route errors (vascular, intrathecal) may occur.

- Removes pain as a barrier to movement.
- Uses small amounts of, if any, opioids, which improves alertness.
- Precautions are needed to prevent falls.
- Patients may have motor limitations in the area affected by nerve blocks.

*CNS = central nervous system; GI = gastrointestinal; MEP = movement-evoked pain; NSAID = nonsteroidal antiinflammatory drug; PO = *per os* (by mouth).*
### Table 3. Nonpharmacological Pain Management Strategies That Facilitate Movement

<table>
<thead>
<tr>
<th>Category</th>
<th>Strategies</th>
<th>Benefits</th>
<th>Risks</th>
<th>Effect on Mobility</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Restorative modalities:</strong> Helps to restore optimum function, independence, and comfort</td>
<td>• Positioning</td>
<td>Builds strength, stamina, and flexibility. Supports proper alignment to prevent secondary maladaptive changes. PT/OT program can be tailored to an individual’s needs and risks.</td>
<td>Risks include fatigue, overexertion, inflammation, injury, or falls. Increase in pain or swelling may reinforce fear/avoidance patterns. Risk of injury exists with thermotherapy (don’t use in a person unable to feel or remove).</td>
<td>• Have an activity/exercise plan appropriate to surgery/recovery needs. • Start with imagining movements before doing them, then progress. • Establish a routine. • Thermotherapy and stretch after activity.</td>
</tr>
<tr>
<td></td>
<td>• Thermotherapy</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Therapeutic exercise</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Massage</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• PT/OT</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Orthotics; adaptive equipment</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Behavioral modalities:</strong> Activities that assist individuals in overcoming cognitive/affective barriers to movement and/or pain</td>
<td>• Relaxation/imagery mindfulness techniques</td>
<td>Reduces pain, distress, and cognitive and affective barriers to movement. Benefits increase with practice. May reduce medication use.</td>
<td>Unresolved mental health problems may emerge requiring special attention. Guidance may be needed to master techniques if anxiety, frustration, or intrusive thoughts prevent engagement. Requires frequent (daily) practice. Virtual reality, real reality, or videos may trigger motion sickness or unpleasant memories, thoughts, or feelings.</td>
<td>• Relaxation techniques may be better done sitting upright, with eyes focused on one point. • May need to challenge cognitive distortions or pessimism to motivate patients. • Mastery takes time; need to practice even if no immediate benefit.</td>
</tr>
<tr>
<td></td>
<td>• Mental distraction</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Pacing activities</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Cognitive behavioral therapy</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Technology-guided therapy (telehealth)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Self-management programs</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Complementary/integrative approaches:</strong> Unconventional activities that can be used in addition to or with other nonpharmacological or pharmacological strategies</td>
<td>• Reiki, Healing Touch</td>
<td>Enhances blood flow, circulation, and nutrition. Stimulates natural comfort (endorphins) and healing processes. Diminishes unhelpful stress responses.</td>
<td>Lack of access to skilled personnel who understand postsurgical limitations is a limiting factor in many settings. Some nutritional supplements interact with drugs.</td>
<td>• Nutrition promotes strength and muscle building and may reduce a proinflammatory state, nausea, and other hindrances to mobility. • Distraction or a caring presence can help with mobility perseverance.</td>
</tr>
<tr>
<td></td>
<td>• TENS</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Humor</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Music</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Acupuncture</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Nutritional supplements</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Social and spiritual modalities:</strong> Activities that facilitate interpersonal and intrapersonal adaptive coping, task persistence, and existential fulfillment</td>
<td>• Prayer</td>
<td>Provides strength, comfort, motivation, and meaning for the individual.</td>
<td>Spirituality may be equated with religiosity and be distressing if the person feels they are being punished for mistakes; or they may feel angry to have bad things happen when they did all the “right” things.</td>
<td>• Aligns with beliefs, values, routines, and rituals. • Finds meaningful connections as a motivator for movement such as group exercise.</td>
</tr>
<tr>
<td></td>
<td>• Meditation</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Support groups</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Stress, coping, and resilience training</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Guided imagery</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Example: Per a physician’s order, place TENS near location of pain for about 15 minutes twice a day, gradually increasing the intensity until the preferred or tolerated intensity is reached. Offer thermotherapy (topical heat or cooling source) at least 15 minutes before or immediately after the activity known to produce MEP.

Example: Encourage slow diaphragmatic breathing before engaging in a painful activity to “breathe out” movement-related fear or anxiety. Counting (as distraction) during painful activity and resuming diaphragmatic breathing after MEP can aid in task persistence and MEP recovery.

Example: Reiki, before bed or early in the morning, can help to reduce anxiety before a painful activity or promote comfort after MEP (and sleep if used at night).

Example: Set a long-term goal of resuming realistic routines and rituals, with a daily activity goal despite MEP of working toward that goal. Use social or spiritual resources to aid in coping with the distress or grief over losses, or to maintain and strengthen meaningful connections. This may include inviting a chaplain or spiritual guide to visit the patient or encouraging prayer or meditation prior to any activity that will stimulate pain.

---

MEP = movement-evoked pain; OT = occupational therapy; PT = physical therapy; TENS = transcutaneous electrical nerve stimulation.
ness based on the type of pain. For example, diaphragmatic breathing can be used during severe procedural pain or MEP, whereas distraction or sleep hygiene techniques may be best for less intense pain. Combining physical and mental strategies, such as isometric exercises and mindfulness-based cognitive interventions, can work synergistically to improve pain and functioning after surgery. Other wellness approaches that promote movement and engagement with valued people, places, and things (going to a familiar place to socialize, for example) can be considered. Many settings offer chaplaincy, Reiki, pet, music, art, aromatherapy, or other therapies to promote comfort and wellness. These not only promote comfort and mobility but can also reduce the risk of persistent postsurgical pain and related disability. Thus, nurses should consider multimodal approaches to treat MEP and prevent persistent postsurgical pain and long-term functional disability.

Interventional techniques that suppress pain transmission can also facilitate movement. Peripheral nerve blocks or regional (epidural, for example) analgesia often provide excellent partial, temporary relief but may pose additional risks when mobilizing the patient. Quelled sensory motor nerves may produce weakness, suppress the protective nature of pain, and when combined with diminished proprioceptive and autonomic activity can increase the risk of falls and injuries. Percutaneous devices that send electrical impulses to a peripheral, regional, or central nerve and disrupt pain signals are being tested to yield similar benefits without the risks of local anesthetics.

During the acute postoperative period, exercise, as well as any activity restrictions, should be ordered. Therapeutic movement (guided by physiotherapists in some cases) prevents diminished functional capacity and increases the range of motion, strength, and stamina that are lost with immobility. Tailored, therapeutic movement reduces pain and stiffness and can increase the production and release of innate hormones and chemicals that naturally alleviate pain and promote healing. One option is to introduce a modified style of tai chi, which encourages mindful movements and stretching and can be completed while the patient is supine or sitting on the side of the bed. An evidence-based approach should be taken to initiating exercise routines that build muscle strength, range of motion, balance, and endurance in order to guard against the risks of overexertion, increased pain, inadequate circulation, and mechanical strain or bleeding at the surgical site. Functional goals may include increasing strength, stamina, and mobility to a level required for safe discharge or transfer. Adaptive equipment, including orthotics, walkers, and compression sleeves, may be needed for optimal comfort and functional independence. An activity plan approved by the surgeon, often developed by a physical or occupational therapist, is recommended to safely mobilize patients, and to prevent the undesirable effects of continued immobility. Nurses have an important role to play in implementing the plan, reporting undesired responses, and preventing avoidable harm, such as falls and skin breakdown, related to the activity or equipment used. These approaches emphasize movements needed to maintain and restore optimal functionality.

In the postoperative period, teaching activity pacing, including scheduling when to start or stop an activity, helps patients overcome fear–avoidance patterns. Activity pacing can prevent the exacerbation of pain by minimizing the pain induced by overexertion and spasms secondary to loss of muscle or range of motion due to inactivity. For patients with observed or verbalized fear of movement, graded-exposure approaches (which involve identifying and overcoming fear, starting with the least feared step) and graded activity (from motor imagery [imagining the movement] to progressively more difficult movements) may enhance adherence to treatment by reducing catastrophizing, fear, and avoidance of movement. Complementary wellness approaches, such as diaphragmatic breathing, improved nutrition, sleep hygiene, music, humor, acupuncture, and aromatherapy, can reduce pain and facilitate activity by making pain more tolerable. An emerging wellness concept is pain hygiene, which stresses that pain management should be as routine as daily hygienic practices and incorporates multifaceted techniques to address the individualized biopsychosocial–behavioral aspects of pain.

Recovery bundles. Recovery bundles are evidence-based, interrelated practice measures to aid and enhance recovery after surgical and interventional procedures. A growing body of evidence supports Enhanced Recovery After Surgery (ERAS) approaches as the best practices for a variety of surgery types. Protocols typically start with preoperative prehabilitation (exercise), nutritional, education, and counseling efforts using motivational interviewing techniques to improve physical and mental preparation before surgery. Perioperative preemptive multimodal analgesia, with early postoperative mobilization, sleep hygiene, and oral intake, has also been shown to have better outcomes than traditional restrictive approaches. Early mobilization is considered one of the most important components of ERAS protocols. However, MEP assessments are not considered standard because of differences in setting-specific resources and procedure-specific factors.

Although these recovery best practices have been adopted internationally, they are inconsistently applied across procedures and settings. Nurses are in a key position to help refine ERAS protocols for their setting given their knowledge of its perioperative pathways, surgery, procedures, and resources. Nursing engagement is key to realizing these opportunities for improvement through interprofessional team collaboration to develop standardized approaches to pre-
operative preparation, and to improve analgesia, nutrition, hydration, and early mobilization. Adopting MEP as a standard part of pain assessment and reassessment and as a basis for daily treatment is an important component of recovery. Alternate approaches for those not achieving pain control or hitting functional benchmarks at defined intervals should also be discussed by the team to facilitate refinement of treatment plans if first-line therapies fail.

**Research trends in MEP management.** MEP is increasingly recognized internationally as an important patient outcome to measure before and after surgery. Research on MEP and its management has been conducted primarily in Canada, the United States, the Netherlands, Denmark, Israel, and Australia. In Europe, pain management recommendations promote regional anesthesia; fewer opioids; and more nonpharmacological interventions such as music, virtual reality, relaxation, and physiotherapy. Recent research has investigated the effect of several therapies on people experiencing MEP: exercise, transcutaneous electrical nerve stimulation (TENS), kinesiology taping, continuous and pulsed ultrasound, manual therapy, and medications. One systematic review found moderate evidence for exercise therapy and low evidence for TENS in providing a beneficial treatment effect for MEP. While multifaceted pain treatment is a recommended best practice, it is not consistently applied and could benefit from implementation science investigations and consensus-developed nursing order sets for MEP management.

**EVALUATION OF INTERVENTIONS, GOALS, AND TREATMENT PLANS**

Evaluation and refinement of goals, intervention, and treatment plans contribute to positive patient outcomes. Regular reassessment or evaluation of timely attainment of benchmark pain control and functional outcomes provides information about whether recovery is on track or the plan of care needs refinement based on responses to therapy.

When evaluating pain, it is important to assess its multiple dimensions rather than only focusing on its intensity. For example, after ankle surgery a patient reporting a severe pain rated as 8 on a 0 to 10 scale would be evaluated and treated differently if it was a sharp ankle pain rather than a crushing chest pain. Consistently documenting multiple dimensions of pain promotes continuity of care by “telling the story” of what is helping or possibly harming the patient. Promoting consistency in how pain is assessed, documented, and communicated can aid in refining an ineffective treatment plan or reveal complications that interfere with healing and recovery. As noted previously, pain assessed at rest is less revealing than pain assessed during movement, as the former fails to identify patients who refuse to breathe deeply or engage in prescribed activities because the pain with movement is too severe. Therefore, assessments should be completed both at rest and with movement.

In general, reassessments of pain are done periodically per organizational routines and often before and after an analgesic is provided to determine if the intervention is working or if the patient is experiencing undesired effects. Understanding the onset, peak, and duration of administered analgesics is important, so that reassessments can be done at a time that approximates the medication’s peak effect. This information can also be useful when involving patients in painful activities. For some patients, engaging them in activities soon after the onset of an analgesic helps them to move despite the presence of pain, as they know that when the activity is completed the medication will be working at its best. When safety concerns exist, such as for ambulating patients with a nerve block or an epidural, making sure they can stand with the strength to lock their knee and delay supplemental analgesics that may weaken them or contribute to orthostatic hypotension are advised.

The effect of the intervention on pain, functioning, and adverse events should be evaluated near its peak effect and documented within four hours per organizational policy. In outpatient settings, the desired and undesired effects of pain-relieving interventions are not yet fully known, and that fact should be documented and education should be provided to the patient and caregiver about anticipated and reportable undesired effects. Nurses in these settings should consider follow-up phone calls with patients and caregivers to determine the level of pain control. When evaluating the intervention’s effect on pain, it is important to use the same pain intensity measure after the intervention as was used at baseline. Progress (if any) made toward comfort and function goals as found in the care plan and any undesired effects should be documented. If needed, comfort and function goals can be adjusted to be more realistic.

For 161 additional nursing continuing professional development activities on the topic of pain management, go to [www.nursingcenter.com/ce](http://www.nursingcenter.com/ce).

Staja Q. Booker is an assistant professor at the University of Florida College of Nursing, Gainesville. Paul Arnstein is an adjunct professor at Massachusetts General Hospital Institute of Health Professions, Boston. Rianne van Boekel is an assistant professor at Radboud University Medical Center, Nijmegan, The Netherlands. Contact author: Staja Q. Booker, bookers@ufl.edu. The authors and planners have disclosed no potential conflicts of interest, financial or otherwise.

**REFERENCES**


**PROVIDER ACCREDITATION**

LPD will award 2 contact hours for this NCPD activity. LPD is accredited as a provider of NCPD by the American Nurses Credentialing Center’s Commission on Accreditation.

This activity is also provider approved by the California Board of Registered Nursing, Provider Number CEP 11749 for 2 contact hours. LPD is also an approved provider of continuing nursing education by the District of Columbia, Georgia, West Virginia, New Mexico, South Carolina, and Florida, CE Broker #50-1223. Your certificate is valid in all states.

**PAYMENT**

The registration fee for this test is $21.95.