Anxiety, a state of uneasiness or apprehension toward a vague or nonspecific threat, is prevalent in cardiac patients. Estimates are as high as 70% to 80% during the acute phase, and it persists long-term in 20% to 25% of patients. Anxiety inflicts its toll through 3 major pathways. In the physiological pathway, anxiety affects the musculoskeletal system by causing muscular tension; the autonomic nervous system by arousing sympathetic responses; and the psychoneuroendocrine system (hypothalamic-pituitary-adrenal axis) by triggering secretion of catecholamines and glucocorticoids (see Figure). The psychological pathway elevates negative mood states, whereas the social-behavioral pathway promotes disconnection from self and others and stress inhibition with resultant unhealthy lifestyle behaviors. The deleterious effects of this psychophysiological stress response are troublesome because anxiety is an independent predictor of arrhythmic/ischemic complications and increased mortality in cardiac patients.

As part of autonomous nursing practice, relaxation is an integrative therapy that calms the mind and body by reducing sympathetic nervous system activity. The resultant relaxation response is characterized by lower respiration, heart rate, blood pressure, myocardial oxygen consumption, and muscle tone. The beauty of relaxation is that it can be used in any setting, and only a basic set of instructions and a quiet, comfortable environment are needed. The relaxation response, consisting of a mental device, passive attitude, and decreased muscle tone, may be evoked through many techniques.

Techniques generally focus on progressive muscle relaxation (active tensing and relaxing of muscles) or passive muscle relaxation (focusing on words like “relax” during exhalation). Similarly, autogenic training involves passive concentration and slow repetition of single words or phrases on exhalation—“my right leg is heavy” or “my heartbeat is calm”—to induce muscle relaxation and promote vasodilatation. Often practiced with relaxation, imagery reframes situations to positive images, lowering the

**Perceived stress**

- Limbic system
  - Hypothalamus
  - Cardiotropin-releasing hormone
  - Adrenal medulla
  - EPI
  - Arousals of body
    - HR, BP, RR, metabolic rate
  - Adrenal cortex secretes corticosteroids
    - Glucose, Na retention, anti-inflammatory response

**Cortical processing**

- MSS
  - Neural messages transduced via motor pathways
  - SNS
  - Release of norepinephrine at target organs
  - ANS
  - PNE

**Figure Stress response**

Abbreviations: ACTH, corticotropin; ANS, autonomic nervous system; BP, blood pressure; epi, epinephrine; HR, heart rate; MSS, musculoskeletal system; Na, sodium; PNE, psychoneuroendocrine system; RR, respiratory rate; SNS, sympathetic nervous system.

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Like relaxation, imagery is a learned skill because it takes practice to use the right brain. Also, the more senses one uses (sight, smell, touch, taste, sound), the more cortical areas of the brain are involved and the more images affect physiology. Regardless of the technique, relaxation gives attention to breath. Diaphragmatic breathing involves focusing on slow, deep, rhythmic breaths, inhaling through the nose and exhaling through the mouth. These techniques reduce the “fight or flight” response and thereby promote parasympathetic activity. This clinical review assesses available evidence on the effectiveness of stress response mediated by psychoneuroendocrine interactions. Thus, imagery may be added to increase or decrease sensations of weight (rag doll, floating) or soothe away bothersome thoughts.

### Table 1
Relaxation studies

<table>
<thead>
<tr>
<th>N (sample/setting) intervention</th>
<th>Mean difference, %</th>
<th>P</th>
<th>Effect size</th>
<th>Level of evidence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Van Dixhoorn et al&lt;sup&gt;7&lt;/sup&gt;</td>
<td>156 (Myocardial infarction/cardiac rehab) Relaxation/exercise vs exercise</td>
<td>1.10 STAI-State</td>
<td>&gt;.05</td>
<td>0.14</td>
</tr>
<tr>
<td>Collins and Rice&lt;sup&gt;4&lt;/sup&gt;</td>
<td>50 (Mixed cardiac&lt;sup&gt;2&lt;/sup&gt;/cardiac rehab) Progressive muscle relaxation/imagery vs cardiac rehab</td>
<td>0.57 STAI-State</td>
<td>&gt;.05</td>
<td>0.07</td>
</tr>
<tr>
<td>Wilk and Turkoski&lt;sup&gt;9&lt;/sup&gt;</td>
<td>14 (Mixed cardiac&lt;sup&gt;2&lt;/sup&gt;/cardiac rehab) Progressive muscle relaxation vs cardiac rehab</td>
<td>-1.57 STAI-State</td>
<td>&gt;.05</td>
<td>—</td>
</tr>
<tr>
<td>Lewin et al&lt;sup&gt;10&lt;/sup&gt;</td>
<td>130 (Angina/outpatient clinics) Progressive relaxation vs education</td>
<td>-1.02 HADS</td>
<td>.05</td>
<td>0.36</td>
</tr>
<tr>
<td>Hui et al&lt;sup&gt;11&lt;/sup&gt;</td>
<td>65 (Mixed cardiac&lt;sup&gt;2&lt;/sup&gt;/cardiac rehab) Relaxation vs qigong</td>
<td>2.04 STAI-State</td>
<td>&gt;.05</td>
<td>0.22</td>
</tr>
<tr>
<td>Rees et al&lt;sup&gt;12&lt;/sup&gt;</td>
<td>Meta-analysis</td>
<td>Anxiety &lt;.05</td>
<td>-0.15 (CI -0.33, 0.03)</td>
<td>—</td>
</tr>
<tr>
<td>Van Dixhoorn and White&lt;sup&gt;13&lt;/sup&gt;</td>
<td>Meta-analysis</td>
<td>STAI-State .003</td>
<td>Brief relaxation</td>
<td>(Grade 1): -0.08 (CI -0.27, 0.09)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Full relaxation</td>
<td>(Grade 2): -0.51 (CI -0.71, -0.31)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Extended relaxation</td>
<td>(Grade 3): -0.24 (CI -0.51, 0.04)</td>
</tr>
</tbody>
</table>

Abbreviations: CI, confidence interval; HADS, Hospital Anxiety Depression Scale; rehab, rehabilitation; STAI, State Trait Anxiety Inventory.
<sup>4</sup> Percentage difference between treatment and control groups.
<sup>2</sup> Varied combinations of angina/myocardial infarction, cardiac arrest, percutaneous transluminal coronary angiography, heart surgery, and heart failure.

**About the Author**

Margo A. Halm is a clinical nurse specialist and director of nursing research and quality at United Hospital in St Paul, Minnesota, where she leads and mentors staff in principles of clinical research and evidence-based practice.

**Corresponding author:** Margo A. Halm, RN, PhD, CNS-BC, United Hospital - Mailstop 60316, 333 N. Smith Ave, St Paul, MN 55102 (e-mail: margo.a.halm@allina.com).
relaxation and imagery in reducing anxiety in cardiac patients.

Methods

The strategy included searching MEDLINE, CINAHL, Cochrane, Joanna Briggs, and TRIP databases. Key words included cardiac, angina, myocardial infarction, anxiety, relaxation, and imagery. Only randomized studies were included.

Results

Five randomized trials and 2 meta-analyses were retrieved (Table 1). With more than 2700 patients studied, most trials were conducted in cardiac rehabilitation and outpatient settings; however, 1 meta-analysis included 4 inpatient trials. Common sample characteristics included being white, male, 50 to 60 years old, and married. Cumulative findings revealed that relaxation produced small, significant reductions in state anxiety. Although 1 meta-analysis found similar anxiety reduction for the relaxation interventions part of stress management versus complex psychological programs, another found greater anxiety reduction for grade 2 (full sessions with multiple techniques) compared with grade 1 (brief session) or grade 3 (extended sessions with cognitive skills) relaxation training.

Recommendation Based on Current Evidence

Available studies provide class I evidence for the effects of relaxation on anxiety (Table 2); however, research is needed on more diverse cardiac samples (eg, females, younger and older patients). Small but significant reductions in anxiety can be expected, with greater effects from more intensive relaxation training. Therefore, to reduce the harmful effects of anxiety on patient outcomes, cardiovascular nurses can encourage patients to participate in cardiac rehabilitation after discharge and can influence rehabilitation programs at their hospital or in their community to offer full relaxation training with multiple techniques, such as cognitive-behavioral restructuring and meditation. As van Dixhoorn and White's meta-analysis concluded, “If one wants to implement relaxation therapy, better do it well.”

Although evidence suggests greater effects of intensive training, cardiovascular nurses have a chance to begin teaching patients simple relaxation techniques in the hospital setting. In the biopsychosocial model, the mind and body are seen as connected bidirectionally. In a recent survey, almost half of critical care nurses ranked anxiety as harmful and more than three-fourths believed that anxiety management was very important. Most commonly used interventions were anti-anxiety medications and communication or information techniques; teaching relaxation was reported only 21% to 40% of the time. Thus, the biopsychosocial model provides a framework to assist nurses in expanding their repertoire of anxiety management strategies and empowering patients to learn self-healing modalities that interrupt major anxiety pathways, thereby contributing to secondary prevention.

In a more recent national survey of critical care nurses, the vast majority (96%) perceived integrative

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<td>Levels of evidence</td>
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<tr>
<td>Class</td>
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<tr>
<td><strong>Class I</strong></td>
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<tr>
<td><strong>Class IIa</strong></td>
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<td><strong>Class IIb</strong></td>
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<td><strong>Indeterminate</strong></td>
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<td><strong>Class III</strong></td>
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therapies as helpful for managing anxiety. Significant proportions of respondents reported personal and professional use of relaxation (87%) and guided imagery (76%), which were viewed as legitimate by most. At least 56% of patients or families requested relaxation techniques (versus 12% for imagery). Indeed, integrative therapies resonate with patients’ desire to have options, control, and influence over their care.17 As Tracy and Lindquist’s18 model advocates, critical care nurses play a key role in facilitating patient access to and the delivery of integrative therapies, potentially influencing satisfaction of patients and their families, safety of patients, and biopsychosocial outcomes—not to mention satisfaction among staff.

Despite common barriers of lack of training and knowledge, most critical care nurses in a large national survey16 expressed an overwhelming openness to and desire for, additional education and availability of integrative therapies for patients, patients’ families, and nurses. Based on current research evidence and the interest of critical care nurses, educational programs on relaxation and imagery are clinical practice priorities that may provide clinicians with the knowledge to teach the relaxation response to cardiac patients. Disch and Kretizer19 also urge critical care nurses to examine their beliefs about integrative therapies, talk with patients and families about their use of integrative therapies, and collaborate with researchers investigating the effectiveness of integrative therapies as groundwork to facilitate dialogue on how these therapies can be incorporated into existing care patterns (rather than viewing them as “add-on” or separate techniques from mainstream clinical practice). By doing so, nurses can promote truly holistic care environments. Incorporating such therapies into our self-care practices also nurtures our bodies, minds, and spirits—allowing us to be more fully present and able to share with patients the full arsenal of therapies that could help them heal.

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